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(ESSP II)

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DIAGNOSTIC STUDY OF PROVIDING MICRO-INSURANCE SERVICES TO LOW-INCOME HOUSEHOLDS IN ETHIOPIA:

AN INPUT TO A NATIONAL MICRO-INSURANCE STRATEGY

ESSP II – EDRI REPORT

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THE ETHIOPIA STRATEGY SUPPORT PROGRAM II (ESSP II)

ABOUT ESSP II

The Ethiopia Strategy Support Program II is an initiative to strengthen evidence-based policymaking in Ethiopia in the areas of rural and agricultural development. Facilitated by the International Food Policy Research Institute (IFPRI), ESSP II works closely with the government of Ethiopia, the Ethiopian Development Research Institute (EDRI), and other development partners to provide information relevant for the design and implementation of Ethiopia's agricultural and rural development strategies. For more information, see http://essp.ifpri.info, http://www.ifpri.org/book-757/ourwork/program/ethiopia-strategy-support-program or http://www.edri-eth.org.

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Diagnostic Study of Providing Micro-Insurance Services to Low-Income Households in Ethiopia: An Input to a National Micro-Insurance Strategy

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Acronyms

Accelerated and Sustained Development to End Poverty	ASDEP
Acquired Immune Deficiency Syndrome	AIDS
Agriculture Development-Led Industrialization	ADLI
Association of Ethiopian Insurance Companies	AEIC
Association of Ethiopian Microfinance Institutions	AEMFI
Central Statistical Agency	CSA
Centre for Environmental Economics and Policy in Africa	CEEPA
Climate Change National Adaptation Programme of Action	NAPA
Climate Prediction and Applications Centre	ICPAC
Community Based Rehabilitation	CBR
Contagious Bovine Pleuropneumonia	CBPP
Credit Reference Bureau	CRB
Di-ammonium Phosphate	DAP
El Niño-Southern Oscillation	ENSO
Ethiopian Economic Association	EEA
Ethiopian Institute of Banks and Insurance	EIBI
Federal Cooperative Agency	FCA
Food and Agricultural Organization	FAO
Gross Domestic Product	GDP
Human Immunodeficiency Virus	HIV
International Food and Policy Research Institute	IFPRI
Intergovernmental Authority on Development	IGAD
Intergovernmental Panel on Climate Change	IPCC
International Labour Organization	ILO
International Livestock and Research Institute	ILRI
Micro Development Training and Consultancy Services	MDTCS
Millennium Development Goal	MDG
Ministry of Agriculture and Rural Development	MoARD
Ministry of Finance and Economic Development	MoFED
National Bank of Ethiopia	NBE
Non-Governmental Organization	NGO
Productive Safety Net Program	PSNP
Purchasing Price Parity	PPP
Southern Nations, Nationalities and People's Region	SNNPR
Transformation and Growth Program	TGP
Tuberculosis	TB
United Nations	UN
United Nations Mission in Ethiopia and Eritrea	UNMEE
World Food Programme	WFP
World Health Organization	WHO

Executive Summary

Macroeconomic performance — Ethiopia has experienced strong economic growth in recent years. With real GDP growth rates at or near double digit levels since 2003/04, the country has consistently outperformed most other countries in Africa and expanded much faster than continent-wide averages. This impressive growth is partly attributed to significant growth rates in the service sector which averaged 12.9 percent in the last 7 years. On the other hand, the growth in the agricultural sector has shown a continuous decline, from a peak of 16.9 percent in 2003/04 to 7.6 percent in 2009/10.

Developments in the agricultural sector — Although macroeconomic indicators signify impressive growth over the last seven years, growth rates of the agricultural sector have declined significantly from 16.9 percent in 2003/4 to 7.6 percent in 2009/10. The agricultural sector contributed 42 percent of GDP for fiscal year 2009/10, while the service sector contributed 46.1 percent of GDP, indicating that the service sector was driving the economy's expansion. Given the importance of agriculture in providing livelihoods for the majority of the population and the relatively small contribution to overall employment in the service sector it is clear that addressing the vulnerability of agricultural risks and promoting sustained agricultural growth are crucial.

Crop production — Cereals dominate Ethiopian crop production. Cereals were grown on 73.4 percent of the total area cultivated, by a total of 11.2 million farmers. After cereals, the second most important crop group (in terms of acreage) is pulses. In 2004/05–2007/08 6.4 million holders grew pulses on 12.4 percent of total area cultivated. One of the major constraints that significantly affect the growth of agricultural production and productivity in Ethiopia is the limited use of modern inputs and technology.

Livestock production — Livestock accounts for an estimated 15 percent of the total GDP and contributes to the livelihood of 60–70 percent of the Ethiopian population. According to the National Bank of Ethiopia leather and leather products, meat and meat products, and live animals accounted respectively for 7.2 percent, 2.4 percent, and 4.5 percent of total exports for the first quarter of 2008/09, accounting for the cumulative value of 49.5 million USD. Nonetheless, the development and expansion of the livestock sector has been inhibited by drought, reduced grazing areas, ruminant disease, insufficient nutrition, marginal production and productivity, inadequate breeding improvements, and limited support services.

Social protection — Ethiopia's Productive Safety Net Programme (PSNP), the social protection programme implemented by the government, intends to smooth consumption and protect the assets of chronically food insecure households by providing them with predictable and adequate transfers of cash and/or food. PSNP additionally aims to build community assets through labor intensive public works and the program endeavors to 'graduate' people from food insecurity. This is to be achieved through a combined effort of the PSNP and complementary programs providing access to credit, agricultural extension, and other services.

Agricultural risk — The most prevailing agricultural risks cited by Ethiopian households include drought, crop, and livestock loss. Secondary agricultural risks included pest and disease, soil infertility, water logging, hail, and weeds. Unexpected shocks such as illness or death are anticipated given the health-related environment and the poor medical services low-income households face. All these shocks can lead to substantial loss of income, wealth,

and/or consumption and force households to consider whether or not to seek medical assistance when ill, to pay school fees for children, to buy inputs, and even to repay loans.

Coping strategies — The ability of farmers to manage small and frequent losses depends on access to agricultural services and the functioning of the relative markets, such as those for credit, finance, transport, and storage or extension services. Where such markets are incomplete or uncompetitive, farmers' ability to cope with risks is hindered. In these cases, small-scale farmers are forced to rely on other mitigating or informal means to smooth consumption, which may perpetuate subsistence, hinder farm capital formation, and limit agricultural productivity growth. Prominent Ethiopian household coping strategies include sale of livestock, sale of "other" agricultural products, accessing cash resources such as savings, and the use of food aid.

Willingness to purchase insurance — It would be difficult to measure the actual demand, willingness, and ability of Ethiopians to pay for micro-insurance without detailed and deep analysis based on quantitative estimates of interest in specific products (actual terms, including benefit levels, policy exclusions, premium rates, claims procedures, etc.). However, on the basis of the limited available primary data there appears to be a strong interest in micro-insurance across the country.

Formal insurance sector — The insurance sector in Ethiopia is very small, young, and underdeveloped with many small insurance companies displaying high levels of inefficiency. In 2007, about 0.1 percent of Ethiopia's population had access to insurance services. Insurance premiums accounted for about 0.2 percent of GDP. Several factors cause low insurance penetration in Ethiopia. The major factors include: the structure of the economy which is dominated by rain-fed agriculture, absence of differentiated products, unethical competition, backward technology, the absence of compulsory insurance, non-existence of reinsurance companies, and low and negative interest rates.

Micro-insurance delivery channels — Micro-insurance can be developed and delivered by insurance companies, mutual funds, Micro-Finance Institutions (MFIs), NGOs, and government or semi-public bodies. In Ethiopia, only insurance companies and deposit-taking MFIs are allowed, by law, to issue micro-insurance policies. Other providers such as cooperatives can be used as agents of the insurance companies and deposit-taking MFIs. Although there has been a relative success in building sustainable micro-insurance providers in Ethiopia, such as insurance companies, deposit-taking Microfinance Institutions (MFIs), and cooperatives, they failed to provide tailored micro-insurance services and interventions which address the insurance needs of low-income households.

Micro-insurance product offerings — Micro-insurance products have been limited in range. MFIs and many savings and credit cooperatives (SACCOs) are currently self-insuring their loans through credit-life insurance, because of the lower cost structure, simplicity, limited risk, and the focus of the micro-insurance providers protecting their assets. Ethiopian financial service providers have implemented various insurance schemes such as weather index insurance and livestock indemnity insurance to reduce the risks of smallholder farmers. The results of the innovative pilot projects are being scaled up by insurance companies, MFIs, and NGOs.

The HARITA project compliments the country's innovative social protection scheme, the PSNP. The project has been exploring ways to build upon the PSNP model by enabling farmers to pay insurance premiums in kind rather than in cash. The project has found ways

to overcome technical product design barriers, engaging clients meaningfully in product development, and creating a scalable in-kind premium payment model whereby farmers obtain insurance through their labor. The first season of results demonstrate that the HARITA model can effectively reach very vulnerable families, most of who had previously been viewed as uninsurable.

The Nyala Insurance Corporation weather insurance pilot — The pilot uses a weather index to demonstrate the feasibility of establishing contingency funding. In the event of severe and catastrophic shortfalls in precipitation, the index is able to indicate the number of beneficiaries and helps giving an effective aid response.

The World Bank weather-based index insurance pilot — The World Bank implemented a pilot project on weather-based index insurance. The index that was developed looked at historical rainfall data as well as agronomic inputs and field based research to determine the impact of shortfalls in rain during the critical growth periods for maize. The index was used in turn to design an insurance policy which would payout when adverse weather occurred.

The Ethiopian Pilot Indemnity Livestock Insurance Project (PLIP) — The pilot was initiated to identify the feasibility of developing a livestock indemnity insurance product for high value livestock (cattle and sheep). The pilot project had a broader goal of supporting the development of the livestock sector by enhancing the quality and quantity of livestock production and safeguarding smallholder farmers against inherent risks.

Macro-level interventions

Improving regulation — There is a need to focus on regulating distribution channels that are familiar with, and have the trust of, low-income households and providing incentives or even mandating risk carriers which are unregulated or under other institutions such as the Federal Cooperative Agency (FCA) to become licensed. Moreover, deposit-taking MFIs providing micro-insurance products should separately report on their micro-insurance activities.

Capacity building of regulators — There is a need to build the capacity of the National Bank of Ethiopia (NBE) and the FCA, in terms of training, developing supervision manuals, exposure to best practices, and other technical supports, to promote and effectively regulate micro-insurance activities in the country.

Client protection — Regulators and other stakeholders should avail efficient and effective procedures and processes for lodging complaints and resolving disputes between the insurance providers and policyholders.

Infrastructure — Intervention of government and donors in Ethiopia in improving the physical infrastructure will have a positive impact on the expansion of micro-insurance and inclusive finance at large.

Subsidies and tax reliefs where possible — There is a possibility of giving tax break relief incentives to micro-insurance providers as an incentive to motivate them to serve the low-income market.

Financial education — Promoting consumer education about the value of insurance is a priority intervention in expanding micro-insurance services.

Coordination and establishing partnership — The government should coordinate various policies, strategies, and programs in Ethiopia with the strategy of micro-insurance for low-income households to be implemented at macro-level.

Meso-level interventions

Training — A micro-insurance research center should be established to conduct policy oriented research to understand the excluded segments of the population.

Networks and associations — There is a need to have strong and sustainable networks to provide value adding services such as lobbying, self-regulation, and performance monitoring.

Reinsurance — There is a need to establish an agricultural insurance company, duly funded through donor guarantees (similar to the credit guarantee scheme by donors such as **Kreditanstalt für Wiederaufbau** (KfW) and linked to international index reinsurance programs such as the global index reinsurance facility initiated by the International Finance Cooperation (IFC).

Availing quality data — There is a need to have both credible long-term statistical information and actuarial models.

Support technical service providers — The government, donors, and other development partners should assist in building the capacity and the market for technical service providers.

Establishing a Credit Reference Bureau (CRB) — The establishment of a functional CRB will play a positive role in increasing outreach, as well as improving efficiency and the quality of delivering loans and micro-insurance services.

Micro-level interventions

Product development — Unless there are appropriate micro-insurance products to mitigate the risks of low-income households, any improvement in food security, poverty alleviation, or agricultural transformation in Ethiopia may be quickly lost due to the impact of various types to risks.

Distribution systems — Insurance companies need to design innovative distribution channels with lower transaction costs. These could include linkages between the licensed insurance providers and traditional organizations such as *iddirs* (traditional risk-sharing groups) and grassroots level finance providers.

Education and training staff — There is a need for technical capacity building to fully develop the knowledge base of the insurance industry.

Technology platform — This includes improving the back-office (Management Information Systems) and front office technologies ranging from sophisticated electronic solutions to social technology.

Educating policyholders and potential clients — Educating clients can play a critical role in providing financial literacy to policyholders.

Client-level interventions

Client education on micro-insurance — This intervention would involve a series of capacity building activities focused at increasing the knowledge of micro-insurance concepts, skills, and attitudes.

Education on client protection — There is a need to educate clients on the details of insurance products which can assist in protecting against abuse from micro-insurance providers.

Alignment of the micro-insurance strategy with other development programs at grassroots level — There are various stakeholders that play a critical role in implementing a micro-insurance strategy at the grassroots level. These include: (i) governments at various levels, policymakers and regulators at macro-level; (ii) support institutions and intermediaries at meso-level; (iii) private sector insurers, government-owned insurance providers, and cooperatives, which are regulated or unregulated; and (iv) the existing and potential policyholders, low-income households. Moreover, donors, NGOs, and international agencies can support the development of micro-insurance in the country. There is also a need to create, promote, and coordinate public or private partnership. Since there is a need for significant investment in capacity building at all levels, donors, governments, and other development partners can be involved in providing technical assistance, financial support, and transfer of knowledge and the promotion of insurance awareness and consumer education.

1. Introduction

Over the last decade the government of Ethiopia has initiated a number of proactive developmental policies, strategies, and programs intended to reduce poverty and fuel economic growth. The overriding focus has been on the agricultural sector to catalyze broad economic growth. The economy has expanded at unprecedented pace and has outperformed average annual growth rates of all nations throughout the continent. Economic expansion has been driven by a sound growth and poverty reduction strategy, focusing on the commercialization of agriculture and infrastructure developments, enhancing private sector developments and the expansion of regulatory and institutional policies to support private business, which have all in turn contributed to the strategy's success. The intensification of exports has been realized through the production of high value agricultural products and increased support to export oriented manufacturing sectors.

The economy's development has become more broad-based with the service sector driving the growth of the economy by contributing 46.1 percent of GDP, while the agriculture sector contributed 42 percent of GDP for fiscal year 2009/10. Although the service sector has been a major source of growth, the economy's base will continue to originate from the agricultural sector which sustains the economic livelihood of the majority of the population. Moreover, the country is heavily reliant upon the agricultural sector for income, foreign currency, and food security. Nevertheless, Ethiopia's agriculture sector is characterized by smallholder farmers, who rely on traditional rain-fed agricultural practices epitomized by insufficient production yields.

Reliance on rain-fed agriculture exposes the population to weather-related shocks and other economic shocks and becomes a constant threat to food security and household livelihoods, particularly given that most households in Ethiopia do not reach beyond subsistence farming. This diagnostic synthesizes a number of empirical studies on risks and vulnerabilities in Ethiopia. The research demonstrates the prevalence of analogous risks which challenge the solidity of the livelihood of many households. The study examines mechanisms devised by households to mitigate risks and reduce levels of vulnerability. Welfare costs due to shocks and foregone profitable opportunities have been found to be substantial, contributing to persistent poverty (Morduch 1990; Dercon 1996, 2004; Rosenzweig and Binswanger 1993; Elbers et al. 2007; Pan 2008) often compelling smallholder farmers to forego modern technologies (i.e., chemical fertilizers, improved seeds, small-scale irrigation schemes) which would narrow the gap between farmers' yield and what agronomists call 'exploitable yield potential'.

Many development programs fail to recognize the impact insurance services can have both in facilitating risk management for smallholder farmers and augmenting demand for credit. We suggest the existence of informal coping mechanisms imply prevailing gaps in the formal market but also inform investigators regarding the possible development of effective formal insurance mechanisms that would appropriately address the needs of smallholder farmers.

This diagnostic evaluates formal and informal players operating at the low end of the insurance market and across various facets of the value chain. We analyzed micro-insurance market structures, provision platforms, and distribution channels and categorize market factors and trends affecting the expansion of the micro-insurance sector (considered the penetration of social welfare and other government support networks as alternative risk mitigating mechanisms) and offer recommendations and interventions with an objective to

structure a framework for a national agricultural insurance strategy for the rural economy in Ethiopia.

1.1. Background

The population of Ethiopia, according to the 2007 Population and Housing Census of the Central Statistical Agency (CSA), was 73.9 million. Taking a population growth rate of 2.6 percent per annum and 83 percent of the population living in rural areas, Ethiopia has more than 81 million people, making it the second most populated country in Africa. Ethiopia is recognized as one of the world's oldest civilizations and is endowed with a rich diversity of natural resources. However, Ethiopia is one of the poorest countries in the world. About 23 percent of Ethiopians live on less than one dollar a day (PPP adjusted); while 76 percent live on less than two dollar a day; and about 44 percent of the population lives below the nationally defined poverty line of 1,075 Birr (about 107 USD) (UNDP 2008).

Ethiopia's remarkable growth has been associated with a number of policy successes, as well as favorable external conditions. Ethiopia has seen a significant decline in its fiscal deficit (from 4.2 percent of GDP five years ago to 1.3 percent). Better regulatory and institutional frameworks, such as improved business registration procedures and requirements, have helped strengthening investor confidence. Large investments in infrastructure—reaching about 6 billion USD (20 percent of GDP), which is large relative to the economy's size—have helped to fuel domestic demand and enhance the economy's productive potential. Positive external factors include rising remittances, increasing international commodity prices, and a range of special incentives have helped exports to grow at an average annual rate of 10.5 percent between 2004 and 2009 and contributed to the economic boom (Ali 2011).

The economy is a subsistence economy where agriculture (predominantly rain-fed) accounts for 41 percent of the GDP and 90 percent of the export earnings. About 85 percent of the population depends on earnings from agriculture for their livelihood. In 2009/10, industry and services accounted for approximately 13 percent and 46 percent of GDP, respectively. Although the economic growth in Ethiopia is a function of diverse endogenous and exogenous factors, it is highly dependent on the performance of the agricultural sector which is challenged by the ability to reach higher levels of productivity and to ease conditions contributing to food insecurity. The low level of agricultural productivity and household level food security in Ethiopia are the results of: (i) natural resource degradation; (ii) erratic, scarce, and unpredictable rainfall; (iii) and increased population pressure. As a result, unreliable rainfall, high population growth, and structural bottlenecks are the daunting challenges of the country. Development strategies and programs in Ethiopia were designed and implemented to address these problems. Currently, the government's Growth and Transformation Plan (GTP) gives key emphasis to the commercialisation of agriculture, including the development of smallholder agriculture, to achieve growth and meet the Millennium Development Goals (MDGs). Improving crop yields and livestock productivity and intensifying marketable farm products (including diversification into new higher-value crops of fruits, vegetables, spices, and others) are recognised as important interventions to increase agricultural production. Adoption of improved agricultural technologies (e.g., fertilizer, improved seeds, and irrigation) and practices by small and large farmers is believed to be crucial in this respect.

Access to financial services such as loans, savings, micro-insurance, and other financial products is a key instrument in increasing agricultural productivity and production. However, financial intermediation within Ethiopia is constrained by the diverse nature of the agricultural activities and risks arising from the undiversified nature of the local economies which include the following:

a) The agricultural sector is dominated by subsistent smallholder farmers who are largely non-monetized. The livelihoods of the rural communities are less dependent on the market system. As a result, an increase in the level of agricultural production may not effectively be translated into an increase in rural household income. Moreover, farmers are heterogeneous in terms of skills and cultural background.

b) The difficult terrain, dispersed settlements, low population density, and long distances between lenders and the geographically dispersed rural households increase administrative and transaction costs of finance providers (in searching, screening, monitoring, and enforcement).

c) Smallholder farmers often demand small loans, saving accounts, and micro-insurance products which increase transaction costs on financial providers. Moreover, smallholder farmers have little, if any, acceptable collateral either due to lack of assets or unclear property rights or a proper registry system for their movable assets.

d) Investing in agriculture is considered less profitable than other sectors such as construction, banking, manufacturing, tourism, and trade and services. This is mainly due to lack of economies of scale and use of best practices in farming. Coupled with the high risks identified in the agricultural sector, financial players are reluctant to enter the sector.

e) Smallholder farmers lack track records. Moreover, there is limited information to asses risk as well as incomplete willingness and capacity to repay loans and premiums, which often requires resources, infrastructure, and systems.

f) Providing financial services to smallholder farmers is perceived as less sound and risky because of covariate risks tied with agricultural production and marketing, and an absence of formal insurance mechanisms to mitigate risks.

g) Smallholder farmers primarily depend on rain-fed agriculture and are exposed to drought. Moreover, the seasonal characteristics of agriculture lead to lumpy demands for financial services at the start of a season, a period of several months without income and then a concentrated period after harvest when payments (interest, principal of the loans and premiums) can be made.

h) There are particular problems in financing inputs for subsistence crop production, as the financed inputs will not directly lead to increased cash flow from which repayments can be made (Amha 2008).

The above characteristics of smallholder farmers and the agricultural risks in Ethiopia reinforce each other and consequently lead to high production risks which are compounded by price volatilities of agricultural products. Price uncertainty is aggravated by a weak domestic market and lack of integration in the international agricultural market. For agriculture to continue serving as an engine of growth in the coming years, through the domestic economy and international trade, there has to be progress in terms of commercialization, with more intensive farming, increased marketable output, and

comparable declining ratio of production for personal consumption. Aside from deepening technological progress, it will mean greater market interaction on the part of farmers. Extension of credit to the small farmer will gain importance with commercialization of agriculture, and give impetus to the establishment of rural banks. Cooperatives can play more important roles in facilitating input and output marketing as well as promoting the provision of rural finance (MoFED 2002).

To this end, any intervention to expand micro-insurance should be properly designed to address the settings and characteristics of smallholder farming and low-income households in Ethiopia. Moreover, there is a need to address the country's restricted communication and physical infrastructure systems; the insufficient meso-level regulation and supervision framework; and inadequate contract enforcement mechanisms which directly or indirectly influence access to insurance products by smallholder farmers. Risk mitigating mechanisms—such as weather index insurance, crop insurance, livestock insurance, and other formal insurance schemes—cannot be expected to be accessed by every household in rural areas, bearing in mind issues relating to proximity, affordability, eligibility, terms of product, or knowledge of the product. Product and distribution innovations, financial literacy, improved infrastructure, and policy and regulatory changes can be used to reach smallholder farming and low-income households who have the potential to be consumers of micro-insurance products. Conversely, there are very poor and vulnerable individuals and households who cannot access micro-insurance products without support from government, donors, or other development partners and may remain dependent on social security or social protection programs. This assumes that formal insurance business models are unable to sustainably provide services to a cluster of the population.[1] However, micro-insurance can support social protection programs (e.g. where government utilize insurance mechanisms with some form of subsidy to deliver social security), but it can never independently replace social security/protection programs (Smith and Chamberlain 2009).

1.2. Research Questions

The study is intended to provide insights into issues surrounding the management of risks by low-income households and will serve as the basis to design a micro-insurance strategy for low-income households in Ethiopia and develop demand-driven risk managing financial products. The study is intended to address the following research questions:

a) What economic stresses make low-income households in Ethiopia vulnerable?

b) What coping mechanisms do low-income households use to alleviate the impact of economic stress?

c) How do low-income households view micro-insurance?

d) Is there a potential demand for micro-insurance?

e) Who are the micro-insurance providers in Ethiopia?

f) What is the capacity of existing meso-level technical service providers?

g) Are there projects, programs, or insurance products that address production and marketing risks in agriculture in Ethiopia?

[1] Traditionally poverty lines determine the fact that households below which direct government support and subsidies are triggered.

h) Which international best practices are relevant to the Ethiopian context?

i) What interventions are required to provide broad-based micro-insurance products to low-income households in Ethiopia, at macro, meso, micro, and client levels?

1.3. Objectives

This study has several objectives which include identifying and analyzing risks experienced by low-income households; assessing the potential demand and opportunities for the development of micro-insurance for the low-income segment; exploring the current policy and regulatory framework of the insurance industry; assessing the capacity of existing insurance providers; and identifying challenges for expanding the insurance market.

The study intends to assist in developing tools and strategies to increase risk management mechanisms and expand the micro-insurance markets through the development of financial instruments such as loans, savings, payment systems, and social protection policies. The analysis also aims at generating and analyzing data towards developing a national micro-insurance strategy. The specific objectives of the study include:

a) Review the key household risks faced by low-income households, particularly smallholder farmers.

b) Identify the coping strategies of low-income households to mitigate risks.

c) Assess the perception, knowledge, and awareness of low-income households on micro-insurance.

d) Assess the awareness, willingness to pay by low-income households, and potential demand for micro-insurance.

e) Review the demand and supply of delivering micro-insurance services to low-income households.

f) Identify innovative products, approaches, and institutions that can be scaled up in the country.

g) Assess the key policies and social protection programs focusing on mitigating the risks of low-income households in Ethiopia.

h) Assess the impact of macroeconomic policies, agricultural development programs, drought, and climate change on the vulnerability of low-income households.

i) Examine the regulatory constraints affecting the expansion of micro-insurance in Ethiopia.

j) Review the meso-level infrastructure and technical service providers supporting the expansion of micro-insurance.

k) Propose specific interventions which can serve as key inputs in developing the national micro-insurance strategy.

1.4. Method of Data Collection

The study used both qualitative and quantitative information gathered from secondary and primary sources. The secondary data were obtained from the Ministry of Agriculture, Federal Cooperative Agency (FCA), Association of Ethiopian Microfinance Institutions (AEMFI), Association of Ethiopian Insurance Companies (AEIC), National Bank of Ethiopia (NBE), Central Statistical Authority (CSA), International Food Policy Research Institute (IFPRI), Ethiopian Economic Association (EEA), Ministry of Health, insurance companies, commercial banks, MFIs, cooperatives, and other reports from various sources. Focus group discussions were conducted with key informants including senior staff of the Ministry of Agriculture, bankers, microfinance practitioners, leaders of multipurpose and financial cooperatives, *iddirs*, the Ethiopian Institute of Banks and Insurance (EIBI), and other relevant institutions.

2. Developments in the Macro Economy, Agricultural Sector, Climate Change, and Social Protection Programs to Respond to Household Risks

Ethiopia has experienced strong economic growth in recent years. With real GDP growth at or near double digit levels since 2003/04, the country has consistently outperformed most other countries in Africa and expanded much faster than the continent-wide averages (Mwanakatwe and Barrow 2010). Real GDP growth averaged 11.4 percent per annum during the 2003/04 and 2009/10 period, placing Ethiopia among the top performing economies in Sub-Saharan Africa. Initially having been led by agriculture, growth has become more broad-based, with a rising contribution from mining, services, and manufacturing sectors. The country's economic growth rates are therefore expected to remain high despite large fluctuations in agricultural production. This growth performance is well in excess of the population growth rate and the 7 percent rate required for attaining the MDG of halving poverty by 2015. Yet, a number of issues warrant the attention of policy makers.

2.1. Macroeconomic Performance

Since 2004, Ethiopia's economy has grown by an unprecedented 11.4 percent on average—up from less than the 3 percent annual growth during the previous seven years and much faster than the average annual growth in Africa as a whole (nearly 6 percent). According to the National Accounts data produced by the Ministry of Finance and Economic Development (MoFED), the Ethiopian economy is anticipating a real GDP growth rate of 11.4 percent in 2010/11. Although macroeconomic indicators signify impressive growth over the last seven years, growth rates of the agricultural sector have declined significantly from 16.9 percent in 2003/04 to 7.6 percent in 2009/10 (Table 2.1). Despite favorable weather conditions and enhanced government support agricultural productivity remains low. The expansion in agricultural production has been driven by increases in the area of land cultivated, rather than major improvements in productivity. Pushing the production frontier further in the same way by applying increases in cultivated area is difficult due to the already existing pressures on the land (Mwanakatwe and Barrow 2010).

Consequently, the economy's growth has become more broad-based with the service sector driving the growth of the economy by contributing 46.1 percent of GDP, while the agriculture sector contributed 42 percent of GDP for fiscal year 2009/10. Nonetheless, the economy will remain heavily reliant on the agricultural sector as it accounts for over 80 percent of employment; in contrast, the service sector accounts for merely 10 percent of the labor force. Some of the service sub-sectors that have registered the fastest growth over the past five years, such as financial services, show relatively high productivity but show little potential for generating employment. In addition, service exports are concentrated in a few areas, such as airlines and shipping, which have low employment growth potential (Ali 2011). Given the importance of agriculture in providing livelihoods for the majority of the population and the relatively small contribution to overall employment in the service sector, it is clear that addressing the vulnerabilities of the agriculture sector and promoting sustained agricultural growth is crucial. While the service sector has been an important source of growth, especially in the past decade, in order to translate this growth into more poverty

reduction, both employment enhancing and redistributive policies need to be employed (MoFED 2002).

Table 2.1. Sectoral growth performance and share in GDP in Ethiopia (2001/02–2010/11)

Sector	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11 (estimates)
Growth performance										
Agriculture	-1.9	-10.5	16.9	13.5	10.9	9.4	7.5	6.4	7.6	9.0
Industry	8.3	6.5	11.6	9.4	10.2	9.5	10.1	9.7	10.0	15.0
Service	3.3	6.0	6.3	12.8	13.3	15.3	16.0	14.0	13.2	12.5
GDP	1.3	-2.0	11.8	12.7	11.8	11.8	11.4	10.1	10.5	11.4
Percentage distribution of GDP										
Agriculture	49.1	44.9	47.0	47.4	47.1	46.1	44.6	43.1	42.0	41.1
Industry	12.9	14.0	14.0	13.6	13.4	13.2	13.0	13.0	13.0	13.4
Service	38.6	41.7	39.7	39.7	40.4	41.7	43.5	45.0	46.1	46.6

Source: Ministry of Finance and Economic Development.

Economic activity within the service sector was fueled by the considerable growth rates of Hotels and Restaurants (24.3 percent); Real Estate, Renting, and Business Activities (20 percent); Education (17 percent); and Health and Social Work (14 percent) (Table 2.2). Wholesale and Retail Trade; Real Estate, Renting, and Business Activities; and Transportation and Communication led the service sub-sector by contributing 13.6 percent, 9.9 percent, and 5.8 percent of the GDP, respectively. The growth of the industrial sector has remained invariable during the 2003/04–2009/10 fiscal periods—with an average 13.2 percent per annum growth rate for the period, representing 13 percent of GDP for fiscal year 2009/10. Construction grew rapidly during the period (averaging 11.8 percent per annum) as it was spurred by inflows of foreign aid, workers' remittances, and private transfers that funded a surge in investment in the mid-2000s. Despite the performance of the construction subsector, infrastructure bottlenecks (such as water shortages and power outages), inadequate access to finance, a shortage of foreign exchange, and a shortage of raw materials have all contributed to underperformance in industry (Ali 2011).

Table 2.2. Service sub-sector growth rate of GDP

Economic activity	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11 (estimates)
Financial Intermediation	24.2	28.7	15.1	28.1	16.5	-3	23.7
Hotels and Restaurants	11.6	19.5	27.5	23.3	23.9	24.3	24.6
Wholesale and Retail Trade	13.1	17.5	16.8	15.8	11.7	9.3	5.9
Real Estate, Renting and Business	7.4	14.5	15.2	17.3	15.9	20	22.1
Education	12.6	8.6	21.2	14.8	13	17	4.4
Health and Social Work	16.9	9.8	15.8	15.5	20.4	14	6.2
Public Administration and Defense	11.6	6.4	11.8	12.5	18.4	8.9	9.4
Transportation and Communication	19.2	5.7	9.3	11.5	8.9	14.4	9.7

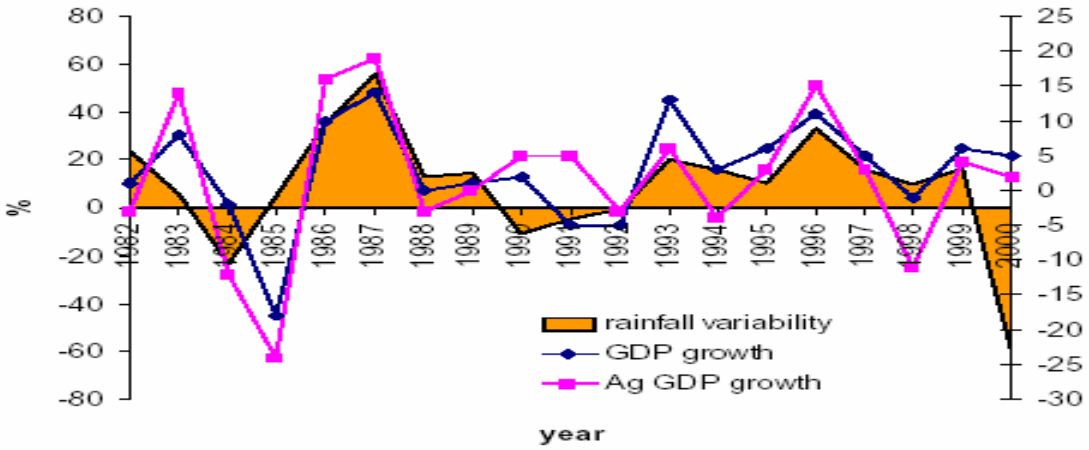
Source: Ministry of Finance and Economic Development.

Although there has not been serious research on what contributed to the double digit growth rates, the takeoff in 2003/04 was a result of cumulative development efforts by farmers, private sector participants, government interventions, and support of development partners. Economic expansion has been driven by a sound growth and poverty reduction strategy, focusing on the commercialization of agriculture and infrastructure developments, enhanced private sector developments and the expansion of regulatory and institutional policies to support private business, which have all in turn contributed to the strategy's success. The accomplishments of the poverty reduction strategy are underpinned by Ethiopia's recent growth in output and services and extent to the expansion and diversification of its exports. Moreover, government formulated incentives provided to new economic activities have started to yield results. The flower industry is a case in point. Flower exports have expanded from less than 10 million USD in 2004/05 to close to 170 million USD in 2009/10 (Mwanakatwe and Barrow 2010). The price increase in agricultural products has also encouraged farmers to increase production. Decentralization of power and heavy government public expenditure (focusing on pro-poor sectors) grew by 19 percent since 2003/04, and tax revenue increased from 11 billion Birr in 2003/04 to 35.7 billion Birr in 2009/10 which contributed to greater government spending in infrastructure development, raised domestic demand, and stimulated macroeconomic growth.

2.2. Developments in the Agricultural Sector

Ethiopia's agriculture sector is characterized by extreme dependence on rainfall, low use of modern agricultural inputs, and insufficient production yields. Rainfall in much of the country is often erratic and unreliable; and rainfall variability and associated droughts have historically been major causes of food shortages and famines (Wood 1977; Pankhurst and Johnson 1988). Data from the last forty years indicate a high positive correlation between macroeconomic performance and agricultural growth, which in turn are linked to good weather and adequate rainfall (Figure 2.1). Demeke, Guta, and Ferede (2004) find that the amount and temporal distribution of rainfall is generally the single most important determinant of inter-annual fluctuations in national crop production levels. According to Von Braun (1991) a 10 percent decrease in seasonal rainfall from the long-term average generally translates into a 4.4 percent decrease in the country's food production.

Figure 2.1. The relationship between annual rainfall and Gross Domestic Product (GDP) growth in Ethiopia



Source: IGAD ICPAC (2007).

Addis Ababa University's Department of Geography & Environmental Studies conducted a recent study to analyze rainfall variability and trends, and to examine vulnerability of food grain production to rainfall variability in the Amhara region of Ethiopia. The study found that during the period of 1994–2003, for which crop production data are available, the patterns of inter-annual variability in production of the six major cereals (teff, barley, wheat, maize, sorghum, and millet) cultivated in the region are similar to the patterns of inter-annual variability in the seasonal or annual rainfall amounts. Teff, barley, and wheat production show stronger correlations with *kiremt* rainfall, while sorghum production is more strongly correlated with *belg* rainfall. Maize production appears to require a more even distribution of rainfall throughout the *belg* and *kiremt* seasons. Sorghum shows the largest year-to-year variability as it is cultivated in semi-arid and arid parts of the region where rainfall variability is high (Woldeamlak 2009). Production of cereals also showed statistically significant correlations with each other, suggesting that rainfall is the common yield-limiting factor as use of chemical fertilizers and other agricultural inputs is limited. Woldeamlak (2009) points out that the fact of high correlations between cereal production and rainfall in the region suggests that farmers are vulnerable to food insecurity related to rainfall variability.

Reliance on rain-fed agriculture exposes the population to weather-related shocks and becomes a constant threat to food security and household livelihoods, particularly given that most households in Ethiopia do not reach beyond subsistence farming. The World Bank indicates that 53 percent of rural households are net cereal buyers, implying that households are unable to produce sufficient amounts of cereal to fulfill household consumption needs (World Bank 2005a). Thus, small variations in weather conditions make smallholder households extremely vulnerable to food insecurity. Using the Ethiopian Rural Household Survey (ERHS) dataset to estimate the effect of rainfall shock on smallholder food security and vulnerability, Demeke, Keil, and Zeller (2010) found a strong association of persistent food insecurity and vulnerability with adverse rainfall shocks. Using three rounds of ERHS data (1994, 1999, and 2004) the study established that 32 percent of the sampled households were less food secure in all three rounds. These findings confirm the notion that climate variability is one of the critical "drivers of food security" in many African agrarian households (Gregory, Ingram, and Brklacich 2005; World Bank 2006).

Climatic conditions are a central determinant in crop production and yield performance. Alem et al. (2010) find that uncertainty associated with climate variability may also affect investment decisions with upfront costs and uncertain outcomes. The use of productivity-enhancing external inputs is one such investment. In settings where financial and insurance markets are imperfect, households cannot freely borrow to finance external input use nor can they trade away the risk of crop failure in the insurance market.

In 1994/95 the Ethiopian government launched the Agriculture Development-Led Industrialization (ADLI) development strategy which marks agriculture as a primary stimulus to generate increased output, employment, and income for the people, and sets agriculture as the springboard for the development of other sectors of the economy. Gabreselassie (2006) notes that policy makers assumed that significant productivity growth could be easily achieved by improving farmers' access to technologies which would narrow the gap between farmers' yield and what agronomists call 'exploitable yield potential'. Agriculture growth induced by these interventions would then spur industrialization, particularly in agricultural input and processing industries, as well as in sectors producing consumer goods in response to higher household incomes and increased spending.

ADLI focuses on increasing the productivity of smallholder farmers through the increased use of fertilizers and improved seeds, investments in roads and other infrastructure, and improvements of various public services (such as primary health care, primary education, and water supply) (Dorosh and Schmidt 2010). As part of the ADLI strategy the Ethiopian government formulated a smallholder intensification extension program known as Participatory Agricultural Demonstration Training Extension System (PADETES) to support increased crop yields. The PADETES strategy—analogous of the ADLI strategy—was a technology-based, supply-driven intensification which consisted of enhanced supply and promotion of improved seeds, fertilizers, on-farm demonstrations of improved farm practices and technologies, improved credit supply for the purchase of inputs, and close follow-up of farmers' extension plots. The objective of PADETES was to achieve pro-poor sustainable development in rural areas through increasing farm productivity (yield), reducing poverty, and increasing the level of food security. Hence, wider dissemination of improved farm technologies, management practices, and know-how to the smallholder farmers has been the major activities of the federal and regional governments in a massively expanded extension program (Gabreselassie 2006).

The new system gave prominent attention to the role of chemical fertilizer in ensuring food security. According to Ministry figures (MoA 2003), fertilizer use grew by 39 percent from 190 thousand tons in 1994 to 264 thousand tons in 2003. The use of improved seeds also increased from 1,184 tons in 1995 to 17,778 tons in 1999. Similarly, during the same period, the value of farm credit rose from 8.1 million to 150.2 million Birr, and the number of farmers participated in the extension program rose from 31,256 to 3,731,217 (MoA 2003). Indeed, the Commercial Bank of Ethiopia has been funding fertilizer imports as well as input loans to smallholder farmers. The latter has been channelled to individual farmers through cooperatives/unions, local government offices, and several microfinance institutions (mostly in-kind) based on 100 percent government guarantee. In 2009/10 alone, it provided about 2.73 billion Birr to purchase agricultural inputs for five regions (Amhara, Oromiya, SNNP, Tigray, and Beneshangul-Gumuz). The fertilizer imported by the Agricultural Input Supply Enterprise (AISE) and cooperative unions has increased from about 594 million Birr in 2000/01 to about 2,725 million Birr in 2009/10, which is consistent with the significant increase in the volume of fertilizer consumption in the country.

The promotion of improved seeds has been enormously challenging for PADETES. For instance, an extension study conducted by the Ethiopian Economic Association found that only half of the farmers participating in PADETES used improved seeds. Among them, 20 percent of early adopters discontinued their use of improved seeds immediately when their participation came to an end. In general, only 8 percent of sampled farmers reported a frequent use of improved seeds. Although the use of improved seeds is a critically important technology required for higher yield and productivity, the majority of farmers use local seeds. An FAO/WFP (2009) report shows that in the 2008 *meher* season, at least 95 percent of all seeds used were local seeds carried over from the previous harvest by the farmers themselves, following the traditional on-farm seed selection process. Though some progress has been made over the past five years, the use of improved seeds in Ethiopia still remains very low. Furthermore, the use of different complementary inputs to the package recommended by agricultural experts is low. An Ethiopian Economic Association evaluation showed that only 22 percent of the households used a complete package of crop production, i.e., improved seeds, fertilizer, and improved agricultural practices in the recommended amounts. Most of the households (78 percent who were participating in the extension

package program) used an incomplete package of crop production, lacking one or more of the major components (Gabreselassie 2006).

Apart from fertilizers and improved seeds, irrigation and the use of modern farm machinery is almost non-existent. Evidence indicates that Ethiopia has not taken full advantage of the country's water resources or fully utilized water development technologies (small-scale irrigation, water harvesting, and on-farm diversification) which offer an opportunity to improve productivity of land and labor, increase production volumes, and most notably contribute to diminishing drought related risks. Awulachew et al. (2005) find that data related to the country's irrigated land presently vary, with estimates ranging between 150,000 and 250,000 hectares, or less than 5 percent of potential irrigable land. The latter figure gives a per capita irrigated area of about 30 m^2—this value is very small compared to 450 m^2 globally. A case study on the economic importance of agriculture for sustainable development and poverty reduction notes an irrigated area growth scenario, formulated on Ethiopia‘s Irrigation Development Program. The plan involves the development of about 274,000 hectares of additional irrigated area by 2015, 50 percent of which will be allocated to cereal crop production. Simulation results indicate that this level of expanded area will only increase irrigated cereal production to 3 percent to 5 percent of total cereal production in 2015, representing a minimal additional annual growth. It should be noted, however, that given the medium to long-term nature of the program (meaning that projects are only completed toward the end of the simulation period), the potential returns are not fully captured within the simulation timeframe (Diao 2010).

Howard et al. (2003) suggest that technology-led innovations in agricultural intensification have not been widely adopted because of lack of extension inputs, minimal market opportunities, or other system constraints, while economic factors (farm size, oxen ownership, labor availability) influence the intensity of use. Proponents of a more local-level approach, including many Ethiopia based NGOs with long experience of working on challenging agricultural problems (see Ejigu and Waters-Bayer 2005), do not argue against new technologies per se, but advocate for a more carefully designed ‘innovation system’ where the promotion of new technologies is linked to processes of farmer innovation, social and cultural institutions governing uptake, and economic and market conditions, particularly for poorer farmers in more marginal areas (Haile, Abay, and Waters-Bayer 2001; Gabreselassie 2006).

2.2.1. Crop Production

Cereals are the dominant staples for the majority of Ethiopians; 62 percent of an average Ethiopian daily calorie intake comes from cereals. Also, cereals account for about 45 percent of the food expenditure of an average household. Thus, cereals, including barley, maize, teff, wheat, and sorghum, are the most important crops for Ethiopia's agriculture. While 64 percent of agricultural value added comes from crops, more than 70 percent of crop land is devoted to cereal production. More than 11 million smallholders engage in cereal production and total cereal production was 13.6 million ton in 2007/08, an increase of 4.8 million ton compared to production in 2003/04. Total area allocated to cereals also expanded by 27 percent from 6.8 million hectare in 2003/04 to 8.8 million hectare in 2007/08. At the same time, average cereal yield exhibited a 22 percent growth from 1.3 ton/ha in 2003/04 to 1.6 ton/ha in 2007/08 (see Table 2.3) (Diao 2010).

Teff is the most favorable staple crop for both Ethiopian rural and urban consumers and for all different income levels of households. Thus, teff occupied more land than the other crops. 30 percent of total cereal land in 2007/08 was used for teff production. The second important food crop is maize, which occupied 20 percent of total cereal land, followed by sorghum (18 percent), wheat (16 percent), and barley (12 percent). While most cereal crops are staple foods, barley is also used for local alcohol production. In terms of volume of production in the same year (2007/08), maize actually ranked first with 3.8 million ton of output, and output of teff is 3 million ton. While teff occupied 30 percent of cereal land, output of teff is equivalent to 22 percent of cereal output. This implies that teff is much less productive in land use. Indeed, national average yield of maize is 2.1 ton per hectare (ton/ha) in 2007/08, yield of teff is only 1.2 ton/ha, the lowest level of yield among all major cereal crops. Teff is a crop only grown in a few countries (mainly in Ethiopia) and its yield response to fertilizer is relatively limited given that the technology to develop high-yield varieties of teff is more difficult than to develop other cereal crop varieties broadly grown in the world. On the other hand, teff is more favorable than maize in the Ethiopian diet and has a higher income elasticity in demand. This combination indicates a potential challenge to Ethiopia's food security due to the inconsistency between the technological potential and consumers' preference (Diao 2010).

Table 2.3. Cereal production

	2003/04				2007/08			
	Area 000 ha	Output 000 ton	Yield ton/ha	Share of total cereal area %	Area 000 ha	Output 000 ton	Yield ton/ha	Share of total cereal area %
Teff	1,985	1,672	0.84	29.10	2,565	2,993	1.17	29.60
Barley	911	1,071	1.18	13.40	985	1,355	1.38	11.40
Wheat	1,075	1,589	1.48	15.80	1,425	2,314	1.62	16.40
Maize	1,300	2,455	1.89	19.10	1,767	3,750	2.12	20.40
Sorghum	1,242	1,695	1.36	18.20	1,534	2,659	1.73	17.70
Millet	303	304	1.00	4.40	399	538	1.35	4.60
Total	6,816	8,786	1.29	100	8,675	13,609	1.57	100

Source: Diao (2010).

2.2.2. Livestock Production

Ethiopia has the largest livestock population in Africa. It is estimated at 105 million tropical livestock units, which includes 49.3 million heads of cattle, 47 million heads of sheep and goats, 8.3 million equines, 760 thousand camels, and a poultry population of 38.13 million (CSA 2009). Cattle play the most important role in the farming economy followed by sheep and goats. Poultry farming is widely practiced in Ethiopia and small farmers use them for consumption purposes and a source of cash income.

The livestock subsector is an integral part of the country's agricultural production system and contributes significantly to the country's economic development—the contribution of livestock and livestock products to the agricultural economy accounts for 35–45 percent, excluding the value of draught power, transport, and manure (Winrock International 1992). Livestock

accounts for an estimated 15–17 percent of the total GDP and contributes to the livelihood of approximately 70 percent of the Ethiopian population—this translates into approximately 44–52 million people whose subsidiary needs, economic activity, and food security rely on livestock production. Livestock contributes to the production of food (milk, meat, eggs, and blood), industrial raw materials (wool, hair, hides, and skins), inputs for crop production (draught power and manure), and export earnings (live animals, skins, and hides). They also generate cash income which can be used to purchase food grains, seeds, fertilizer, and farm implements and for financing miscellaneous social obligations, and is a form of asset accumulation to protect against unforeseen risks.

According to the National Bank of Ethiopia, leather and leather products, meat and meat products, and live animals accounted for 7.2 percent, 2.4 percent, and 4.5 percent of total exports for the first quarter of 2008/09, respectively. The cumulative value of export livestock items represented revenue of 49.5 million USD—accounting for a 14 percent share of Ethiopia's major export items for the indicated quarter (NBE 2009). Field studies by the Institute of Development Studies have found that livestock accounts for 37–38 percent of rural households cash income. The studies reveal that as cash income increases a greater proportion is derived primarily from livestock (as opposed to crops). Similarly, a household economy analysis conducted by Save the Children-UK in 1998, indicated that 45–95 percent of the income source of poor and middle income pastoralists were derived from livestock sales (Table 2.4).[2] Similarly, a recent study on destitution in the northern highlands of Ethiopia found that the ownership of livestock was a critical factor in determining whether a household would be able to be self-provisioning or fall into poverty from which it would be difficult to escape (Devereux, Sharp, and Amare 2002).

Table 2.4. Income source (percent of income) of Somali pastoralists

Income source	Wealthy	Middle	Poor	Very poor
Livestock sales	100	80–95	45–50	30–45
Livestock products	0	5–20	5–10	0
Herding for other people	0	0	10–20	20–35
Income from cropping	0	0	0	0
Other income	0	0	15–25	30–40

Source: Devereux, Sharp, and Amare (2002).

In Ethiopia, livestock is produced under two major production systems: the sedentary mixed crop-livestock production system and the nomadic pastoral or agro-pastoral production system. The other less important, but growing, livestock production systems are small-scale peri-urban and urban production systems and medium- to large-scale commercial livestock production systems. The mixed crop-livestock production system is based on limited communal and/or private grazing areas and the use of crop residue and stubble. The pastoral production system is based on extensive communal grazing while agro-pastoralists are characterized by a combination of both pastoral and mixed crop-livestock production. Mixed-farming households practice both crop and livestock production (Negassa, Rashid, and Gebremedhin 2011).

The percentage of farmers in Ethiopia only growing crops was 18 percent in 2001/02 and decreased to nine percent in 2007/08, while the percentage of farmers keeping livestock

[2] Save the Children-UK (1998) cited in Sandford and Habtu (2000).

only was eight percent in 2001/02 and it decreased to five percent in 2007/08. On the other hand, the percentage of farmers with both crop and livestock holdings was 74 percent in 2001/02 and this percentage increased to 86 percent in 2007/08. Diversification allows producers to mitigate the risk of crop failure or losses of livestock, while livestock is also an important input to crop production and vice versa. Both the mixed crop-livestock and the pastoral production systems are characterized as small-scale, low-input, and less commercially oriented, with very little or no vertical coordination. The common feature of these production systems is that livestock producers keep different livestock species for multiple uses. Recently, commercially oriented livestock production systems have begun to emerge. Private sector entries and capital investment into meat, dairy, and poultry farms have increased substantially over the last several years (Negassa, Rashid, and Gebremedhin 2011).

There is a general absence of financial services, such as credit, savings, and insurance, in rural areas. Smallholder farmers consequently use livestock as a means of savings and capital investment. As a result, it is not uncommon for households to sell livestock to meet petty-cash requirements to cover seasonal consumption deficits or to finance large expenditures. This implies that livestock represents a considerable household asset for smallholder farmers. Accordingly, any economic shocks and/or adverse market conditions which negatively influence livestock production can potentially have overwhelming effects on household stability (increasing levels of economic vulnerability and food insecurity). For instance, following the severe drought conditions of 1999/2000 the Ministry of Agricultural reported livestock mortality estimates of 80 percent in several pastoral *woredas* (districts) (Beruk 2003). Such conditions reduced per capita livestock holdings and livestock production, causing unfavorable trade terms, and diminished household purchasing power for smallholder farmers. The consequences are particularly grave for pastoralists who tend to sell their livestock during periods of drought or erratic rain in order to purchase staple crops to manage during lean periods.

The development and expansion of the livestock sector has been inhibited by drought, reduced grazing areas, ruminant disease, insufficient nutrition, inadequate breeding techniques, and limited support services. The latter industrial constraints are prevalent conditions which are being gradually addressed via various initiatives. Nonetheless, the absence of a formal livestock insurance has led households to develop unique coping mechanisms to mitigate risks and safeguarding livestock assets. As mentioned above, farmers diversify their production system to mitigate the risk of crop failure or losses of livestock. Research has also found that when livestock based communities are faced with natural calamities (resulting in the loss of livestock and livelihood) community members respond by contributing breeding animals and food aid to affected households. A livestock production study conducted by Hawassa University found that pastoralists have an indigenous mechanism of coping with the problems of feed and water shortage during the dry season and during drought years. When grasses become depleted from the grazing land they lop the leaves and branches of trees and feed to their animals. Acacia pods are also used as important sources of dry season feed for goats, camels, and cattle. A pastoralist from Arda'ola reported that a plant called *Andaade* is chopped and fed to animals during the dry season to alleviate the critical problem of feed shortage during this time (Tolera and Abebe 2003). The existence of such informal coping mechanisms suggests prevailing gaps in the formal market but also informs investigators regarding the possible development of effective formal insurance mechanisms that would appropriately address the needs of

livestock producers. Unfortunately, livestock insurance has received little attention as a viable alternative to safeguard the livelihood of poor households until recent disease outbreaks have heightened the visibility of their large economic and financial costs to producers and the wider economy in developing countries. Micro-insurance can play a crucial role in reducing the vulnerability of poor households and ultimately enable excluded populations to mitigate their material risks and increase their welfare through the development and expansion of the insurance market.

2.3. The Productive Safety Net Program as a Social Protection Scheme in Ethiopia

Social protection involves policies and programs that protect people against risk and vulnerability, mitigate the impacts of shocks, and support people who suffer from chronic incapacities to secure basic livelihoods. It can also build assets, reducing both short-term and intergenerational transmission of poverty. It includes social insurance (such as health, life, and asset insurance, which may involve contributions from employers and/or beneficiaries); social assistance (mainly cash, food, vouchers, or subsidies); and services (such as maternal and child health and nutrition programs). Interventions that provide training and credit for income-generating activities also have a social protection component (Adato and Hoddinott 2008).

Since economic growth does not guarantee that development invariably trickles down to the poorest population, there is a need to adopt social protection policies and strategies which include social insurance, minimum standards to protect citizens, and social transfers. Listed below are four categories of intervention which address the risks of disadvantaged and vulnerable populations:

a) **Preventive interventions:** These are formal or informal systems of pensions, health insurance, maternity benefits, child benefits, workforce benefits, cash transfers, and unemployment benefits aimed at preventing risks and consequences of livelihood shocks. These interventions fall under social insurance in which contributory beneficiaries benefit in the event of shocks from a pull of resources to which they have been contributing.

b) **Promotional interventions:** These are interventions that enhance income and capabilities. These consist of skill building programs, micro-credit services with specific aims of building household assets and livelihood development, and social transfer interventions.

c) **Protection interventions:** These interventions aim at providing relief from development. These are often regular and predictable transfers of cash and/or food for a limited or unspecified period in order to protect the lives and livelihood of chronically poor and food insecure individuals and households. Such transfers may be conditional—where acceptance of transfers comes with commitment to certain obligations such as participation in public works—or unconditional in which receipt of interventions are unconditional. Other protective measures aim at abolishing barriers, such as user fees, that prevent vulnerable groups from having access to basic social services such as education and health. There is a need to address supply side constraints that limit socially and economically vulnerable populations from having access to these services.

d) **Transformative interventions:** These interventions aim at protecting the rights and interests of people exposed to social risks and vulnerabilities by addressing power imbalances and structural causes that perpetuate economic inequality and social exclusion. The three types of interventions that have been identified in the Ethiopian social protection scheme include: (i) legal reforms and enforcement measures aimed at strengthening protection systems for all vulnerable groups including elderly and disabled; (ii) interventions that aim to build the capacity of claim holders to hold government accountable; and (iii) setting up structures within governments that are responsible for mainstreaming the interests of vulnerable groups in the plans, programs, and projects of their respective institutions (REST 2011).

The Ethiopia Productive Safety Net Program (PSNP) provides a topical case study of a large-scale government-implemented social protection program, in one of Africa's poorest countries. It is a 'live example' of the opportunities and challenges facing donors and governments as they seek to forge a consensus over social protection. Ethiopia's PSNP is one of the largest and most successful and commendable forms of social protection in Sub-Saharan Africa (Brown, Gibson, and Ashley 2008). The PSNP is currently operating in 300 *woredas* and the number of beneficiaries has grown from 4.5 million in 2005 to 8 million in 2010. The program is being implemented by the government through the Ministry of Agriculture with the exception of the Somali Regional State where it is jointly implemented by the World Food Program (WFP) and the multilateral donors (500 million USD) and government contribution of 2 billion Birr per annum.

PSNP has two objectives. First it aims to smooth consumption and protect assets of chronically food insecure households by providing them with predictable and adequate transfers of cash and/or food. Second, it aims to build community assets (e.g., roads, soil and water conservation structures, and schools) through labor intensive public works—this is the 'productive' component of the PSNP. PSNP endeavors to 'graduate' people from food insecurity. This is to be achieved through a combined effort of the PSNP and complementary programs providing access to credit, agricultural extension, and other services. The PSNP works through government financial and food distribution channels and is administered through the Food Security Coordination Bureau (FSCB). The program provides a mix of cash and food transfers to participants. The PSNP has both a public works (conditional) transfer component and a direct (unconditional) transfer component. Most PSNP participants (80–90 percent) are required to contribute to public works. They are paid for up to five days per month, per household member, for six months each year. This contribution equals a maximum annual payment of 21 USD per capita. Households eligible for direct unconditional transfers are those who, in addition to being chronically food insecure, have no labor and no other sources of support. They may include disabled people, orphans, and people who are sick, elderly, pregnant, or lactating (Brown, Gibson, and Ashley 2008).

The review of previous food security programs highlighted the need for a more consistent and timely approach to household investment and income generating investments and a more diversified approach to the provision of direct transfers and financial products for asset accumulation and protection (including transfers, savings, and multiple arrangements for credit) (MoARD 2009). The household asset building component of the food security program (2010–2014) recognizes that food insecure households vary in their capacity to undertake investments, assume risks, adopt innovative practices, and to take on and repay loans. The food insecure households in PSNP are broadly categorized into three groups:

a) Chronically food insecure households with few productive assets and low and insecure income sources (ultra-poor) have little ability or self-confidence to take on the responsibilities of loan conditionality and they have no credit history. As a result, commercial credit providers are unwilling to lend to them and they depend on transfers for a significant proportion of their food needs. This group requires safety net transfers, savings, and micro-credit with intensive support and tailored products to enable them to gain a foothold on the pathway to graduation. Small appropriate and well-planned and supported loans as well as the discipline of saving will allow them to build a credit history for a more formal engagement in the credit market (MoARD 2009). The profile of the beneficiaries of the program ERCS seem to be similar to this group in the PSNP. Although the beneficiaries of the program have knowledge, skills, and potential to transform their livelihoods, they need the support of the program (grant, technical services, and access to credit) to build their confidence and become involved in income generating activities.

b) Chronically food insecure households with a better asset base and confidence to take on a loan, but relying on transfers to meet the household's food needs and who may not have a credit history or significant savings to generate confidence among commercial credit providers.

c) Food insecure households who have some productive assets and more substantial and secure income sources and have the capacity and self-confidence to take on investment loans, but nevertheless have fragile livelihoods and are therefore not very attractive for commercial credit.

The Productive Safety Net Program can play a significant role in the transition out of emergency relief. In circumstances of chronic poverty and food insecurity, predictable social transfers can help to address the structural dimensions of hunger and vulnerability and reduce the need for ad hoc relief appeals (Ministry of Labor and Social Affairs 2011). The PSNP was modeled to respond to chronic food insecurity whereby the program not only meets food deficit requirements, but does so in a way which protects and builds community assets.

Despite the success of PSNP, there are challenges which include: lack of coordination within the Ministry of Agriculture (e.g. between Agricultural Extension Department and Land Use and Environmental Management Department) and between PSNP and the Household Asset Building Program (HUB). There also appears to be a lack of balance in central control and a decentralization of decision making and operational activities. Additionally, capacity constraints within the program agitate the effective use of available resources. Although PSNP covers only very poor household within the 300 *chronically food insecure* woredas, there are chronically food insecure households within the *surplus producing* woredas, who are not benefiting from PSNP; and the transiently food-insecure, who are able to feed themselves in a good season but suffer when the rains fail, are largely overlooked by PSNP. The emergency appeal system that should help transiently food-insecure households during extreme drought is usually too slow in its response to prevent distress sales of assets; households then move into the chronically food-insecure group. Ultimately, this makes the PSNP unsustainable—unless the weather risk component can be addressed (Hellmuth et al. 2009).

3. Major Risks, Coping Strategies, and Willingness to Pay by Low-Income Households

This section synthesizes the evidence of existing literature pertaining to the varying coping strategies low-income households use to mitigate variable risk factors and the willingness of households to pay for insurance in Ethiopia. In order to gain a more comprehensive perspective of the potential for micro-insurance in Ethiopia we complemented our analysis with the results of research from several regional and national micro-insurance studies conducted in Ethiopia and analyzed them within the context of extenuating risk management instruments poor households employ to reduce risk and vulnerability.

3.1. Major Agricultural Risks Facing Low-Income Households

Agricultural risk is associated with negative outcomes stemming from imperfectly predictable biological, climatic, and price variables. These variables include natural adversities, climatic factors not within the control of agricultural producers, and adverse changes in both input and output prices (World Bank 2005b). In this context, farmers have to manage risks in farming as part of the general management of the farming business. Hazards and unforeseen events occur in all economic and business activities and are not specific to agriculture. However, agricultural risk and risk management instruments in the sector may have a certain number of specificities, compared with other types of household risks. The Organization for Economic Cooperation and Development (OECD 2009) identifies the major sources of agricultural production risks as: weather, pest, disease, genetics, machinery efficiency, quality of inputs, and the interaction of technology with other farm and management characteristics. Other agriculture hazards include ecological risks related to crop yields, climate change, and management of natural resources. Smallholder farmers are also susceptible to market risks associated with output and input price variability, relationships with the food value chain with respect to quality, safety, new products, and technological changes. Moreover, unexpected changes may occur in access to credit or other sources of income that affect the financial viability of the farm.

A category of agricultural risk that represents another important source of uncertainty for agricultural producers is institutional risk. Institutional risk constitutes of risks generated by changes in legal frameworks or regulations that affect producer activities (e.g., agriculture policies, food safety, and environmental regulations). Changes in regulations can have significant impact on the profitability of farming activities. For instance, both Huirne et al. (2000) and Hardaker et al. (2004) indicate that government actions and rules such as laws governing disposal of animal manure or the use of pesticides, tax provisions, and payments can impose great costs on smallholder farmers. Swain and Floro (2008) indicate that vulnerability is prevalent in rural low-income households because the magnitude of risk that they face is striking, particularly for those who live in the rain-fed areas, and their subjective judgment regarding the likelihood of shocks is high. The threat of loss of or decline in farm earnings is brought about by environmental conditions that affect their output such as weather leading to drought or floods, and pests, and by market fluctuations that lead to changes in input and product prices. Yield risks are especially significant when agricultural price and other supports are inadequate or non-existent.

The source of risk in agriculture are numerous and diverse. As a consequence, the assortment of vulnerabilities or personal circumstances often determines production in ways

that are outside the control of smallholder farmers. Agricultural production implies specific outcomes or yield expectations by smallholders. However, production outcomes are often characterized by high levels of variability and uncertainty due to various external risk factors referenced above. Agricultural risks faced by Ethiopian households are parallel to those found in empirical literature that explore vulnerabilities faced by households in developing countries, namely, drought, crop and livestock loss. Other related agricultural risks identified by Ethiopian households include pest and disease, soil infertility, water logging, hail, and weeds. Unexpected shocks, such as illness or death, are anticipated given the health-related environment and poor medical services that low-income households face. These shocks can lead to substantial loss of income, wealth, and/or consumption and force households to consider whether or not to seek medical assistance when ill, to pay school fees for children, to buy inputs, and even to repay loans.

The Micro Development Training and Consultancy Services (MDTCS) conducted 43 individual interviews and 125 focus group discussions to delineate the ranking of risks by households in various regions of Ethiopia. The results of the study indicate that household risks vary from region to region. For example, death of a household member was ranked number one in the Oromiya cereal producing region, while Oromiya pastoralists and SNNP coffee producers ranked respectively livestock loss and coffee and enset disease as their priority risks (Table 3.1) (Oxfam America and MDTCS 2009).

Table 3.1. Risks as identified by households, ranked for different regions

Ranking	Oromiya (cereal producers)	Oromiya (pastoralists)	SNNP (coffee producer)	Addis Ababa (micro entrepreneurs)
1	Human death	Livestock loss	Coffee and enset disease	Illness of family members
2	Crop failure	Human illness	Price fluctuation	HIV/AIDS
3	Livestock loss	Human death	Natural disaster	Death of family members
4	Human illness	Fire	HIV/AIDs and TB	Lack of income or employment
5	Car accident		High cost of living	Fire
6	Clan conflict			

Source: Oxfam America and MDTCS (2009).

It's important to note that low-income households experience various nominal risks which are frequent. However, related losses are financially negligible and therefore manageable by smallholder farmers and do not require micro-insurance products. While the financial impact of these risks are low the frequency of their occurrence perpetuates poverty and may require the attention of other risk mitigating strategies offered by microfinance institutions, development organizations, or government agencies in order for them to be properly addressed.

3.1.1. Drought Risks

Drought is the number one risk, not only for rural Ethiopia, but also for the country in general, as evidenced by the fact that the country's macroeconomic growth closely mirrors increases and decreases in precipitation (Oxfam America 2009). The most immediate consequence of drought is a fall in crop production, due to inadequate and poorly distributed rainfall. Farmers are faced with harvests that are too small to both feed their families and fulfill their other commitments. Livestock sales act as a buffer in times of hardship; farmers disinvest in

livestock assets to buy food. The first animals to be sold are usually those which make the least contribution to farm production, such as sheep and goats. However, as the period of drought-induced food deficit lengthens, farmers will have to start selling transport and draught animals, such as oxen and donkeys, as well as breeding stock, which constitute to the basis of the household's wealth. In the Ethiopian highlands, livestock are usually disposed of in the following order: sheep and goats, then younger cattle, with horses, donkeys, and work oxen being sold as a last resort (Wood 1976), since the latter are essential for land preparation.

Adverse weather conditions have increased in severity over time and CEEPA notes that Ethiopia has experienced food shortages every two years since 1950. Dercon (2002) drew data from an Ethiopian Rural Household Panel Survey (1994–1997) to review individual-specific shocks that made households vulnerable to serious hardships and found that 78 percent of respondents indicated that they were seriously affected by harvest failure (drought/ flooding frost, etc.) over the last twenty years (Table 3.2). Analogous results were found by Dercon et al. (2008) using a nationally representative panel data (Ethiopian Rural Household Survey 1999–2004) covering approximately 1,450 households across the country in which 46.8 percent of the respondents indicated that they experience at least one major drought-related shock in the period—ranking drought as the number one priority risk of rural households.

Table 3.2. Risk-related hardship faced by rural households in Ethiopia

Event Causing Hardship	Percentage of households reported to have been seriously affected in the last 20 years
Harvest Failure (Drought/Flooding/Frost, etc)	78%
Policy Shock (Taxation/Forced labor/Ban on migration)	42%
Labor Problems (Illness/Death)	40%
Oxen Problems (Disease/Death)	39%
Other Livestock Problems (Disease/Death)	35%
Land Problems (Villagization/Land reform)	17%
Asset Losses (Fire/Loss)	16%
War	7%
Crime (Theft/Violence)	3%

Source: Dercon (2002).

IGAD ICPAC (2007) note that El Niño-Southern Oscillation (ENSO)[3] led to the Tigray/Wollo famine of 1972/73, causing approximately 200,000 deaths. The other major drought was during 1983/84 that took the lives of an estimated one million people, destroyed crops, and contributed to the death of many livestock. However, the impact of drought seems to reduce in the recent years due to improved early warning and new drought management policies. Nevertheless, the east and north of the country are the most vulnerable to drought and have experienced the highest levels of food insecurity. In northeastern Ethiopia, for example, drought induced losses in crop and livestock between 1998 and 2000 were estimated at

[3] ENSO is a quasi-periodic climate pattern that occurs across the tropical Pacific Ocean roughly every five years. It is characterized by variations in the temperature of the surface of the tropical eastern Pacific Ocean—warming or cooling known as *El Niño* and *La Niña* respectively—and air surface pressure in the tropical western Pacific—the *Southern Oscillation.* ENSO causes extreme weather (such as floods and droughts) in many regions of the world. Developing countries dependent on agriculture and fishing, particularly those bordering the Pacific Ocean, are the most affected.

266 USD per household—greater than the annual average cash income for more than 75 percent of households in the region (Carter et al. 2004). In 2002, the failure of the two rainy seasons withered over 70 percent of the maize and sorghum crops, decimating grain production. In 2002 alone, Ethiopia produced 25 percent less cereals and pulses than the previous year (FAO 2003a).

Slow onset disasters may recur yearly, and can often be predicted on the basis of climate shifts. Drought and following famine are perhaps the most serious threats to livestock holdings worldwide. Animal mortalities from malnutrition increase because fodder is insufficient or inappropriate. Endemic diseases increase when herds mix at watering points and weakened animals have a low resistance. As a result, livestock losses can be enormous. For example, in 2000, drought in the Horn of Africa led to the death of more than 90 percent of the cattle in many regions, causing extensive suffering and a widespread need for food and other life-sustaining interventions (USAID 2002). Poor weather conditions often force farmers to sell their livestock to purchase food and meet other essential household commitments. A recent study of the causes of rural destitution in the northeastern highlands of Ethiopia reemphasizes the severity of adverse weather conditions, insofar as its impact to the livelihood of households. The study revealed the following: “the most common way by which households became destitute was after they experienced severe or repeated crop failure due to drought or other natural causes which led to the sale or death of their livestock assets” (Amare 2003). A study of the microfinance institution DECSI by Borchgrevink et al. (2005) found that poor agricultural season and natural disaster (primarily drought) were the overwhelmingly predominate reasons for decreases in household living conditions. Moreover, households mentioned lack of rain as the second most important constraint in both crop and livestock production.

3.1.2. Crop Loss

Major factors for crop loss in Ethiopia include adverse weather, crop disease, pest, and poor agronomic practices (i.e., weeding, tillage, fertilizer application). Postharvest losses stem from spoilage associated with inadequate storage facilities and improper handling and processing techniques. The response of sample households of the MDTCS (2009) survey indicates that coffee and enset diseases are ranked by the respondents as a number one risk in the SNNPR coffee producing areas. Crop failure was ranked as a number two risk by the respondents of the study. Insect pests cause major problems in Ethiopia, often causing considerable crop loss. For example, Boxall’s (1998) critical review of postharvest grain losses found that insects and mold caused a loss of 19 percent of pulses in the Ethiopian highlands.

In respect to poor agronomic practices, optimum weed control systems and efficient use of herbicides are critical in the prevention of yield losses. exemplified by field experiments conducted by the Humera Agricultural Research Center. The Center reviewed three consecutive cropping seasons to estimate the critical period of weed control and yield loss in sesame in Northwestern Ethiopia. The results indicated that the experimental field was infested both with broadleaved (90.1 percent) and grassy (9.9 percent) weeds. Three years pooled data (2006, 2007, and 2008) revealed that *Ocimum basilicum, Corchorus trilocularis, Corchorus orinocensis,* and *Hibiscus trionum* were among the dominant broadleaved weeds; whereas *Digitaria abyssinica* and *Digitaria ternate* were the dominant grassy weeds. More importantly, the data revealed uninterrupted weed growth caused a reduction in yield of

82.9 percent, 82.5 percent, and 86.3 percent in 2006, 2007, and 2008, respectively (Amare 2011).

There is a wide range of technologies and practices available that, if adopted, would enable smallholders and larger producers to improve the quality and quantity of grains during postharvest handling and storage. These include better postharvest grain management, better pest management, enhanced storage structures, and enabling policy and institutional arrangements for grain marketing. A recent World Bank report (2011) argues that the low opportunity cost of labor may contribute to the slow adoption of postharvest technology in Africa, particularly for harvesting, drying, and storage technologies that have most commonly been a target for postharvest loss-reduction interventions (World Bank 2011a).

The handling, processing, and preservation of crop produce at the time and after harvesting are commonly identified as postharvest management. Improved postharvest management depends on the quality and efficiency of handling, processing, and preservation techniques used. Crop yields can be nullified if inappropriate or unreliable postharvest management is employed. Proper storage helps ensure household and community food security until the next harvest and helps producers not to sell at low price during the glut period that often follows a harvest. Postharvest crop losses in Ethiopia are estimated at a very broad range of 20–70 percent of the overall crop losses (Nova Scotia Agricultural College 2008). On the other hand, the postharvest losses of perishable (vegetable and fruits) food crops are about 30 percent. The average postharvest losses of food crops such as teff, sorghum, wheat, and maize are 9–12 percent, 14.8 percent, 13.6 percent, and 10.9 percent, respectively (Dereje and Mamecha 1989). Grain traders store grain in warehouses with small capacities often characterized by poor ventilation. Although farmers express interest in improving postharvest storage facilities, they often lack the capital to make such investments. Grain losses due to poor storage by farmers are reported to range between 11–19 percent (Kassahun 2000). These losses are not only a waste of valuable food and other resources (agricultural inputs, labor, land, water, etc.) but are also symptoms of poorly performing value chains. Such poor performance is a cost to the poorest in that it constrains the livelihoods of those engaged in agriculture and limits the success of agricultural economies (World Bank 2011a).

3.1.3. Livestock Disease and Death

Livestock disease is a major constraint to livestock and crop production across Ethiopia. Various diseases have the potential to debilitate, maim, and even kill livestock which contribute to reduced income and increased household vulnerability. According to the FAO (2003b), the livestock disease and parasite situation are well understood, and control and treatment methods are sufficiently known and established throughout the country. The livestock diseases that are commonly encountered and are of economic importance to production are foot and mouth disease, Contagious Bovine Pleuropneumonia (CBPP), anaplasmosis, enterotoximia, lumpy-skin disease, and Hemorrhagic septicemis. Other diseases, such as Black-leg and Anthrax, also occur sporadically. Rinderpest is one disease that has seemingly been effectively controlled. Intestinal worm-infections causing great production-losses from ilness (e.g., tapeworm) as well as mortality develop also important problems. Ticks are, however, the main livestock health hazards as they are common in the highlands and the major vectors of many of the epidemic diseases. The incidence of some of these economically-important diseases has been increasing from year to year due to inadequate veterinary services. An FAO Livestock Sector Brief (FAO 2003b) reports that

CBPP increased from 777 cases in 1996 to 1,648 cases in 1998 and 1,595 in 2001. Similarly, foot to mouth disease increased from 888 cases in 1996 to 14,192 cases in 1998 and to 12,579 cases in 2000. The incidence of lumpy-skin disease increased from 4,210 in 1996 to 9,209 cases in 1998 and to 10,298 in 2000.

About 85.8 percent of the respondents of the Oromiya region livestock insurance demand study (AEMFI 2010) indicated that their livestock were affected by livestock disease. Respondents were asked to rank the three most common livestock diseases. The most prevalent livestock diseases by frequency of occurrence were black leg, foot and mouth disease, and anthrax. A vast majority of respondents used medical treatment from local veterinarian health centers when outbreaks of livestock disease occurred; other coping mechanisms included cutting off the foot of the livestock; cleaning of the feed bath; local cultural treatment; no coping mechanism; and one respondent resorted to destocking his livestock. The availability of veterinary services permits farmers to purchase and apply applicable drugs when needed. The proximity of animal health systems in relation to farming communities is certainly crucial to crop production and animal husbandry.

3.1.4. Health Risks

Health risks are reoccurring and create persistent uncertainties that continually put pressure on households financial and human resources, not to mention, the health of economic portfolios. Add to this the varying severity and cost of illnesses. Beyond the direct health costs, the poor are particularly vulnerable to the pressure of lost income when the household income earner falls ill or a household member must take time away from productive activities to care for sick household members. This vulnerability is compounded by the repercussions that stem from the redirection of household resources to the treatment of the sick and her or his illness (Cohen and Sebstad 2005).

Communicable diseases are considered as major causes of morbidity and mortality, as well as disability in Ethiopia. The high prevalence of communicable diseases in the country is linked to the poorly developed socio-economic and environmental factors that have been inherent for centuries. The Ministry of Health estimates that 75–80 percent of the disease burdens in Ethiopia are assumed to be preventable using measures like improving environmental health status and nutritional interventions (Ministry of Health 1998). Kumie and Ali (2005) suggest that in a country like Ethiopia, that has poor social conditions (education, housing, sanitation, etc.) and with more than 50 percent of its population illiterate and under the poverty line, the level of communicable diseases is found to be of the highest magnitude. Poverty, unregulated fertility, ignorance, gender issues, and limited resources in health programs are closely related to these factors. Overall socio-economic improvements are central for the maintenance of a healthy life. Poverty alleviation programs and the expansion of education in Ethiopia are expected to play key roles in the alleviation of the burden of malpractices in sanitation.

Per capita health expenditure in Ethiopia is estimated at 7.10 USD, far below the minimum (34.00 USD) necessary to meet primary health care needs in a developing country. Although the Ethiopian government has taken important steps toward improving the country's health sector, there are still an average of 37,000 patients for every doctor, by far the lowest doctor to patient ratio in Africa, and more than 50 percent of households nationwide must travel 15 kilometer or more to reach the nearest available health facility (CSA 2007). The major threats to health include injuries, disabilities (either due to accidents or congenital disease),

and illness (acute or chronic). Sadly, many of these diseases can be prevented through proper hygiene, sanitation, and vaccination at an early stage. Access to adequate health services is a prerequisite for health insurance—in rural setting this is a serious issue. Those households without health insurance rely on available cash flow, savings, or informal group-based mechanisms to manage health risks. However, such risk strategy is not sustainable if multiple crises occur over a given time period. None of the respondents or respondents' household member, in the Oromiya region livestock insurance demand study (AEMFI 2010), has invested in health insurance in the past 10 years. About 84 percent of the respondents were not aware of health insurance; and 70 percent of the respondents indicated that they do not prefer to invest in health insurance in the future; 23 percent of the respondents would prefer health insurance in the future.

An East-African survey conducted by Cohen and Sebstad (2005) found that ill health scored highest as the life cycle event that caused the greatest degree of financial pressure on the poor and respondents perceived this shock as increasing in severity over the past five years (Cohen and Sebstad 2005). Oxfam America (2009) conducted field research in three of Ethiopia's regions (Oromiya, SNNPR, and Addis Ababa) and found that illness was one of the most commonly ranked risks in the study. The MDTCS (2009) survey also found illness to be a recurring risk for low-income households, with respondents often affected by short-term illnesses such as yellow fever, tuberculosis (TB), diarrhea, in addition to long-term illnesses including tuberculosis and HIV/AIDS (Oxfam America and MDTCS 2008). Illness, like death, falls under the category of anticipated but not predictable risks. But unlike death, it is not a one-off occurrence but a constant risk during a person's lifetime. This repetitiveness creates persistent uncertainties and continually places pressure on a household's human resources and further depletes the health of a household's economic portfolio.

3.1.5. Death of Family Members

Death risks include the cost that result from death of a family member. The degree of uncertainty regarding death is greater than that caused by life-cycle events, but less than that caused by other risks faced by low-income households. This is because each family member can be sure that they will die at some point. However, they experience uncertainty regarding when it may happen. The financial loss a household experiences when a death occurs includes both one-time components (e.g., cost of proper burial, cost of settling the deceased accounts, etc.) and, potentially, an ongoing component to replace income that the deceased formerly provided to the family (Brown and Churchill 2000).

Beyond the emotional pain associated with the loss of a loved one, death imposes a heavy financial burden on surviving family members, especially when it involves the demise of the primary male breadwinner. Single-parent households (particularly female-headed ones) face a more daunting struggle for survival due to long-term loss of income. Cohen and Sebstad (2005) argue that often equally urgent but more a consequence of the loss of an immediate family member is the longer terms costs such as:

- Rituals or ceremonies following death.
- Loss of income if deceased is breadwinner.
- Business closure if deceased ran a business.
- Settlement of outstanding debts or other obligations of the deceased.

- In some cultures, the transfer of assets to the brother(s) if the male household head dies.

Where an extended family member dies, surviving relatives often take on new responsibilities. Many next of kin take on the adoption of orphan children. Several focus groups also commented on the increased rate of death, a reflection of the high incidence in East-Africa of not only HIV/AIDS but also other life threatening illnesses such as TB and drug-resistant malaria (Brown and Churchill 2000).

Cohen and Sebstad (2005) denote the gender dimension of the death of a family member, pointing out that death of a husband is often compounded by many secondary shocks that affect the economic and social welfare of a woman and her children over the long run. The loss of a husband is compounded by:

- The loss of husband's income stream;
- Loss of household assets;
- Loss of social status/standing in the community;
- Loss of supportive links to husband's family;
- The need to assume full responsibility for children.

For most women, the family assumes the immediate financial pressure of the funeral. Beyond the personal loss of a partner, it is the next wave of the shock that often has the greatest impact. Women can find themselves and their children destitute. When relatives grab all jointly owned assets, including those that a couple may have built up through investing loans in their businesses, the women are robbed of the means to earn a living and support their children. Thrust quickly into extreme poverty, the long-term effects on these women can be calamitous (Cohen and Sebstad 2005).

Even among the world's least developed countries, figures for life expectancy in Ethiopia are below normal, with men living an average of 53 years and women an average of 55 (CSA 2007). Oxfam America (2009) points out that the country's early average age of death stems largely from low levels of health; in addition, participants surveyed in the Oromiya region cited death due to clan conflict as a problem. Violent clan conflict is a serious issue in certain parts of the country, particularly in pastoralist and agro-pastoralist areas. With water and fodder in short supply, nomadic families constantly migrate in search of resources, often leading to skirmishes with other groups (Oxfam America 2009). A recent study in the Afar region shows that both demand side factors (e.g. resource scarcity and population pressure) and supply side factors (e.g. absence of clear land boundaries, proliferation of firearms, and cultural differences) contribute to ethnic conflicts. The study also shows that state-driven changes in customary rights have led to increasing conflicts between pastoralists and the state (Hundie 2008). It is unclear to what degree clan conflict is recorded in the official figures.

Death of a family member is identified by the MDTCS study (2009) as a major risk of households. Many households in Ethiopia have adopted informal funeral insurance such as *iddir*. It is a traditional organization, composed of friends, relatives, and neighbors living in the same district who regularly contribute savings to provide financial and material assistance to households in times of mourning. Statistics related to the costs of a funeral are hard to come by, but economist Stefan Dercon estimates burial accounts for 25 percent of the average low-income household's yearly consumption expenses (Dercon et al. 2004).

3.1.6. Injuries and Disabilities

A major source of injuries in Ethiopia can be traced to the country's high rate of traffic accidents. Ethiopia has one of the highest fatality rates per vehicle in Africa, with 180 fatalities per 10,000 cars per year. In Addis Ababa approximately 28 percent of emergency room visits are related to trauma or injury. In 2003 over 1,800 persons died in Ethiopia due to road traffic injuries, 7,000 were disabled, and property worth 56 million USD were lost due to road traffic crashes. Most victims in the city are vulnerable road users and pedestrians. The pre-hospital care system is inadequate and there are not enough nurses and doctors trained in emergency care. Supplies are also scarce (WHO 2011).

The impact of car accidents on the lives of injured or deceased individuals, their affected family, the Ethiopian health care system, and property is significant. A 2007/08 report conducted by the Federal Police Commission found that more than 3,000 people (82.6 percent of whom are pedestrians) die in automobile-related accidents every year. Over the last 10 years, car accidents in the city have caused more than ETB 200 million in losses. Another recent study estimated that the nation loses a staggering one percent of its GDP every year when human costs and lost property are factored in (Sisay 2007).

WHO (2011) indicates that there are several studies showing a high incidence of domestic violence in some parts of the country, as well as sexual violence, however the data are scarce. Some hospital based studies also show that many trauma patients have injuries due to violence. Landmine injuries affect people mainly in the northern parts of the country. Data from UNMEE show that since 2000 over one-hundred people have been killed in landmine injuries and 286 have been injured.

Approximately one million people are disabled in the country. 32 percent of these are persons with total or partial blindness, 32 percent have leg or arm impairment, and 19 percent suffer from deafness/speech impairment. Mental disability is frequent. The government legally protects the rights of the disabled. The health care sector has limited recourses to meet the rights and needs of the disabled. Rehabilitation only reaches out to very few of those in need. Traditionally there is a great stigma attached with disability, e.g. having a disabled child. The education sector is working on offering special education for children with special needs and with inclusive education for disabled children able to join school. In Ethiopia there are various NGOs, both national and international, working in this area, with Community Based Rehabilitation (CBR) and with other issues like awareness rising in the community and implementation of the UN standard rules on equalization of rights for people with disabilities (WHO 2011).

3.1.7. Risk of Urban Households

Youth employment is a pressing issue in Ethiopia where almost two-thirds of the population is younger than 25 years. The demographic transition from high fertility-high mortality to low-fertility and longer life expectancies implies a spike in the dependency ratio. Young entrants to the labor market, who are generally better educated than their parents and have higher expectations for employment, face difficulties in securing jobs in many parts of the world. Ethiopia has not yet entered its demographic transition, and the fertility rate is so high that the population continues to grow at a rapid pace. The official rate of urban unemployment in 2005 was 21 percent (this is based on the population age 10+, while this study looks at those age 15+). Using the international definition, measured unemployment is lower than official numbers but still high at 14 percent. Standard international definition requires *active*

job search, while the Ethiopian national definition does not require this. Ethiopia together with South Africa are the only countries in Sub-Saharan Africa officially reporting unemployment at more than 20 percent, which is partly due to the national definition of unemployment (World Bank 2007a).

3.1.8. Market Risks

Marketing is that part of the business at household or enterprise levels that transforms production activities into financial success. Unanticipated forces, such as weather or macro-economic policies, can lead to dramatic changes in crop and livestock prices. As agriculture moves towards a more global market, these forces are increasingly derived from world factors. When these forces are understood, they can become important considerations for the skilled marketer. To be successful, farmers should take an informed and balanced approach to making marketing decisions. Focus on long-term profitability, not short-term windfalls. Academic studies indicate that marketing strategies which depend on price chasing or speculation have not been shown to be consistently profitable. Also, those strategies that do not consider financial and production risks will likely prove to be poor.

Both input and output price volatility are important sources of market risk in agriculture. Prices of agricultural commodities are extremely volatile. Output price variability originates from both endogenous and exogenous market shocks. Segmented agricultural markets will be influenced mainly by local supply and demand conditions, while more globally integrated markets will be significantly affected by international production dynamics. In local markets, price risk is sometimes mitigated by the “natural hedge” effect, in which an increase (decrease) in annual production tends to decrease (increase) output price (though not necessarily farmers’ revenues). In integrated markets, a reduction in prices is generally not correlated with local supply conditions, and therefore price shocks may affect producers in a more significant way. Another kind of market risk arises in the process of delivering production to the marketplace. The inability to deliver perishable products to the right market at the right time can impair producers’ efforts. The lack of infrastructure and of well-developed markets makes this a significant source of risk in many developing countries.

The Oromiya region livestock insurance demand study (AEMFI 2010) reveals that adverse livestock prices occurred to 48.3 percent of the sampled respondents. Over the last three years, the frequency of experiencing adverse livestock prices occurred 3 times to 40 percent of the respondents, 2 times to 25.9 percent of the respondents, 1 time to 20.4 percent, and 20 times to 1.9 percent of the respondents.

3.1.9. Climate Change and the Risk of Low-Income Households

According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2007), warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. IPCC has also concluded that more climate change is on the way resulting from past, current, and future greenhouse gas emissions with its potential adverse impacts on socio-economic development of countries (Ministry of Water Resources and NMA 2007). Although the contribution of Ethiopia to greenhouse emission is very limited, it is among the vulnerable countries affected by climate change with low adaptive capacity and high sensitivity to climate variability and change. The causes for vulnerability of the country to climate change include: very high dependence on

rain-fed agriculture, under-development of water resources, low health service coverage, high population growth rate, low economic development level, low adaptive capacity, inadequate road infrastructure in drought prone areas, weak institutions, lack of awareness, etc. (Ministry of Water Resources and NMA 2007).

Climate is often described by the statistical interpretation of precipitation and temperature data recorded over a long period of time for a given region or location. Mean annual rainfall distribution in Ethiopia is characterized by large spatial variation which ranges from about 2,000 mm over some pocket areas in the southwest to less than 250 mm in Afar and Ogaden lowlands. The mean annual temperature distribution over the country varies from about 10°C in the northwest, central, and southeast highlands to about 35°C in the northeastern lowlands (Ministry of Water Resources and NMA 2007). Ethiopia has experienced both dry and wet years over the last 55 years, which is linked with El Niño and La Niña phenomena. Years such as 1952, 1959, 1965, 1972, 1973, 1978, 1984, 1991, 1994, 1999, and 2002 were dry, while 1958, 1961, 1964, 1967, 1968, 1977, 1993, 1996, and 2006 were wet years. The country has also experienced both warm and cool years over the last 55 years. However, the recent years are the warmest compared to earlier years: temperature has been increasing by about 0.37°C every ten years (Ministry of Water Resources and NMA 2007). The potential rainfall shocks are the main causes of vulnerability for 38 percent of the vulnerable population (those with a 50 percent likelihood of falling below the poverty line) (World Bank 2005b).

The magnitude of vulnerability to climate change varies from region to region and within a region. The study of Deressa, Hassan, and Ringler (2008) concludes that Afar, Somali, Oromiya, and Tigray are relatively more vulnerable to climate change. The vulnerability of Afar and Somali region is attributed to their low level of regional development. The vulnerability of Tigray and Orimia region is attributed to higher frequencies of drought and floods and lower access to technology, institutions, and infrastructure. Unlike Afar and Somali region, the lower access to technology, institutions, and infrastructure in Tigray and Oromiya region is due to their high population in proportion of what is available.

Drought is the single most important climate related natural hazard which is becoming a serious challenge to the entire population, particularly for rural households. The arid, semi-arid, and dry sub-humid parts of the country are the most vulnerable to drought. Agriculture is the most vulnerable to climate variability and small-scale rain-fed subsistence farmers and pastoralists are the most vulnerable (Ministry of Water Resources and NMA 2007). Further, poor households located in high-risk or drought prone areas that are highly dependent on agriculture and natural resources are vulnerable to the impact of climate change[4]. The impact of climate change ranges from recurrent drought, loss of biodiversity, rangelands, and soil nutrients to catastrophic floods and declining livestock and food production (Adem and Amsalu 2010). This is aggravated by the lack of financial resources, skills, and technologies; high level of poverty and food insecurity; and the excessive dependence of the economy on rain-fed agriculture, which limits the adaptive capacity of the country to address climate change.

A variable and unpredictable climate presents a risk that can restrict the options of low-income households and limits development. Even though a drought may happen only once in a five or six year period, the threat of the disaster is enough to block economic viability,

[4] The impact of climate change is aggravated by thin markets, demographic pressure, unfavorable social cultural practices, lack of social services, limited access to education and health, and lack of early warning system.

growth, and wealth generation in all years—good or bad (Hellmuth et al. 2009). On the other hand, poverty limits the capacity of people to manage weather, marketing, and health risks, while the same risks contribute to enduring poverty. Under these circumstances, low-income households avoid taking risks. They tend to shy away from using modern inputs and innovative technologies that could increase productivity, since these innovations may increase their vulnerability. In the case of production failure, this could exhaust the assets or reserves of poor households. Moreover, creditors are unlikely to lend to farmers if drought might result in widespread defaults, even if loans can be paid back easier in most years. The lack of access to credit, in turn, critically restricts access to agricultural inputs and technologies. Thus, risk transfer approaches such as weather index insurance, livestock insurance, and health insurance can play significant roles in mitigating the risks of low-income households.

Adem and Amsalu (2010) revealed that although drought is not a new phenomenon in the southern lowlands of Ethiopia, it has become severe, frequent, and prolonged in recent years—drought cycles have become too short to adequately recover from their impact. Moreover, the rains are not only insufficient but also extremely unpredictable. As a result, people are exposed to high risks and several types of disaster such as drought, flooding, epidemics, wildfire, and pestilence. More than 70 percent of the households in southern Omo and Guji and 56 percent in Borena indicated that livestock disease has intensified in recent years as compared to the past. With the recurrent and extended droughts, existing and newly emerging livestock diseases are causing more illness and livestock deaths. These newly emerged livestock diseases affected camels and goats, which are considered as most resistant to droughts. Crop damage has become widespread due to pest infestations and occurrence of new types of pests and worms. Moreover, repeated and seasonal floods from Omo River have caused widespread destruction of life and property and massive displacement. The climate change in southern Omo and Guji resulted in a decline in production and productivity of crop and livestock. The impacts of the hazards transcend mere declining crop and livestock production, but rather become the cause of tense social relations triggering ethnic and tribal conflicts.

The number of people vulnerable to acute and chronic food insecurity is always increasing as a result of dependence on rain-fed agriculture and the high population which is increasing at a rate of 3 percent per annum. The Centre for Environmental Economics and Policy in Africa (CEEPA) points out that Ethiopia is exposed to the effect of failure of rains or occurrence of successive dry spells during the growing season, which often leads to food shortage thereby increasing levels of household vulnerability. Adverse weather conditions have increased in severity over time and the CEEPA notes that Ethiopia has been experiencing food shortages every two years since 1950 (Deressa, Ringler, and Hassan 2010). Table 3.3 provides an extensive account of droughts that have affected Ethiopia over time.

Table 3.3. Chronology of El Niño and drought/famine in Ethiopia

El Niño years	Drought/Famine	Regions
1539–1541	1543–1562	Hararghe
1618–1619	1618	Northern Ethiopia
1828	1828–1829	Shewa
1864	1864–1866	Tigray and Gondar
1874	1876–1878	Tigray and Afar
1880	1880	Tigray and Gondar
1887–1889	1888–1892	Most of Ethiopia
1899–1900	1899–1900	Most of Ethiopia
1911–1912	1913–1914	Northern Ethiopia
1918–1919	1920–1922	Most of Ethiopia
1930–1932	1932–1934	Most of Ethiopia
1953	1953	Tigray and Wollo
1957–1958	1957–1958	Tigray and Wollo
1965	1964–1966	Tigray and Wollo
1972–1973	1973–1974	Tigray and Wollo (About 200,000 people dead)
1982–1983	1983–1984	Most of Ethiopia
1986–1987	1987–1988	Most of Ethiopia
1991–1992	1990–1992	Most of Ethiopia
1993	1993–1994	Tigray, Wollo, and Addis
	2002–2003	Most of Ethiopia (15 MM people require food assistance)

Sources: Quinn and Neal (1987); Degefu (1987); Nicholls (1993); Webb and Braun (1994); cited in IGAD and ICPAC (2008).

IGAD ICPAC (2007) note that El Niño-Southern Oscillation (ENSO)[5] led to the Tigray/Wollo famine of 1972/73 causing approximately 200,000 deaths. The other major drought was during 1983/84 that took the lives of an estimated one million people, destroyed crops, and contributed to the death of many livestock. However, the impacts of drought seem to be reducing in the recent years due to improved early warning and new drought management policies.

Nevertheless, the east and north of the country are the most vulnerable to drought and have experienced the highest levels of food insecurity. In northeastern Ethiopia for example, drought induced losses in crop and livestock between 1998 and 2000 were estimated at 266 USD per household—greater than the annual average cash income for more than 75 percent of the households in the region (Carter et al. 2004). In 2002, the failure of the two rainy seasons withered over 70 percent of the maize and sorghum crops, decimating grain production. In 2002 alone, Ethiopia produced 25 percent less cereals and pulses than the previous year (FAO 2003). The effects of drought escalate household vulnerability and cascade into further risks including diminished nutritional status of those in drought-affected areas, food shortages, and household reliance on emergency food aid.

The repeated droughts in Ethiopia result in low agricultural production and productivity, weather-induced shocks, and lack of access to productive resources, which affect the livelihood of millions of people. The evidence from the study of Dercon (2009) indicates that

[5] ENSO is a quasi-periodic climate pattern that occurs across the tropical Pacific Ocean roughly every five years. It is characterized by variations in the temperature of the surface of the tropical eastern Pacific Ocean—warming or cooling known as *El Niño* and *La Niña* respectively—and air surface pressure in the tropical western Pacific—the *Southern Oscillation.* ENSO causes extreme weather (such as floods and droughts) in many regions of the world. Developing countries dependent upon agriculture and fishing, particularly those bordering the Pacific Ocean, are the most affected.

about half of the households (interviewed in 2004 for a rural panel data survey in 25 communities across the country) reported that they faced serious hardship due to drought in the preceding five years, while about a quarter of the sample reported hardship resulting from illness and a similar number reported problems related to illness. The consumption levels of those reporting a serious drought were found to be 16 percent lower than of families not affected, and shocks from illness appeared to have similar average impacts. Further, the costs were not just short-term. It was found that those who had suffered considerably in the 1984/85 famine—the most severe famine in recent history—were experiencing lower growth rates in consumption in the 1990s, a period of overall recovery, than those who were not seriously affected by the famine. Thus, any intervention to address the needs of the very poor and vulnerable households should address production and marketing risks in agriculture.

Climate change in Ethiopia has affected food insecurity, poverty, water and energy supply, sustainable development efforts, as well as resource degradation and natural disasters. Droughts, famines, epidemics, and floods are very common in Ethiopia. In most instances, these disasters are associated with climatic variability and change (Adem and Amsalu 2010). The droughts in 1972/73, 1984, and 2002/03 and the floods of 1988, 1993, 1994, 1995, 1996, and 2006 in Ethiopia are the results of climate change. Climate change is expected to have adverse ecological, economic, and social impact on the country. Changes in rainfall and temperature increase have resulted in reducing productivity of agriculture and availability of natural resources (Morton 2007). Moreover, on top of considerable loss of livestock and reduction in crop production, changes in the mean climate have brought direct negative impacts on livelihood, assets, health, food, and water security (Adem and Amsalu 2010), which caused tense social relations, particularly in arid and semi-arid areas. Recognizing the social and economic impact of climate change, Ethiopia prepared many national policies and strategies such as the Climate Change National Adaptation Programme of Action (NAPA) of Ethiopia, National Adaptation Program for Action and the Environmental Protection Policy, drafted the National Social Protection Policy and Disaster Risk Management Policy and Climate Change, National Policy on Disaster Prevention and Preparedness, National Policy on Biodiversity Conservation and Research, Population Policy, etc. to respond to the risks and reduce the vulnerability of low-income households.

The vulnerability of Ethiopia to current climate variability and change can be reduced through enhancing adaptive capacity and/or reducing sensitivity/exposure to climate related hazards. The objective of the Climate Change National Adaptation Programme of Action (NAPA) of Ethiopia is to design and implement policies and strategies and prioritize options which respond to the negative impact of climate change. However, this is a process which requires proper coordination and integration with other national, regional, and sectoral policies and strategies. Based on the review of the adaptation options identified in the NAPA, the top high-ranking priority projects to address climate change in Ethiopia are identified in Table 3.4. Promoting drought/crop insurance is ranked as No. 1 from the projects listed by NAPA to mitigate climate change.

Table 3.4. List of prioritized projects in the Climate Change National Adaptation Program of Action (NAPA) of Ethiopia

Title of the project	Average standard score	Rank	Estimated cost (million USD)	Estimated project design cost (million USD)
Promoting drought/crop insurance program	1.00	1	8	0.1
Strengthening/enhancing drought and flood early warning systems	1.00	2	10	0.1
Development of small-scale irrigation and water harvesting schemes in arid, semi-arid, and dry sub-humid areas	0.99	3	30	0.5
Improving/enhancing rangeland resource management practices in the pastoral areas	0.95	4	2	0.05
Community based sustainable utilization and management of wet lands in selected parts of Ethiopia	0.95	5	2	0.05
Capacity building program for climate change adaptation in Ethiopia	0.85	6	3	0.1
Realizing food security through multi-purpose large-scale water development project in Genale-Dawa Basin	0.80	7	700	2
Community based carbon sequestration project in the Rift Valley System of Ethiopia	0.78	8	1	0.05
Establishment of national research and development center for climate change	0.78	9	2	0.2
Strengthening malaria control	0.78	10	6	0.5
Promotion of on farm and homestead forestry and agro-forestry practices in arid, semi-arid and dry-sub humid parts of Ethiopia	0.76	11	5	0.1
Total cost			770	3.75

Source: Ministry of Water Resources and National Meteorological Agency (2007).

3.2. Coping Strategies of Low-Income Households to Mitigate Risks

The ability of farmers to retain small and frequent losses depends on access to agricultural services and the functioning of the relative markets, such as those for credit, finance, transport, storage, or extension. Where such markets are incomplete or uncompetitive, farmers' ability to retain risks is hindered. In these cases, small-scale farmers are forced to rely on other mitigating or informal ways to smooth consumption, which may perpetuate subsistence, hinder farm capital formation, and limit agricultural productivity growth (Carter 2008). Moreover, households in poor developing countries are typically ill-equipped to cope with large shocks. Formal insurance schemes are mostly absent and informal risk-sharing arrangements and savings offer only partial consumption smoothing (Morduch 1995; Townsend 1995; Dercon 2002). Especially the consequences of covariate shocks, such as droughts, are most often hard felt, often affecting people's welfare many years after the shock (Dercon 2004). Carter (2008) indicates that coping strategies employed by low-income households usually perpetuate subsistence, hinder capital formation, and limit productivity growth. It is therefore necessary to delineate prevalent risks faced by Ethiopian households and examine existing coping strategies and their willingness to pay to permit the development of client-centered micro-insurance products that properly mitigate the risks of low-income households.

According to the 2006 MoFED assessment of coping mechanisms, sale of livestock is, by far, the most important coping mechanism in rural areas, ranked as the number one strategy

for three out of the five economic shocks (Table 3.5). Sale of 'other agricultural products' comes second, while food aid ranks third. The use of own resources is ranked fourth despite its superiority in terms of liquidity. In urban areas, cash is ranked as number one coping strategy, while "other" strategies come second and food aid is ranked third. The authors of the report of Oxfam America (2009) were sober by the potential implications of MoFED's findings, as cash reserves are tied at some level to the ability and preference to pay an insurance premium; presumably, an insurance contract would be underwritten from the same pool of precautionary cash funds.

Table 3.5. Response to most frequent shocks in rural and urban areas (percent of respondents)

	Food aid	Sales of livestock	Sale of other agricultural products	Sale of other household assets	Use own cash resources	Other
Rural areas						
Illness	7.2	42.5	38.1	2.6	19.8	12.4
Drought	48.8	42.6	19.4	3.1	10.2	10.0
Death of livestock	9.7	20.4	31.2	3.9	18.2	18.3
Crop damage	29.9	43.1	18.5	3.4	14.4	12.1
Death of family member	8.7	41.3	35.2	2.8	20.3	16.4
Urban households						
Illness	4.6	9.7	5.5	8.1	54.9	19.9
Drought	40.7	10.3	8.8	4.1	15.3	34.2
Death of family member	9.1	8.6	4.5	7.7	43.0	25.4

Source: MoFED (2006).

Smallholder farmers in Ethiopia are certainly aware of their vulnerability to risks and can articulate those risks that have impact on their livelihood. How low-income households respond to those risks, both formally and informally will provide insight into the proper development and application of appropriate insurance products that address their needs and concerns. Table 3.6 indicates that low-income households do indeed manage ex-ante and ex-post risks via various mechanisms. The ex-ante risk coping strategies of the respondents include: building assets, faith and prayer, diversifying income sources, loan, traditional social networks, keeping personal and environmental hygiene, de-stocking cattle, government support, and reserving community grazing land and water ponds. The ex-post risk coping strategies of the respondents include: selling assets, reducing consumption, looking for additional job, deplete cash and in-kind savings, support from relatives and friends, *iddir*, traditional support system, and migration. However, risk management strategies are usually inadequate, inflexible, and often deplete households of assets such as savings, consumer durables, and consumption items.

Table 3.6. Ex-ante and ex-post coping strategies

Ex-ante coping strategies	Ex-post coping strategies
Building household assets through cash saving and stocking grain and animals	Selling productive assets
Depending on almighty god (faith and prayer)	Reducing the quality and quantity of household consumption
Diversification of source of income	Mobilizing labor and finding additional employment opportunities
Loan from formal finance providers	Depleting cash reserves
Strengthening social networks	Depleting in kind savings
Personal and environmental hygiene	Seeking support or gifts from friends in the form of loan or in-kind assistance
De-stocking cattle before drought occurs	*iddir*
Subsidized government support	Calling for traditional support system
Reserving communal grazing land and water ponds	Migration

Source: Oxfam America and MDTCS (2009).

The Ethiopian Rural Household Survey was designed to capture how households cope with shocks. Hill, Hoddinott, and Kumar (2011) indicate similar risk mitigating response patterns in their research. ERHS respondents were asked how many people they could call on "in time of need" and to describe the five most important people in this network. On average, households indicated that there were nine people they could call on and virtually all households had at least one person in this support network. The most important sources of support came from those residing in the same village, relatives, or members of the same *iddir*. Very often they were members of labor-sharing groups (53 percent) and had adjacent plots of land (63 percent). While there is evidence that these are functioning support networks—support is both given and received—their close physical proximity suggests that they may be more effective in coping with idiosyncratic shocks such as illness rather than covariate environmental shocks that they all may be exposed to (Hill, Hoddinott, and Kumar 2011).

Table 3.7 indicates that the type and ranking of coping mechanisms varies from region to region. The urban workers in Addis Ababa identified *iddir* as number one coping strategy, followed by savings, insurance, social networks, and credit. The grain producers and coffee producers in Oromiya ranked faith and prayers as number one coping mechanism, followed by social network (*Busaa Gonofaa*) as a second strategy to mitigate household risks. The coffee producers in SNNP identified *iqub* and insurance as number one coping strategy followed by bank loans, *iddir,* and saving.

Table 3.7. Ranking coping mechanisms by region

Regions participants	First	Second	Third	Fourth	Fifth
Addis Ababa (urban workers)	*Iddir*	Saving	Insurance	Social network	Credit
Oromiya (cereal producers)	Faith and prayer	Selling property	Dependence on relatives	Saving	Dependence on government
Oromiya (pastoralists)	Faith and prayer	Social network	Saving and migration	-	-
SNNP (coffee producers)	*Iqub* and insurance	Loan from bank	*Iddir*	Saving	-

Source: Oxfam America and MDTCS (2009).

3.2.1. Oromiya Region Livestock Insurance Demand Study Coping Strategies

The following synthesizes the coping strategies of smallholder farmers as identified from the Oromiya region livestock insurance demand study (AEMFI 2010) in relation to recurring risks. The results suggest that management strategies among low-income households are usually inadequate, inflexible, and often deplete households of assets such as savings, consumer durables, and consumption items. Investing in animal health programs has significant advantages of preventing the spread of livestock disease and death, and therefore reducing further livestock deaths. If programs are started and maintained at the community level, this can significantly improve the capacity of local communities to care for their animals—a significant advantage over the long-term (USAID 2002).

3.2.2. Coping Strategies of Farmers in the Incident of Livestock Disease

The Oromiya region livestock insurance demand study (AEMFI 2010) reveals that approximately 53 percent of the respondents coped with the incident by their own capital which could result in households shifting assets (children's school cost / health care expenses); 23.7 percent of the respondents purchased medicine on credit to pay for costs associated with livestock disease; 9.3 percent of the respondents used "other" coping mechanism which may infer the use of informal insurance usage; and 6.2 percent of the respondents sold livestock or agricultural produce (consumable items) to smooth the vulnerability related to livestock disease. Respondents were asked to reassess their risk management strategies related to the reoccurrence of livestock disease. About 16.8 percent of the respondents indicated that they would obtain insurance to mitigate the risk. About 45.3 percent indicated they would use their own capital (savings) to purchase medicine; and 25.3 percent indicated that they would purchase livestock medicine utilizing credit. The findings of the sample survey indicate that livestock indemnity insurance could possibly be bundled with credit to serve the needs of smallholder dairy and livestock farmers.

3.2.3. Coping Strategies in the Incidence of Adverse Market Price for Livestock

The Oromiya region livestock insurance demand study (2011) reveals that about 11.1 percent of the respondents coping mechanism to absorb the risk coming from adverse market price for livestock was 0 Birr, suggesting no risk management strategy was applied. Consequently, 50 percent of the respondents reported that they had no coping mechanism for adverse market prices which may indicate that the related costs were too significant to develop a feasible coping strategy or that access to available strategies was limited. About

7.3 percent of the respondents reported that they sold their animals or sold agricultural produce as a coping mechanism. The severity of this event is shown by the fact that 20.6 percent of the respondents indicated that they sought *other means* as a mechanism to cope with the event which may imply that respondents used informal methods/markets to cope with adverse market prices. Respondents were asked to reassess their risk management strategies related to the reoccurrence of adverse market prices: about 16 percent of the respondents indicated that they would invest in insurance; 29.1 percent of the respondents reported that they would not have a coping action; and 23.6 percent of the respondents indicated that they would reduce consumption if the risk occurred in the future.

3.2.4. Coping Strategies of Farmers in the Incidence of Livestock Death

The Oromiya region livestock insurance demand study (2011) indicates that about 52.6 percent of the respondents do not have a coping mechanism for livestock death and 24.4 percent drew down on their savings; while 5.1 percent borrowed capital from their relatives/neighbors/friends to cope with the event; 2.6 percent of the respondents reported that they obtained a loan from a financial institution as a coping mechanism; and 6.4 percent of the respondents either sold an animal or sold agricultural produce to alleviate the risk. Another 7 percent of the respondents reported the use of *"other"* coping mechanisms which may infer the use of informal coping mechanisms. Respondents were asked to reassess their risk management strategies related to the reoccurrence of livestock death: 19.7 percent of the respondents indicated that they would invest in insurance to mitigate the risk of livestock death; 34.2 percent said they would not devise a coping mechanism; and 34.2 percent of the respondents reported that they would use their own capital as a coping mechanism for livestock death if the risk occurred in the future. The latter findings indicate that a properly positioned insurance product that is correctly priced and marketed with an aggressive information and knowledge campaign may shift peoples coping mechanisms to that of using a formal insurance product.

3.3. Willingness to Buy Insurance and the Potential Demand for Micro-Insurance

Box 3.1. Risk management approaches of farmers and other rural producers

Rural producers and communities employ several mechanisms to deal with the risky business of farming, and any intervention must account for the likely effect of those mechanisms and the resources available to farmers. The mechanisms include:

Information gathering:

- Using and improving information available in decision making, for example, market prices, regional rainfall probabilities, new crop varieties, emerging markets, etc.

Avoiding risks:

- Adopting a precautionary stance, with the costs balanced against the possible reduction in serious negative consequences.
- Using less risky technologies of lower but reliably yielding drought-resistant crops or production of crops with more stable markets over those with potentially higher but less certain returns.

Diversification:

- Diversifying production systems through planning a variety of crops for separate markets to mitigate climatic, disease, pest, and market vulnerability.
- Adjusting income generating/productive activities to changed circumstances, reflecting physical assets and markets.
- Financing farm activities with credit, and borrowing in cash or in kind based on social capital in order to invest in diversification of income sources.

Sharing risks:

- Using informal and formal insurance through making small investments expected to provide returns only in the event of difficulty or catastrophe, for example, cash or gifts, “banking” through social capital.
- Using risk pooling in formal and informal arrangements to share outputs and cost of production.
- Using contract marketing and futures trading mechanisms (such as forward contracting to sell all of a crop at an agreed price, futures contracts, and hedging) to reduce price risks for commodities not yet produced, or for future inputs.

The report of Oxfam America’s demand study (Oxfam America 2011) indicated that it would be difficult to measure the demand and actual willingness and ability of Ethiopians to pay for micro-insurance without detailed and deep analysis based on quantitative estimates of interest in specific products (actual terms, including benefit levels, policy exclusions, premium rates, claims procedures, etc.). However, on the basis of the limited primary quantitative and qualitative information in the study, the report concludes that “as such, all that can be said with certainty is that there is strong interest in insurance in principle across the country”. Nearly all the participants in focus group discussions said they would be interested in purchasing insurance, explaining the main reason they had not done so already was ignorance that the service existed. A study in rural Ethiopia indicates that needy households are willing to pay up to 1 USD per month per household for health insurance. The respondents of the MDTCS study identified a list of risks that can be covered by insurance (Table 3.8).

Table 3.8. Risks identified by households that can be covered by insurance

Region and participants	Risks
Addis Ababa (urban workers)	Death and sickness of family members
Oromiya (cereal producers)	Death and sickness of family members, crop failure, and livestock loss
Oromiya (pastoralists)	Loss of livestock
SNNP (coffee producers)	Loss of coffee and enset, loss of stored coffee, property loss, death, fire, and motor

Source: Oxfam America and MDTCS (2009).

Hill, Hoddinott, and Kumar (2011) asked ERHS respondents if they would be willing to purchase weather insurance products through *iddirs.* Across the full sample, 42 percent of respondents were willing to purchase an individual weather insurance contract; approximately the same proportion was willing to do so through an *iddir.* 83 percent of the respondents in the study were willing to purchase weather insurance for a second year even if there was no payout in the first year, and 79 percent were still willing to purchase after five years of good rains and no payout. However, there is a suggestion that willingness to continue purchasing is affected by basis risk, since 30 percent of respondents would not continue purchasing the product if rains failed on their own farms but there was no payout. Respondents were evenly split between preferring an individual contract or one administered through an *iddir*. The main reason for preferring the individual contract was that individuals preferred to make their own payments, whereas those preferring insurance through the *iddir* felt that it was more equitable if everyone had the same insurance and easier if the *iddir* leaders managed payments.

In the Oromiya region livestock insurance demand study (AEMFI 2010), two product concepts were developed to gauge respondents' perception of various aspects of the designed livestock insurance products. Respondents were asked what aspects of the products they most like, to rank aspects of the product that were most appealing, and to identify their willingness to purchase the products. Respondents who were disinterested in the product concepts were asked why they disliked the product and what aspects of the products could be improved to change their decision about the product.

Product Concept 1—Oromiya region livestock insurance demand study (AEMFI 2010)

Coverage: This is the risk-management product that covers the **death of insured livestock** during a fixed term (1,3,5 years)**.**
Benefit: In the case of the death of the livestock during the selected period the policyholder will receive a fixed benefit of 10,000 Birr (606 USD).
Claim Processing: Within one month of the event the benefit will be transferred in cash to the policyholder.
Provider: The service will be provided by a Livestock Cooperative/Union that will act as an "agent" for an Ethiopian insurance company.
Proximity: The service is available in the district where the respondent resides.
Price: The price of the service is 100 Birr (6 USD) per month per animal.
Frequency of Premium Payment: To be determined based on income flow of farmer.

An overwhelming proportion of the respondents reported that they liked the coverage (40.8 percent) and benefits (38.3 percent) of Concept Product 1. The price for the concept

product 1 was unreasonably high at 100 Birr (6 USD) per month for the coverage of one livestock. Nevertheless, farmers indicated that they would insure between their livestock. Respondents indicated that the average amount of livestock they would insure was ten and the mean amount was seven animals. In a real life scenario, the risk would be pooled amongst farmers; thereby lowering the premium. The fact that 33.6 percent of the respondents would definitely be willing to purchase the product suggests that a similar product that is correctly priced would be attractive to smallholder farmers. Merely 7 percent of the respondent did not like Concept Product 1.

The ranking of Concept Product 1 attributes by respondents confirmed that the livestock death coverage is an important attribute as it was also the second most important attribute for 35 percent of the respondents. In addition, this ranking revealed that providing indemnity insurance via cooperatives/unions is appealing to smallholder farmers. However, pricing still remains an issue of concern. Nevertheless, 72.5 percent of the respondents indicated that they *definitely would* recommend the product to friends and 19.2 percent of the respondents reported that *yes they would* recommend the product to friends. The attributes of Concept Product 1 that respondents disapproved include: the price (57 percent) and the frequency of premium payment (74 percent). A majority of respondents *not willing to purchase the products* indicate that price is the overriding reason for their decision (79.9 percent). The latter respondents were asked if the price was reduced to 75 Birr (5 USD) per month would they then be willing to purchase the insurance. About 87 percent of the respondents indicated that they would not change their decision and 11.6 percent would consider and 1.4 percent reported that they would be willing to purchase the insurance at that price.

When asked if there is *any* price change that would persuade respondents to purchase the insurance an overwhelming proportion of respondents (92.5 percent) indicated that they would. The most frequent price that would change their decision was a monthly premium of 10 Birr (0.6 USD) per livestock (32.8 percent) and 50 Birr (3 USD) per livestock (21.9 percent). About 5.8 percent of the respondents *not* interested in the product indicated that the reason for the disinterest was that the *benefit was not appropriate for them.* Similar evidence of price sensitivity was found by Vargas et al. (2011) in their ERHS analysis whereby unconditional demand for insurance fell as the price rose.

Product Concept 2—Oromiya region livestock insurance demand study (AEMFI 2010)

Coverage: This is the risk-management product that covers **livestock related illnesses** during a fixed term (1,3,5 years).
Benefit: In the case of the illness of the livestock during the selected period the policyholder will receive a payment that will cover veterinary related costs related to the illness (**payouts will be predetermined based upon the type of livestock illness).**
Claim Processing: Within one month of the event the benefit will be transferred in cash to the policyholder.
Provider: The service will be provided by a Livestock Cooperative/Union that will act as an "agent" for an Ethiopian insurance company.
Proximity: The service is available in the district where the respondent resides.
Price: The price of the service is 55 Birr (3.3 USD) per month per animal.
Frequency of Premium Payment: To be determined based on income flow of farmer.

An overwhelming proportion of the Oromiya region livestock insurance demand study respondents reported that they liked the benefits (35 percent) and the coverage (25.8 percent) of Concept Product 2. The benefit included payment of veterinary costs of ill

livestock; the coverage protected insurers against the risk of livestock related diseases during a fixed term. The price for the concept product 2 was more reasonably priced at 55 Birr (3.3 USD) per month for the coverage of one livestock. Nevertheless, farmers indicated that they would insure between 1–100 livestock using Concept Product 2; the outliers was 100. The average amount of livestock respondents would insure, excluding the outlier, was nine livestock and the median was seven livestock.

The ranking of Concept Product 2 attributes by respondents revealed that proximity, benefit, and price were the attributes that smallholder farmers found appealing about coverage of livestock illness. Consequently, 31.8 percent of the respondents indicated that they are *definitely willing* to purchase the product; however 57.3 percent of the respondents indicated that they are *definitely not willing* to purchase the product; 6.4 percent indicated that they *may be willing* to purchase the product; and 4.5 percent of the respondents indicated that are *willing to* purchase Concept Product 2. In contrast with Concept Product 1 attribute ranking, the provider (cooperatives/unions) attribute was ranked lowest at 1 percent in the second round of ranking. A majority of respondents *not willing to purchase the products* indicate that the frequency of premium payments is the overriding reason for their decision, i.e. 69.5 percent of the respondents. About 16.9 percent of the respondents indicated that they were dissuaded from purchasing due to the price and 8.5 percent of the respondents indicated that they were displeased with the processing process.

3.4. Insurance Awareness

Attempts were made in the Oromiya region livestock insurance demand study (2011) to identify why respondents did not uptake insurance. Respondents were therefore asked, if they did not invest in insurance, why not? They were asked to provide two different reasons. About 21.6 percent of the respondents reported that they do not know what insurance is. About 60.3 percent of the respondents indicated that the insurance that they require is unavailable and 3.4 percent of the respondents indicated that they did not know where insurance was available; 34 percent of the respondents reported that insurance is too expensive. About 8.7 percent of the respondents indicated that they do not require insurance because they have limited risks; and 4.3 percent of the respondents indicated that they could manage their risks themselves. About 4.3 percent of the respondents indicated that insurance companies do not pay. The Hill, Hoddinott, and Kumar (2011) study uptake responses were analogous. The most common reason given for not purchasing insurance by the ERHS respondents was “I would like to buy it but cannot afford it,” with slightly more than 50 percent of non-purchasers giving this answer. Approximately 30 percent stated that they did not need it and 16 percent thought the price was too high, given what was provided. Less than 3 percent of respondents stated that the rainfall on their fields was too different from that at the weather station, that they did not trust the insurance company to pay, or that they really did not understand the contract.

There are many gaps that need to be addressed as we move forward in delivering appropriate micro-insurance products to low-income households, particularly given the restricted scope of the intended target group and their limited exposure to micro-insurance. Moreover, the absence of risk aversion products developed for low-income households makes the task of creating a broad understanding and awareness of the feasibility and benefits of insurance challenging. The analysis shows limited uptake of insurance and

narrow awareness of basic insurance offerings such as life and insurance. To further analyze the constraints related to increasing financial literacy to the targeted group, the Oromiya region livestock insurance demand study explored the understanding and awareness of various banking and insurance terms.

The awareness level of basic financial terms was relatively high in terms of the frequency of respondents in the study: knowing what particular banking phrases mean (i.e., loan, interest, budget, etc.). However, awareness was quite low for the terms such as leasing, pension management, and shares. A modest percentage of respondents heard of the terms budget and investment, but they were unable to articulate their meaning. Knowledge of financial terms is essential to understand and manage appropriate risk management strategies. Terms related specifically to the various dimensions of insurance were reviewed by respondents to identify levels of literacy. The farmers' limited exposure to insurance is exhibited by respondents' partial awareness of basic insurance terms. Nevertheless, about 70 percent of the respondents knew the term insurance and over 40 percent of the respondents understood the concept of insurance benefits. Although awareness was high among basic terms, a large percentage of clients never heard of the following terms: premiums, claims, and insurance coverage. The limited awareness of financial terms by respondents suggests the need to develop a comprehensive financial literacy program that complements the product development process and assists potential clients in developing sustainable risk aversion schemes.

In order to develop an appropriate financial literacy/education campaign it was critical to identify how and from what sources respondents are exposed to financial information. The results of the Oromiya region livestock insurance demand study (AEMFI 2010) indicated that a majority of respondents obtain financial service information from relatives and friends (81.7 percent). This data imply that micro-insurance providers should target communal organizations such as cooperatives and unions, as they are a combination of business and social forums. Consequently, about 51.7 percent and 41.7 percent of the respondents reported that they derive their financial service information from Cooperatives and Unions respectively. About 75 percent of the respondents indicated that they receive financial service information from the radio, as the apparatus is easilly accessible and relatively inexpensive. About 50.8 percent of the respondents reported that they obtain information from the television. Advertisements were a limited source of financial service information (20.8 percent); and banks and microfinance institutions are a relatively good source for providing financial service information at 30.8 percent and 31.7 percent, respectively. Churches, which are important social outlets, are a very low source of financial service information at 5 percent.

4. Development of Micro-Insurance Services in Ethiopia

Although informal risk-sharing schemes have been devised in the Ethiopian insurance sector, the formal insurance market perceives the low-income sector as an unattractive niche. We believe that many of the risks of financially excluded people in Ethiopia are insurable. By helping low-income households manage their risks, micro-insurance can assist them to maintain a sense of financial confidence even in the face of significant vulnerability. However, providing micro-insurance to poor people is more difficult than delivering other financial services for the following reasons: (i) it requires specialized actuarial capacity, which is complicated by lack of reliable data characteristics of low-income households and the informal markets; (ii) most low-income households do not understand micro-insurance or may be biased against it; (iii) it requires a distribution system that can handle small financial transactions efficiently in convenient locations, and engender trust (Hougaard, Chamberlain, and Aseffa 2009); (v) a high degree of information asymmetry may cultivate moral hazard and adverse selection; and (v) even if insurance is designed for specific covariant risks they are challenged by the existence of basis risk. Insurance companies, MFIs, cooperatives and the informal providers are the key micro-insurance providers in Ethiopia. Despite the crucial importance of micro-insurance for the low-income households, it is largely unavailable to mitigate the risks faced by low-income households. Nor has it been given explicit policy recognition; the policy and strategy documents do not make explicit reference to micro-insurance services.

4.1. The Supply of Micro-Insurance Services in Ethiopia

Micro-insurance can be developed and delivered by insurance companies, mutual funds, MFIs, NGOs, and governments or semi-public bodies. However, it is only the insurance companies and deposit-taking MFIs which are allowed, by law, to issue micro-insurance policies in Ethiopia. Other providers such as cooperatives can be used as agents of the insurance companies and deposit-taking MFIs. Although there has been relative success in building sustainable micro-insurance providers in Ethiopia, such as the deposit-taking MFIs, insurance companies, and cooperatives in a short span of time, they failed to provide tailored micro-insurance services and interventions which address the insurance needs of low-income households. The developments in the provision of micro-insurance by different institutions are discussed in the following sections.

4.2. Insurance Companies

The insurance industry in Ethiopia remains small and less known. In 2007, about 0.1 percent of Ethiopia's population had access to insurance services. Insurance premiums (both for life and general insurance) accounted for about 0.2 percent of GDP, which is very low compared with other African countries (Smith and Chamberlain 2009). In the same year, the contribution of premiums to GDP in South Africa, Kenya, and Uganda were 15.3 percent, 2.5 percent, and 0.6 percent, respectively. With an annual market growth rate of 22 percent, the insurance sector in Ethiopia has mobilized a gross premium income amounting to 1.19 billion Birr from the general insurance business alone (NBE 2008). Table 4.1 indicates that as of June 30, 2011, there are 14 insurance companies with 221 branches operating in the country (First Consult PLC 2009). The total capital of the industry reached 3,221 million Birr. The government owned Ethiopian Insurance Corporation (EIC) accounted for about

19 percent of the branch network, 44 percent of the capital share, and 32 percent of the gross premium income. The remaining private insurance companies accounted for 81 percent of the branch network, 56 percent of the capital share, and 58 percent of the gross premium income (Table 4.1).

Table 4.1. Type of business, branches, total asset, capital, and profit, as of June 30, 2010

Name of the company	Date of establishment	Type of insurance business	Branches*	Total capital ('000 Birr)	Total asset ('000 Birr)	Profit ('000 Birr)
Ethiopian Insurance Corporation	1975	Non-life & life	41	1,428,058	270,435	101,347
National Insurance Company	23/09/94	Non-life	16	57,750	20,412	7,760
Awash Insurance Company	01/10/94	Non-life & life	29	251,810	75,076	17,017
United Insurance Company	09/11/94	Non-life & life	23	238,376	77,019	21,179
Africa Insurance Company	22/12/94	Non-life & life	13	331,247	59,569	11,883
Nile Insurance Company	11/04/95	Non-life & life	21	246,694	85,906	31,117
Nyala Insurance Company	27/06/95	Non-life & life	16	226,792	83,857	23,310
Global Insurance Company	14/01/97	Non-life	10	59,872	23,442	3,590
Nib Insurance Company	02/05/02	Non-life & life	22	264,698	73,751	20,902
Lion Insurance Company	10/07/07	Non-life	11	54,755	13,190	4,158
E-Life Insurance Company	23/10/08	Life	-	5,359	4,372	-
Oromiya Insurance Company	26/01/09	Non-life	16	55,564	20,515	(7,080)
Ababy Insurance	26/07/10	Non-life	3	-	-	-
Berhan Insurance	24/05/11	Non-life	-	-	-	-
Total			221	3,220,975	807,544	242,263

Source: National Bank of Ethiopia (NBE), 2011.
Note: * Number of branches is reported as of June 30, 2011.

The insurance companies in Ethiopia comprise six non-life insurance companies; seven providing both life and non-life insurances, and one life insurance company (Table 4.1). Life insurance companies cover liabilities contingent on life while general insurance companies cover liabilities relating to events that result into loss or damage of property. Reinsurance services are only offered by Ethiopian Insurance Company (EIC) on a discretionary basis—they selectively accept inward reinsurance business from a variety of foreign insurance companies operating in other countries throughout Africa and Asia (First Consult PLC 2009). General insurance is the dominant business in the Ethiopian insurance industry. Motor insurance takes the lion's share of general insurance service in almost all insurance companies followed by engineering, aviation, and marine.

As of June 30, 2010 the total capital of the industry (both life and non-life) reached 808 million Birr. The insurance industry has sold general (non-life) insurance since its inception. The general (non-life insurance) business constituted more than 95 percent of the total sector's capital on average during the last ten years. The share of long-term (life insurance) accounted only 5 percent of the sector's capital in the last ten years. The dominance of the general insurance business is an indication of the limited role played by insurance companies in saving mobilization and long-term investment in Ethiopia.

The number of branches of the Ethiopian Insurance Corporation (EIC) increased from 16 in 1994 to 41 in 2010. Although six new private insurers with 43 branch networks joined the industry in the last 10 years, the share of EIC has remained constant at about 19 percent. The share of total capital of EIC, however, dropped by 10 percentage points during 2005–2010 indicating that the newly opened insurers have high capital to branch ratio. Most of the

branches of insurance companies are found in the urban centers. By the end of June 30, 2010, 50.7 percent of the total branch networks of the insurance companies were located in Addis Ababa (see Annex Table A.1).

The total gross written premium of the insurance industry in Ethiopia for general insurance exhibited an increasing trend in the last ten years reaching 1.8 billion Birr at the end of June 30, 2010. Of this sum, about 43 percent was generated by Ethiopian Insurance Corporation, which is the only public insurance company. On the other hand, gross written premium as percent of GDP depicted a declining trend over the last nine years. At the end of 2009, the gross written premium as percent of GDP reached the lowest level of 0.43 percent. This was mainly due to the global credit crunch which had an increasingly visible impact on the global insurance demand in the last two years. The global crisis has an impact on the Ethiopian insurance sector for it is integrated with the global system via international trade and transport. Table 4.1 indicates that all, with the exception of Oromiya Insurance Company have registered a positive profit. In June 2010, the ten insurance companies have registered a total profit of 242 million Birr, which is by far lower than the banking sector.

Although the share of the public insurer has been decreasing in recent years, EIC still dominates the insurance industry in Ethiopia. This is partly explained by the preferential treatment given to EIC by government and public enterprises, which can be considered as entry barrier to insurance companies. Since similar products are sold in the market, product differentiation cannot be considered as the cause for an entry barrier in Ethiopia. In other words, there are no differentiated products that allow one company to have competitive advantage over other rivals. The introduction of innovative products such as floriculture, travel, condominium, and crop insurance by some companies could create product differentiation in the future. Thus, the major entry barriers to the Ethiopian insurance industry are beyond the traditional ones such as lack of skilled and experienced insurance professionals, unattractive and erratic profitability of the industry, fear of unhealthy competitions, very low size of modern sector, restrictive directives which limits insurers to invest on selected areas[6] such as T-bills and bank deposits, etc.

The insurance sector in Ethiopia is very small, young, and underdeveloped with many small insurance companies displaying high levels of inefficiency. Several factors caused low insurance penetration in Ethiopia. The major factors include: the structure of the economy which is dominated by rain-fed agriculture, absence of differentiated products, unethical competition, backward technology, restrictive proclamations, absence of compulsory insurance, non-existence of reinsurance companies, lack of capital market, and low and negative interest rate (First Consult PLC 2009). However, there has been modest growth in terms of number of insurance companies and branches. There has been a significant increase in private sector involvement in the insurance industry. Despite the modest growth and an enabling regulatory framework, there are a number of factors which constrain the expansion of Ethiopia's conventional insurance sector. These include:

- Insurance companies have not exploited the client database of banks, MFIs, cooperatives, labor unions, etc. and have not used them as distribution networks to expand outreach.

[6] The NBE directive limits insurance funds to be invested on selected areas. Accordingly, not less than 65 percent of general and 50 percent of life should be invested on T-bills and bank deposits, less than 15 percent on company share, less than 10 percent on real estate, and other investments should not exceed 10 percent.

- Insurance companies tend to compete for the small existing insurance market. This has resulted in 'price wars', which reduce premiums significantly and have a negative impact on the return to assets/equity or profitability of the sector. The relatively low level of profit for insurance companies does not provide much room for the expansion and modernization of the industry.
- The industry does not attempt to develop new products beyond the existing product base; products tend to be very limited in range and tend to target corporate clients. There are limited insurance products that would allow low-income households or individuals to mitigate risk of crop failure, livestock loss, or cope with health and death issues. There is a need to develop innovative products and approaches to provide affordable insurance services in a sustainable way.
- Insurance companies have very limited technical skills to expand their activities. It is reported that there are no actuaries in Ethiopia. Many hire foreign actuarial experts when product development is required. Moreover there is a limited capacity in designing, administering, and distributing insurance products that are appropriate for low-income households.
- Although some insurance companies have started implementing electronic management information systems, many still use manual systems. This raises administration fees and makes the extraction of client information difficult. Clients pay premiums in cash or check by either physically visiting the insurance company or it is collected by brokers or agents. For micro-insurance clients, they need to pay small premiums more frequently which will require an efficient payment system.
- Insurance companies tend to have limited awareness of transaction costs across different product categories as they generally do not follow cost-center.
- Limited availability of data (e.g., mortality data, weather data) is making product design difficult.
- There is a need to ensure greater insurance literacy and awareness especially in rural areas where individuals have modest education on insurance and finance in general.
- In addition, other risk reducing instruments which help to manage price and production, such as forwards, futures, options, and swaps, need to be cautiously promoted. This will require expanding commodity exchange markets and putting the right institutions, legal system, and infrastructure in place.

4.3. Deposit-Taking MFIs

Introduced in its regulated form in 1996, the MFI industry registered a remarkable growth in terms of outreach and performance. So far 31 registered MFIs have been operational. As of March 2011, they had a total of 2.4 million active clients with an outstanding loan portfolio of about 6.2 billion Birr (367 million USD). They mobilized about 3.0 billion Birr (176 million USD) of savings (Annex Table A.2). Moreover, about 50 percent of the clients of the MFIs are female (AEMFI 2010). The average loan size and savings in 2011 were about 2,583 Birr (153 USD) and 1,250 Birr (74 USD), respectively, which indicates that MFIs target the active poor. Many of the MFIs provide similar financial products and use predominantly the group lending methodology. Although loan and saving products are the dominant financial products, some have also introduced micro-insurance, leasing, money transfer, and

managing pension funds on behalf of the Social Security Authority. Their loan products can be broadly categorized into agricultural loans, micro-business loans, micro and small enterprise loans (micro-bank loans), employee loans, package (food security) loans, and housing loans (Amha 2008). Recently MFIs have also started providing individual loans to Micro and Small Scale Enterprise (MSE) operators and others that need larger loans (above 5,000 Birr).

Unlike MFIs in the rest of Africa which tends to avoid financing agriculture, MFIs in Ethiopia have aggressively attempted to deliver financial services to the agricultural sector. About 66 percent of MFI loans were used to finance agricultural activities. Trade activities come next (19 percent), most of which are actually agricultural trade activities (Amha 2008). Agricultural loans ranged between 6 USD and 1,100 USD. The agricultural loans in many of the MFIs are end-term loans where the principal is paid in a single installment at the end of the loan period/production season. However, interest is mostly paid on monthly (and in some cases weekly) basis. According to a study by Admassie, Ageba, and Demeke (2005) livestock purchase was the dominant activity financed followed by agricultural production and expansion of existing business in that order. More than 81 percent of the clients reported to have spent their last MFI loan on what may be considered as productive uses—namely livestock purchase (45 percent), agricultural production (20 percent), and start new business or expand an existing one (16 percent).

Two MFIs, ACSI (Amhara Credit and Saving S.C) and DECSI (Dedebit Credit and Saving S.C) have also packages (or food security loans) aimed to help farmers achieve food security at household level. The package contains about nine agricultural activities (poultry, dairy cow, goat/sheep rearing, fattening of goat/sheep, fattening of cattle, traditional bee farming, modern bee farming, irrigation, and modern inputs). The loans could be in cash or in-kind (where borrowers take credit coupons from the MFI to the Bureau of Agriculture and Rural Development and receive the items in the chosen package). They are given on individual basis and involve full guarantee of the respective regional governments (for loans not exceeding 5,000 Birr) or asset collateral (for loans above 5,000 Birr). Clients are given relevant training and extension support on the respective packages (Amha 2008).

In spite of the high and covariant risks of agricultural loans, MFIs in Ethiopia have developed financial products which have the potential of increasing agricultural production and improving the household food security of the rural poor. The regional based and government-supported MFIs are also attempting to address the problem of financial services to the agricultural sector, including those in remote areas. The establishment of regional MFIs has also contributed to the relatively fair distribution of microfinance activities in the country. Moreover, the high repayment rate (more than 95 percent) enjoyed by MFIs is partly explained by the support of grassroots level government institutions and the group collateral business model. Savings mobilization by Ethiopian MFIs is becoming an integral part of a viable micro-credit delivery system, such that the link between savings and credit promotes agricultural production and food security. The experience of MFIs in Ethiopia reveals that the poor are indeed bankable.

Risk management has always been an objective of MFIs in Ethiopia. Practitioners are aware that clients occasionally use business loans to pay for medical expenses, funerals, or to smooth household cash flow. Even if they do not have an immediate emergency, some of the clients only invest a portion of the loan in their businesses and they save the rest so that they will have a cushion to fall back on, if they experience repayment problems. In other

words, clients may use a loan which was intended for one purpose to fulfill a different objective because that is the only financial service that is available to manage the risks or shocks. To this end, MFIs are beginning to tailor products so that they more accurately fit the purpose for which clients use them, including risk management. The three main types of risk management financial services are: (i) convenient and client-centered saving products; (ii) emergency loans, which are designed very differently from the standard loan products to address shocks; and (iii) micro-insurance products to address systemic risks and individual household risks (Manje and Churchhill 2002).

The deposit-taking MFIs in Ethiopia focus on the provision of loans and savings. Borrowing and saving can be an efficient way for households to manage risks. However, households that access fiduciary services incur associated financial market risks. For instance, the threat of systematic risks and shocks can make households reluctant to take loans because they fear the consequences of an inability to repay. As a consequence there is a need to develop insurance products to complement loans, savings, and other financial products. Table 4.2 indicates that many MFIs have started providing credit-life insurance for group loans where the policyholder is the individual client. Some MFIs such as Agar MFI have started providing credit-life insurance for individual loans. However, some practitioners indicated that since MFIs are currently providing individual loans on the basis of property collateral, there is no need for credit-life insurance. To this end, MFIs require property collateral from clients before taking loans. On the other hand, some MFIs have also started proving livestock insurance, property insurance for housing loan, and insurance for cash-in-transit. Two MFIs are also piloting weather index insurance and health insurance.

Table 4.2. The status of delivering micro-insurance products through MFIs, as of March 31, 2011

Microfinance Institution	No. of active clients	Type of insurance products
Addis Credit and Saving Institute (AdCSI)	146,482	Credit-life insurance for group Property insurance for housing loan
Oromiya Credit and Saving Institution (OCSSCO)	469,713	Livestock insurance Credit-life insurance for group Health Insurance (Pilot)
Gasha Microfinance Institution	6,991	Credit-life insurance for group Cash in transit insurance
Sidama Microfinance Institute	47,810	Credit-life insurance
Wisdom Microfinance Institution	46,118	Credit-life insurance
Agar Microfinance Institution S.Co		Credit-life insurance for group and individual loans
Amhara Credit and Saving Institution (ACSI)	633,659	Credit-life insurance for group
Dedebit Credit and Saving Institution (DECSI)	402,661	Piloting weather index insurance Health insurance (at a preparation stage)

Source: AEMFI (2011).

OCSSCO has two types of credit-life insurance: (i) in the event of death, if the client pays 1 percent of the loan as a premium, the loan balance of the deceased is settled from the insurance fund; (ii) if the client pays 1.5 percent of the loan as a premium, an amount equivalent of the loan balance is provided to the family of the deceased, in addition to the settling of the loan balance. DECSI is currently piloting parametric or index-based insurance

covering the loss of crop yield due to a random variable that can be easily observed and tightly linked to the yield of the insured specific crop (rainfall, temperature, etc.). Moreover, DECSI has finalized the development of manuals and the selection of staff to be trained in micro-insurance, particularly health insurance for the poor.

AdCSI is currently involved in delivering loans, savings, money transfer, payment systems, and micro-insurance activities. All clients are required to have an insurance policy for loans in exchange for premiums expressed in terms of percentage of the total loan. Moreover, all the loans delivered to clients are covered with credit-life insurance which is classified as life, property, or business insurance. With the exception of housing loans (with a premium of 2 percent of the total loan), AdCSI charges 1 percent of the loan amount as premium.

Micro-insurance covers a broad range of services such as life insurance, health insurance, crop insurance, livestock insurance, asset insurance, etc. which could be provided through a variety of actors. Micro-insurance products delivered through MFIs can also protect their clients efficiently in case of major risks and encourage clients to invest in riskier yet more lucrative activities. Since the deposit-taking MFIs in Ethiopia provide loan and saving services to more than 2.4 million poor clients and have branch networks in almost all *woredas* in Oromiya, Amhara, SNNP, and Tigray regions, they hold a unique position in delivering micro-insurance to rural clients. Credit-based insurance presents significant and easy-to-reach opportunities to enter into the low-income market (Smith and Chamberlain 2009). Moreover, as per the new proclamation (No. 626 of 2009), MFIs can issue insurance policies. MFIs can use the credit, saving, and payment transactions as premium collection opportunities. Premiums can also be deducted from the savings accumulated by clients over the years, given the client's consent.

The larger MFIs in Ethiopia are providing micro-insurance products using an in-house mutual insurance model. This arrangement makes the MFI the final insurer as well as the agent to its clients. We have observed that this modality has worked well for the larger MFIs, particularly for credit-life insurance. On the other hand, because of the limited risk management capacity of the smaller MFIs and their inability to pool risks among a larger population, the in-house mutual insurance model may expose these MFIs and the clients to higher levels of risk. Thus, the smaller MFIs are advised to follow the partner-agent model, where they serve as agents for mainstream insurance companies. This will require understanding and negotiations with mainstream insurance providers that are appropriate for MFI clients.

Compared with the success of the delivery of loans and saving products, MFIs in Ethiopia have not progressed in delivering micro-insurance services to their clients. As indicated earlier, they only attempted to protect their loan portfolio through the provision of credit-life insurance, by covering the repayment of the outstanding loans in case of a borrower's default. In actual fact, they have not addressed the production, marketing, and health risks of the clients. However, given the superior understanding MFIs have with clients (which can reduce fraud and adverse selection) they are well placed to mitigate its clients' risks by bundling micro-insurance with credit/saving products. BASIX in India for example bundles agricultural and livestock credit with mandatory weather and livestock insurance schemes. Learning how to reduce transaction costs was a big part of microfinance success, and a similar learning experience needs to take place in micro-insurance, which is more complex than credit products. Despite the comparative advantage of MFIs in delivering micro-insurance to the excluded population in Ethiopia, there remain key challenges which include:

- Lack of understanding of the value of insurance products on the part of the community and the micro-insurance providers themselves.
- The unavailability of data limits the actuarial analysis and actuarially pricing of products; there is no basic data on health, longevity, climate, etc.
- Although the pilots of micro-insurance products by some MFIs, such as the weather index insurance, are found to be attractive, the scaling up of pilots has been sluggish.
- MFIs have limited capacity and technical know-how to design and deliver micro-insurance (providing simple credit-life insurance and property insurance requires a relatively unsophisticated system). However, when insurance providers are involved in the provision of high impact micro-insurance products, such as health insurance, they need the capacity to handle a large volume of claims, which will require specialized back-office functionality.
- Insurance is a difficult concept to understand, particularly for farmers. This is aggravated by inadequate client education on micro-insurance and other financial products.
- In an environment where people have limited experience in formal insurance, establishing trust in and credibility of micro-insurance products is difficult. To build trust in insurance products, providers will initially have to modify the contract/policy to ensure that they pay out a positive return with sufficient frequency to clients of low-income households.
- Implementing large-scale index-based insurance or health insurance for low-income households requires upfront research and development costs, weather stations, access to international reinsurers, etc., which is beyond the capacity of MFIs. This will require finding a champion such as donors and government projects to overcome initial set-up costs.

4.4. Cooperatives

A flourishing modality for inclusive finance is the development of client-owned and managed rural and urban saving and credit cooperatives. Although there is no separate law or regulatory framework for financial cooperatives, proclamation No. 147/1998 sets out the legal framework for cooperatives in Ethiopia covering the guiding principles which underscore the independent and autonomous character of the cooperatives. The multipurpose cooperatives and saving and credit cooperatives (SACCOs) provide financial, marketing, production, and other services to members. Cooperatives function under the following principles:

a) Cooperatives are structured under democratic principles whereby membership is voluntary and constituents own, manage, and operate the cooperatives. Moreover, members have equal voting authority regardless of the amount of accumulated shares/savings and each member has identical access to cooperative products and services;

b) The guidelines and regulatory framework of cooperative proclamations and directives are issued by competent authorities;

c) Cooperatives are entirely transparent and run with complete participation of all members;

d) Cooperatives maintain adequate accounting records and have sound management practices.

4.4.1. Developments in the Non-Financial Cooperatives Sector

Cooperatives as grassroots organizations are viewed as critical instruments in implementing the objectives of various development programs and strategies such as the poverty reduction and food security programs and the rural development strategy. Accordingly, the drive to promote cooperatives has succeeded in increasing the number of primary cooperatives in a short span of time. A Federal Cooperative Agency report (FCA 2011) indicates that, as of March 2011, there are approximately 30,310 multipurpose and commodity based primary cooperatives categorized under 19 different types. Cooperative categories vary from mining to coffee (Table 4.3). The total capital of the primary cooperatives was estimated to be about 2.34 billion Birr. Membership reached over 5.67 million, however, only 1 million of the constituents are female.

Table 4.3. Outreach of multi-purpose and commodity-based primary cooperatives in Ethiopia, as of March 2011

Type of primary cooperatives	Number	Male members	Female members	Total members	Capital (Birr)
Farmer's multipurpose	7,299	3,857,586	580,477	4,438,063	756,387,922
Forestry and truism	23	5,741	792	6,533	284,817
Fruit and vegetables	137	8,901	1,127	10,028	1,980,745
Incent	54	2,782	515	3,297	2,621,051
Irrigation	1,575	77,812	16,929	94,741	36,639,581
Dairy	348	12,976	7,785	20,761	15,661,147
Fish	70	3,913	271	4,184	4,541,999
Consumers	1,122	693,747	259,520	953,267	465,918,743
Artisans	1,101	114,410	62,731	177,141	63,753,645
Mining	1,739	61,539	6,455	67,994	880,582,550
Consumers of electricity	315	21,055	1,998	23,053	3,869,872
Electricity maintenance professionals	13	176	55	231	13,710
Housing	7,496	133,057	4,152	137,209	40,104,690
Livestock rearing and fattening	328	12,595	3,779	16,374	9,318,188
Urban agriculture	429	17,787	2,322	20,109	8,166,339
Chat	48	5,846	295	6,141	987,400
Slaughter service	14	296	10	309	1,336,412
Coffee	49	2,745	1,336	4,081	5,618,731
Different professional	8,150	150,958	52,863	203,821	95,964,886
Total	30,310	4,668,173	1,002,980	5,671,153	2,336,505,541

Source: Federal Cooperative Agency (2011).

The FCA reports that there are 182 cooperative unions, with a membership of 5,079 primary multipurpose and commodity-based cooperatives (Table 4.4). The unions have about 720.4 million Birr of capital as of March 2011. Several unions are engaged in importing fertilizer and coffee export while two federations of agricultural marketing cooperatives are already established at regional level. The success of some unions' marketing efforts has been notable, for example, importing of fertilizer through cooperative unions increased from about 406 million Birr in 2004/05 to about 2.12 billion Birr in 2007/08.

Table 4.4. Outreach of unions (multipurpose and commodity-based), as of March 2011

Unions by type	Number of unions	Member cooperatives	Capital
Farmer's multipurpose	110	3,552	546,235,265
Dairy	7	84	4,384,900
Honey	2	15	324,230
Food processing	1	26	1,337,596
Agricultural marketing	18	405	38,375,953
Coffee	9	240	102,691,892
Forestry products	2	13	373,928
Livestock marketing	3	26	1,378,972
Sugarcane	1	8	2,863,446
Mining	7	387	4,776,288
Fruits and vegetables	7	174	9,381,334
Consumer's	13	119	8,071,217
Fishery	1	9	50,000
Cobblestone	1	21	105,000
Total	182	5,079	720,350,021

Source: Federal Cooperative Agency (2011).

The government of Ethiopia's Growth and Transformation Plan recognizes that cooperatives can significantly contribute toward inclusive finance. The government consequently intends to strengthen the capacity of the cooperative sector by providing long-term capacity building training to over 282,000 members of 50,000 primary societies, 511 unions, and 6 federations by 2014.

4.4.2. Developments in the Financial Cooperatives Sector

The finance needed for development and growth of cooperatives can come from three sources: (i) the members themselves; (ii) net surplus generated by cooperatives; and (iii) external finance such as loans from banks or MFIs. The best source of finance for cooperatives is derived from its members. The more financing members provide, the less the cooperative business will need to borrow from other sources.

According to Cooperative amendment Proclamation No. 402/2004, any cooperative society shall, after securing the decision of the general assembly, sell shares that shall have equal number and par value in order to enable the society to obtain capital necessary to start its function. The cooperative societies shall collect up on their formation from members at least one fifth of the amount of the shares that the general assembly decides to sell. They shall sell the rest of the shares within four years of the time of establishment. When the need for additional capital arises, the general assembly may decide to sell additional shares. Societies which face a shortage of capital may also sell certain shares to a person who is not a member of the society without contradicting the principles of the society.

The Savings and Credit Cooperatives (SACCOs) accept savings from members, both compulsory and voluntary. The amount/quantity of compulsory savings varies from member to members depending upon his/her capacity. The amount is kept low to enable women and persons with limited means to join a SACCO. In the first year, SACCOs accept only savings. This facilitates the inculcation of saving discipline and the internalization of the management process. Interest on voluntary savings is aligned to that offered by MFIs and banks while the interest rate of compulsory saving is lower. Voluntary savings can be withdrawn at one week's notice. However, for withdrawals of compulsory savings, members are required to

give notice and the amount must be refunded within six months. In the beginning, all members deposit their monthly savings on a designated day. The amount is usually deposited with a local MFI/bank on the same day. Once the number of members exceeds 50 and management capabilities improve, fortnight/weekly savings are accepted.

A SACCO usually starts lending operations in the second year. A member should have saved at least for one year to be eligible for a loan. In the beginning, the loan is restricted to about 75 percent of a member's savings, given the liquidity requirements of SACCOs. Another member should stand surety for the loan. The loan eligibility of the member is suitably increased having regard to the demand for loans (all members may not borrow), liquidity requirements, and the prudential norms. Interest on loans is fixed taking into consideration: (i) the market rate, (ii) financial cost, (iii) operating costs, (iv) the need to strengthen the resource base, and (v) the need to service capital. In the first few years, the loan repayment period is one year. With experience in handling loans and support from unions and federation, primary SACCOs offer different saving and loan products to match the needs of members. However, this takes longer time, particularly in rural context. At the initial stage, SACCOs do not have any paid employee for the secretary functions and the book-keeper. However, as the operations grow SACCOs can employ part-time or full-time employees.

Cooperatives (both multipurpose and financial cooperatives) are key grassroots level organizations which are very critical instruments in implementing the objectives of the various development programs and strategies such as rural development strategies, and poverty reduction and food security programs. To this end, the government has been successful in increasing the number of primary cooperatives in a short span of time.

There are currently about 4,286 urban SACCOs in Ethiopia, out of which about 67 percent (2,852) are in Addis Ababa (FCA 2010). Out of the 393,658 members of urban SACCOs, about 42 percent (163,756) are women. Urban SACCOs are concentrated in Addis Ababa, followed by Oromiya, Amhara, SNNPR, and Dire Dawa. The savings of SACCOs increased from 1.2 million Birr in 1994 to 1.4 billion Birr in 2008 and the average saving increased 16 times within the same period (Gessese 2010). In 2010, out of the 35,000 primary cooperatives and 212 cooperative unions, about 8,623 were primary SACCOs (4,286 urban and 4,337 rural SACCOs) and 56 SACCO unions (54 rural SACCO unions and 2 urban SACCO unions). Although there has been a significant increase in development of rural SACCOs in the last seven years through the support of Rural Financial Intermediation Program I (RUFIP I), the development of SACCOs in Ethiopia before RUFIP I was limited to urban SACCOs.

As a result of the support of RUFIP in the last seven years, the number of rural SACCOs increased from 132 in 2003 to 4,337 in 2010. Table 4.5 indicates that in 2010 there were 4,337 rural SACCOs providing savings (about 108 million Birr) and loans (about 118 million Birr) to 327,085 members, about 48 percent of the members were women. Oromiya has the highest number of rural SACCOs followed by Amhara, SNNPR, and Tigray. About 1,412 rural SACCOs have established 54 rural SACCO unions. The unions have mobilized about 63.4 million Birr of savings and disbursed more than 118 million Birr (Kidanu 2010).

Table 4.5. The outreach of rural SACCOs in Ethiopia, 2010

Region	No. SACCOs	Members			Saving (Birr)	Working capital (Birr)	Loan disbursement (Birr)
		Male	Female	Total			
Afar	10	169	453	622	78,250	101,250	
Tigray	553	23,306	12,319	36,625	31,945,219	14,961,335	19,928,278
Amhara	873	58,296	23,599	81,893	42,255,778	12,083,710	41,822,374
Oromiya	1954	43,236	81,545	124,781	10,200,396	24,441,399	25,673,261
SNNPR	773	41,905	33,385	75,290	20,408,597	10,590,931	29,785,644
BSG	83	2,167	1,021	3,188	1,077,937	185,654	141,468
Gambella	26	436	232	668	361,592	309,330	130,500
Somali	65	482	3,536	4,018	1,279,198	783,943	898,306
Total	4,337	170,995	156,090	327,085	107,576,967	63,457,558	118,379,780

Source: Kidanu (2010).

In spite of the significant increase in the number of primary rural SACCOs and unions in the last four years, their capacity is very weak. However, since rural SACCOs are established within the localities of the communities and are owned by community members, they are the appropriate finance providers to deliver financial services to smallholder farmers. The transaction costs of financial cooperatives are relatively lower because they are managed and supervised by elected members on a volunteer basis.

SACCOs have the advantage of being grassroots level institutions which may translate into lower transaction costs (better information, enforcement of repayment, etc.). Transactions costs are relatively low because they are managed and supervised by voluntarily elected members who work/live in same institution/locality. However, many SACCOs have a significant limitation. They solely depend on the savings of their members for loan financing. Studies show that many SACCOs are already facing loan demands that cannot be met out of the limited local savings of their members. Input loans are mainly handled by the multipurpose cooperatives. But, they have no funds of their own, nor do they receive funds from the CBE for on-lending purposes. Instead, they simply serve as conduits, receiving the inputs paid for with CBE loans and distributing them to farmers. SACCOs also have financial transaction experience (extending loans and loan collection); some SACCOs have also been handling input loans on behalf of multi-purpose cooperatives or MFIs. However, there are several issues that need to be addressed regarding rural SACCOs in Ethiopia for them to serve as sustainable finance providers to smallholder farmers. These include: building the capacity and the image of cooperatives; improving governance and leadership; developing client centered financial products; integrating the financial cooperatives into the proper financial system; mixing promotion and regulatory activities; and developing cooperative policy and a separate law to regulate, supervise, and expand financial cooperatives.

4.4.3. The Potential of Cooperatives to Provide Micro-Insurance Services to Low-Income Households

Cooperatives play an important role to improve the effective provision of micro-insurance services to low-income households that would otherwise be underserved or not served at all by insurance companies. In 2008, cooperatives and mutual insurance accounted for 24 percent of the total formal insurance market globally writing over one trillion USD in premiums, with substantial market shares in many developing countries (IAIS and MIN

2010). In Sub-Saharan Africa, many mutual health insurance schemes have been created on the basis of voluntary membership. In exchange for the premiums sent to a fund, policyholders are entitled to certain benefits. Some cooperatives also sell housing, funeral, health, and accident insurance policies. In Europe, many social security provisions such as health and unemployment were initially developed through cooperatives and trade unions. With public intervention, these mechanisms eventually grew to become fully fledged social insurance schemes (Dercon 2009). Cooperatives that offer insurance products have considerable advantages. First, dealing with groups reduces monitoring and other information costs, because the insurance providers must monitor the group portfolio, leaving the cooperative or the union to monitor the individuals within the group. Next, if groups that include the poorer segments of the society are chosen, the task of targeting can also be devolved to the level of the group. Further, existing groups already have mutual support systems, making it easy to build existing informal schemes with complimentary activities. Finally, groups can be used to help bridge the information or trust gap between formal and informal providers of insurance and potential clients (Dercon 2009).

There are two types of cooperative business models that provide micro-insurance services to members: one is the stand-alone mutual company, which is independent of any cooperative network and is usually large-scale. Good examples are: the Center for Agriculture and Rural Development Mutual Benefit Association in the Philippines (see Annex F) and the Yasiru Mutual Provident Fund in Sri Lanka. The second model is a network of financial cooperatives that provides insurance services to its members by affiliating with an insurance company (Chandani 2009). The distinction between mutual insurers and cooperatives is their ownership: policy owners own mutual insurers while cooperatives may be owned by members or larger second-tier cooperatives. For example, some cooperative may have three tiers of ownership: individual members, regional or national federations, and an apex body that sponsors the insurer and represents member cooperatives. Although the main principles for both insurance business models are the same, mutual insurers and cooperatives may differ in how they are regulated in a specific country. Moreover, individual cooperatives that belong to larger networks may offer financial services (such as saving and credit associations) or have a non-financial orientation (such as trade unions or farmers associations). In this model, the cooperatives are the distributional channel for the risk carrier, where the risk carrier is owned by the network and created for the sole purpose of providing insurance services to the network (Chandani 2009).

Cooperatives have comparative advantage to provide micro-insurance exclusively to members. There are a number of ways that cooperatives can provide insurance services to their members:

As a distributor: Cooperatives can act as a channel to deliver micro-insurance services to members.

As collectors of premiums: Cooperatives can be used as a way to consolidate payment of premiums that can then be aggregated and transferred to the insurer, thus providing cost saving.

As part of claims assessment process: Shifting the claim assessment processes of members from the insurer to the cooperative can have advantages in reducing costs and ensuring timely claim payment.

As the policyholders of a group insurance product covering members of cooperatives: Group based insurances tend to be a lower cost option compared to individually issued insurance delivery. Similar to other group insurance arrangements, the record keeping associated with knowing the list of insured risks, etc. may be an administrative benefit provided by the cooperatives. The natural aggregation advantage of cooperatives reduces cost.

As part of the process of understanding and relating to the members: Knowledge of the characteristics of members of cooperatives makes pricing easier and removes many of the information asymmetries facing other insurers.

As part of the process of educating members on the operations of the insurance services: Cooperatives have a comparative advantage of delivering financial literacy or education.

As providers of ancillary or complementary services: These include the delivery of education on health and provision of other services to compliment the insurance service, or other parts of an overall package for the member of a cooperative.

As a vehicle to reinforce trust in the micro-insurance products: One of the main reasons for the success of cooperatives in delivering micro-insurance products to members is their ability to reinforce trust in the insurance products.

As a means of reducing costs and making micro-insurance affordable: A cooperative acting as an aggregator of members leads to reducing cost and making the product affordable.

As a carrier of some or all of the insurance related risks directly: There is some evidence that mutuality and surplus retention can help members with low insurance literacy to accept insurance even where they purchase insurance and no claim arises. In the cooperative model, the value may be more readily perceived by members when there is no claim on an insurance product providing risk cover only (IAIS and MIN 2010).

Table 4.6. Examples of the roles of mutual, cooperatives, and other community-based organizations

Function	Country	Description
As distributor	India	The micro-insurance agent regulations brought out by the Insurance Regulatory and Development Authority (India) have recognized self-help groups to tie-up with insurer not only for collection of proposal forms but also collection and remittance of premium and policy administration service. Local handling of marketing and sales lowers transaction costs.
Support premium collection	Philippines India	Remittances of funds from Filipino workers overseas have been an important source of support to local families and the wider economy. Church groups providing support to communities of foreign workers have worked with insurers in the Philippines to collect premiums on insurance products during their regular community meetings and remitting them collectively to insurers, reducing cost and improving the efficiency of these contributions.
As part of the claims assessment process	Sri Lanka Philippines	The micro-insurance agent regulations brought out by the Insurance Regulatory and Development Authority (India) have allowed self-help groups assist in the claims settlement process.
As the policyholder of a group insurance product	Sri Lanka Philippines Guinea	Savings and Credit Cooperatives (SACCOs) are able to reduce transaction costs and offer group insurance coverage tailored to the needs of their members by negotiating lower premium rates than what would otherwise be offered by insurers. This fact is also an example of motivating collective risk reduction through individual action and has implications for influencing the quality and cost of services provided to low-income segments.
As part of the process of understanding customers	India Nepal South Africa	Mutual societies are active in information dissemination of formal social protection and poverty alleviation programs. They also ensure registration of all eligible citizens and monitoring by civil society.
As part of the process of educating customers	Ethiopia Zambia Brazil India	Community groups, along with MFIs, performing needs analyses and awareness campaigns in a variety of ways, including focus group meetings, street plays, and inviting micro-insurance claim recipients to tell others about the benefits of insurance. This enhances awareness of insurance and encourages collective action and risk reduction activities by all group members.
As provider of complimentary services	Brazil India Philippines	Many credit cooperatives compliment their financial services offering, namely savings and loans by cross selling life and non-life insurance. Sometimes this may involve non-financial products too.
As carrier of insurance risk	West Africa	The UEMOA legislation, brought out by the Economic Community of West African States (ECOWAS), has developed a multinational framework which allows mutual social health organizations to underwrite health insurance and simplified accounting requirements have been prescribed for such providers.

Source: IAIS and MIN (2010).

SACCOs are self-insuring their credit life risks. The premiums of these products tend to be 2 percent of the total value of the loan and cover the outstanding credit amount in the case of the client's death. Addis Saving and Credit union has started providing credit-life insurance in partnership with a formal insurance company, namely Ethio-life Insurance Company. There is an intension of providing centralized insurance services to all members of cooperative unions.

4.4.4. Challenges of the Cooperative Sector in Delivering Insurance Services to Members

Since many of the cooperatives are involved in providing financial services and technical assistance to their members, they are well-positioned to support the provision of insurance coverage to their farmers. Pilot studies led by Nyala Insurance Company found that farmers' unions effectively deliver channels for both Multiple Peril Crop Insurance (MPCI) and weather index insurance contracts. Nyala insured all farmers who belonged to a specific cooperative under the same master contract/policy. This approach reduced the premium incurred by farmers, eased transaction costs, and improved efficiency. In the case of the haricot bean pilot in Ethiopia, all farmers were members of a credit union (LAFCU) that was providing agricultural inputs to farmers on credit. In the pilot project, LAFCU, and the Yerer farmers' cooperative, and the Dedebit microfinance institution served as an effective intermediary for the insurance company (Nyala Insurance Company), to ensure the members' input credit against weather risk (Meherette 2009). The pilot livestock indemnity insurance implemented by Nyala Insurance Company also used financial cooperatives, particularly the primary SACCOs and unions to channel insurance policies to its members.

There has been a significant increase in the number of Ethiopian primary cooperatives, unions, federations, and members in the last ten years. These federations and unions can enhance the efficiency and capacity cooperatives by allowing the pooling of resources for more complex management activities (e.g. managing of insurance and credit portfolios). It will also make it easier for insurers to partner at the level of primary cooperatives, unions, and federations rather than having to seek out individual members of cooperatives for partnership. Cooperatives provide real distribution opportunities that have yet to be exploited by insurance companies. If cooperatives are allowed to issue insurance policies, they will have a comparative advantage over insurance companies. However, the cooperative movement has to address the following market challenges in order to capture the benefits of the comparative advantages:

a) Rural cooperatives in Ethiopia face geographic challenges. Given the limited infrastructure, the distance between insurers and farmers wishing to access micro-insurance services is too long and inaccessible.
b) Formal insurance providers have trouble understanding the micro-insurance market and the circumstances, expectations, and attitudes of the members of cooperatives on insurance. Moreover, formal insurance providers perceive that conventional insurance is only for the wealthy.
c) Formal insurance providers attempt to serve the lower premium markets with pre-existing business models. This is aggravated by lack of innovations, skills, experiences, and availability of limited products which match the needs of low-income households.
d) Limited awareness and education on micro-insurance is a number one challenge in expanding micro-insurance in Ethiopia. There is a dire need to promote financial literacy/education in rural and urban areas.
e) Although there is no regulatory constraint to cooperatives to serve as distribution channels to insurers in Ethiopia, there is a need for a clear and flexible regulatory framework to promote micro-insurance using the cooperative model. The regulatory framework should have a tiered approach, where matured and stronger cooperative networks can issue insurance policy directly.

f) Some cooperatives are serving insurers as channels of issuing insurance policy to members. However, there is a need to supervise whether the cooperative members and policyholders are protected from any type of abuse.

g) The promotion, regulation, and supervision of cooperatives are often shared between a range of government ministries and agencies. Although currently FCA seems to be the right institution to regulate and supervise micro-insurance activities for the cooperative insurance business model, its capacity is very limited. Thus, effective, complete, and coordinated promotion and regulation of micro-insurance will be a challenging task in Ethiopia unless there is huge capacity building support for FCA.

h) Although cooperatives can establish an insurance company, if they meet the licensing requirements of an insurance company by NBE, we still believe that there is a need to have a separate regulatory framework to cooperatives who are interested to establish a stand-alone cooperative micro-insurance company.

The significant increase in the number of primary cooperatives and unions and the solid captive membership base in Ethiopia allow cooperatives to establish a stand-alone cooperative insurance company or serve as distribution channels to licensed insurers. To this end, there is a need to develop a separate and an enabling regulatory framework for either the stand-alone cooperative insurance companies or cooperatives serving as distribution channels to insurers. This will ensure higher level of accountability and improve governance and proper management of insurance funds. The whole objective of a flexible and an enabling micro-insurance regulatory framework for cooperatives should focus on balancing the need for adequate oversight and ensuring the ultimate quality of the micro-insurance services, while avoiding the loss of access to products and services altogether, and providing flexibility to expand the micro-insurance outreach of cooperatives.

4.5. Informal Micro-Insurance Providers

Although micro-insurance is widely defined as an insurance accessed by the low-income population, potentially provided by a variety of different providers and managed in accordance with generally accepted insurance practices, there are informal micro-insurance providers delivering affordable micro-insurance products to the excluded population. There is ample evidence in Ethiopia and the rest of Africa of self-help groups such as the traditional funeral societies, which are inclusive of the poorest segments of the community, that provide cash and in-kind funeral benefits for their members and members' families. In Ethiopia, there are a variety of informal insurance schemes such as *iddir*, *Bussa Gonofa*, *Debare* and self-insurance mechanisms such as saving in the form of assets, livestock, etc. *Iddir* is a major informal life insurance in Ethiopia where a member pays a fixed monthly payment and gets a predetermined amount of payment from *iddir* in the incidence of their death or the death of a family member. *Iddir* is characterized by: (i) strong cohesion and commitment due to close proximity of members and a high degree of social solidarity; agro-pastoralists explained that "being excluded from *iddir* is culturally embarrassing in our society"; (ii) well-defined rules and obligations that are often recorded in writing and codified through mutually agreed regulations and accounting; (iii) ability to attract different socioeconomic groups with restrictions based on ethnicity or religion relatively rare in practice; (iv) experience with financial management; and similarities to formal insurance but with much less vulnerability to moral hazard and adverse selection problems (Dercon et al. 2008). *Iddir* is primarily

designed to deal with the financial burden of funerals; *iddirs* cover the cost of coffins, ceremonial clothing, utensils and equipment like caps, tables, chairs and tents, as well as extra help while the bereaved family entertains numerous guests. However, some *iddirs* provide other services such as cash transfers or loans for other risks including illness, property damage including fire, death of livestock, and crop failure (Oxfam America 2009). According to a survey (which was not a random survey) quoted by Smith and Chamberlain (2009), about 22 percent of the households indicated that they use their *iddir* to part-finance their health expenditure. In a sample of 78 rural *iddirs* in seven villages, 64 percent of *iddirs* were found to offer non-funeral type of insurance. This included insurance for destruction of house (40 percent), illness (30 percent), fire (28 percent), death of cattle (24 percent), harvest (14 percent), and wedding (14 percent) (Dercon et al. 2006). In all these cases, the premiums for these insurance products are included with the basic membership premium and no additional amount was charged.

According to the Oxfam and MDTCS study (2008), *Bussa Gonofa* (a traditional social support institution) is another type of insurance that is predominant in the Oromiya region. When a member encounters a risk, each member of *Bussa Gonofa* has an obligation to support another member either in cash or in kind, usually in kind. Another dorm of informal insurance, known as traditional *Debare*, is a practice where an individual in a community is given a milk cow in times of crisis and returns back the cow after using the milk. This is usually carried out among close relatives. Traditional ox insurance is also practiced in some parts of Ethiopia. In the occurrence of death of an ox, the community voluntarily buys the meat of the ox so that the victimized individual in the community replaces the diseased ox with the money collected from the sale of the meat.

4.6. NGOs

With a few exceptions, NGOs in Ethiopia provide very little attention to micro-insurance. According to Oxfam America and MDTCS (2008), a local NGO called WISE (Women in Self-Employment) introduced a health insurance scheme targeting low-income female-headed households, who are the beneficiaries of WISE and members of the Saving and Credit Cooperative supported by the NGO itself. WISE's health insurance provides coverage of medical expenses by collecting a premium of 5 Birr (0.3 USD) per month. The total insurance coverage per annum/person is 300 Birr (18 USD) (five times the annual premium contribution). However, to ensure discipline, only 50 percent of the one-time expenditure is covered by the insurance scheme while the remaining 50 percent is covered by the policyholder (Oxfam America and MDTCS 2008) . This indicates that micro-insurance for the poor is feasible if it is demand-driven and is designed professionally.

The Relief Society of Tigray (REST), a local NGO, has been very active in implementing the weather index insurance in collaboration with Oxfam America and Dedebit Credit and Saving Institution (DECSI) (See section 4.8 for further discussion).

4.7. Agricultural Insurance Products

Agricultural insurance products are classified into three main groups based on the method of determining how claims are calculated. (Table 4.7) The following is an abridged summary

overview of key agricultural insurance products as delineated in a recent World Bank Insurance Primer (Iturrioz 2009).

Table 4.7. Classification of agricultural insurance products

Type of Agricultural Insurance Product	Payouts	Availability
a) Indemnity Based Agricultural Insurance (insurance payouts based on the actual loss at the insured unit level)		
Named Peril	Percentage of damage	Widespread
Multiple Peril	Yield loss	Widespread
b) Index based Agricultural Insurance		
Area-Yield Index	Area-yield loss	USA, India, Brazil
Crop Weather Index	Weather index payout scale	India, México, Malawi, Canada, USA
NDVI* Index	NDVI index payout scale	Mexico, Spain, Canada
Livestock Mortality Index	Livestock mortality index payout scale	Mongolia
Forestry Fire Index	Ignition focus/burnt area payout scale	Canada, USA
c) Crop Revenue Insurance		
Crop Revenue Insurance	Yield and price loss	Limited to USA

Source: Iturrioz (2009).
Note: * NDVI = Normalized Deviation Vegetation Index.

4.7.1. Indemnity Based Agricultural Insurance Products

Indemnity based insurance products determine claim payment based on the actual loss incurred by the policyholder. If an insured event occurs, an assessment of the loss and a determination of the indemnity are made at the level of the insured party. The classification is often divided into two subclasses: (i) named peril and (ii) multiple peril agricultural insurance.

Named peril agricultural insurance products (Damage-based products)

Named peril (damage based) provides indemnity against those adverse events that are explicitly listed in the policy. Named peril is a popular type of insurance and accounts for a significant portion of the agricultural premiums worldwide. Named peril insurance contracts are used extensively to protect against hail damage and are used in horticulture and floriculture in addition to crops and fruit but are also used in livestock, bloodstock, aquaculture, forestry, and greenhouses insurance.

Multiple peril agricultural insurance products (yield-based products)

Multiple perils (yield based) provide insurance against all perils that affect production unless specific perils have been explicitly excluded in the contract of insurance. Under this type of insurance, the sum insured is defined in terms of the expected yield to the producer. Cover is normally set in the range of 50 percent to 70 percent of the expected yield. In turn, the expected yield is determined on the basis of the actual production history of the producer or the area in which the producer operates. The sum insured can be based on the future market price of the guaranteed yield if the producer has an insurable interest, or alternatively, if the producer has taken a loan to finance the crop, the sum insured may be based on the amount of the loan if the financier has an insurable interest in the crop. The calculation of the payout is based on the extent to which the actual yield falls short of the guaranteed yield at the agreed price or as the shortfall in yield as a percentage of the guaranteed yield applied to the sum insured.

4.7.2. Revenue Agricultural Insurance Products

Revenue agricultural insurance products protect insured parties from the consequences of low yields, low prices, or a combination of both. It is essentially MPCI cover with a price hedge. This is a relatively new subclass and moves away from more traditional products where the insurable interest is the size of the crop to products where the interest is a revenue stream. This product provides significant benefits to producers that rely on short-term crop financing which is repaid from agricultural revenues and financiers who have extended the crop finance. It gives both the producer and the financier certainty that revenues estimates on which loans are based will largely be realized. A necessary precondition for this subclass is the existence of developed commodities and derivative markets that enable insurers to protect them from price decreases and to pass all or part of the price risk to other risk takers. This explains why revenue insurance for soybeans and corn crops is available in the United States, where markets for these commodities are highly developed.

4.7.3. Index Based Agricultural Insurance Products

Index based agricultural insurance products pay out based on the value of an “index”, not on losses measured in the field. The index is a variable that is highly correlated with losses and that cannot be influenced by the insured. Indexes can include rainfall, temperature, regional yield, river levels, etc. For example, for regional yield for a particular crop, an index is created based on the expected regional yield. A threshold is created which is less than the index. The insurer indemnifies the insured party where the regional average yield is less than the threshold. The precondition for successful implementation of this subclass is that both parties of the contract have confidence in the objectivity and transparency of the index. To achieve the necessary degree of objectivity and transparency, there must be sufficient data, a strong correlation between the index and the losses at the producer level, and freedom from influence by either the insurer or the insured party. There are significant advantages to this subclass. It avoids the issues of moral hazard and adverse selection found in other classes as individual producers are only one of a large number of producers whose output determines the index or the data used to construct the index, physical phenomena such as rainfall are observable and cannot be affected by either party. Because the payment of the indemnity is based on deviations from the index and not on individual losses, no assessment of losses at the individual insured party level is needed. The indemnity process is quick and inexpensive to administer.

Despite these advantages, take up of this product by both insurers and insured parties is still low. This can be explained by considering some of the constraints. From the perspective of insured parties, as the insurance product is based on an index and indemnity is based on the regional deviations from the index, individual producers still face some basis risk. From the point of view of the insurer, it can be a costly and time consuming task to assemble the data and construct the appropriate indexes. Once the indexes have been created, further operational costs are low and this translates into lower premiums for insured parties. The lower premiums are gradually attracting smaller producers who otherwise would not be inclined to take out insurance. The flexibility in design of these products allows insurers to create insurance products that to date have not been possible. For example, the development of weather indexes has fostered the design of products to cover quality requirements in fruit production, and the development of area yield indexes has encouraged

insurance products to cover business interruption risk for companies handling crops where production shortfalls may occur.

4.7.4. Crop Insurance

The most developed form of agriculture insurance is crop insurance (named peril crop insurance) which accounted for 90 percent of the premium written in the sector in 2008. The traditional named peril crop insurance product is hail insurance. Insurance companies offer hail insurance for crops and fruits as well as for horticulture and floriculture production. Hail insurance can be offered on a standalone basis or in combination with other perils like fire, freeze, and/or wind as additional risks. The main feature of this type of crop insurance is that the insurance claim is calculated by measuring the percentage of damage in the field soon *after* the damage occurs. The percentage damage measured in the field, less a deductible expressed as a percentage, is applied to the pre-agreed sum insured. Under this type of insurance, the sum insured is defined on an agreed basis, based on the production costs or on the expected crop revenue. Where damage cannot be measured accurately immediately after the loss, the assessment may be deferred until later in the crop season. The quantity of the deductibles and franchises depends on how vulnerable the crop is to hail damage and the prevalence of hail within the growing area. Insurance on annual crops, considered to be of moderate risk, is offered at rates of between 3 percent and 5 percent of the sum insured subject to a non-deductible franchise of 6 percent. If the crop or the growing areas are considered to be high risk, the premium can be as high as 10 percent with deductibles of 20 percent.

4.7.5. Multiple Peril Crop Insurance (MPCI)

Coverage under MPCI is expressed in terms of a guaranteed yield which is between 50 percent and 70 percent of expected yield regarding the nature of the crop and the region in which it is being grown. Payout under the policy is initiated where the yield of the producer falls short of the guaranteed yield in the policy. If the producer has an insurable interest, the payout will be the shortfall in yield at a value that is agreed in the policy. If the producer has financed the crop externally and the financier has an insurable interest, the payout accrues to the financier and will be the product of the shortfall in the yield and the amount of the loan that was granted. Premium for this type of insurance ranges between 5 percent and 20 percent of the sum insured (depending on the type of the crop), the region in which it will be grown, and the level of coverage being sought.

4.7.6. Crop Revenue Insurance

In guaranteeing the policyholder a certain level of revenue, the insurer protects the holder from declines in yield and also adverse movements in crop prices. The guaranteed yield is determined as a percentage of the producer's past production, and the guaranteed price can be either the future market price for the crop for the month of harvest or the strike price of a base price option. If the actual yield received by the producer, which is given by the product of the actual yield and the spot market price at the time of harvest, is less than the guaranteed amount, the insurer will pay the difference.

4.7.7. Area Yield Index Insurance

The insurance contract defines an area referred to as the “insured unit”. The insurer constructs an index based on a guaranteed yield for the insured unit, normally in the range of 50 percent to 90 percent of the expected yield. The insurer pays out if the actual yield of the insured crop in the insured unit falls below the guaranteed yield, irrespective of the actual yield of the particular policyholder. The payout is determined as the product of the shortfall in production in the insured unit and the sum insured. Payment is normally made six months after the crop is harvested.

4.7.8. Weather Index Insurance Products

The product is designed around the construction of an index that is highly correlated with loss experiences. The most common index in agriculture is rainfall. Typically, an insurer will offer a contract that will specify the index (for example, rainfall), over what period and where it will be measured, the threshold, the sum insured, and any indemnity limits. If the rainfall is less than the index at the specified measurement point and over the period specified in the contract, the insurer will payout under the contract irrespective of the actual losses of the policyholder. The quantity of the payout is determined according to the provisions of the contract. A simple payout may be the total sum insured under the contract. More commonly, contracts are written so that the proportion of the sum insured that is paid out is determined by how far the actual production observed in the insured unit deviates from the index. This product can be used at the micro-, meso-, or macro-level. At the micro-level, a producer will insure his/her production based on the measurement of rainfall at a weather station close to his/her farm. The meso-level insurance may attract a financier who has provided crop finance to producers in a certain geographic area and wishes to mitigate his/her credit risk against the possibility of drought in the area. At the macro-level, a country wishing to lessen the possibility of famine through the failure of a staple crop as a consequence of drought may be attracted to this insurance, where the index is based on the country and the weather observations are made at stations throughout the country.

4.7.9. Livestock Insurance

Livestock insurance provides insurance products to cover horses, mares, colts, fillies, and foals; bulls, cows, and heifers; swine; sheep, goats, and dogs; and occasionally wild animals. It is a relatively small segment of the market, accounting for 4 percent of the total premium written worldwide in 2008. The protection offered under livestock products includes against losses arising from death, injury and loss of function as a result of accidents, natural causes, fire, lightning, acts of God and acts of individuals other than the owner. Cover is extended to forced slaughter of livestock on humanitarian grounds. Additional coverage can generally be purchased for veterinary expenses, transport, and non-epidemic diseases. Where it is offered, the insurance covers business interruption and the costs to government of slaughtering animals to curtail outbreaks of the relevant diseases. Livestock mortality index insurance is a relatively new form of livestock insurance that was introduced into Mongolia. It has potential in countries where livestock production is exposed to catastrophic losses.

4.7.10. Bloodstock Insurance

Bloodstock insurance provides cover for high value animals, mainly equines. It is also a minor business line accounting for 3 percent of the agricultural premium written worldwide in 2008. Animals are either insured on an individual basis or collectively such as where a stable of horses is insured. The insured events include mortality, disability, infertility, medical treatment, and surgery. The sum insured is based on the market value of the animal. The market value is determined by the prizes that the animal has won or the present value of the future prizes that it potentially will win. Any matter that adversely affects the animal's capacity to win prizes will affect its market value and can result in over-insurance. To deal with the potential moral hazard, it is common practice amongst bloodstock insurers to insure high-value animals for only a portion of their market value.

4.7.11. Aquaculture Insurance

Aquaculture insurance provides cover for producers involved in breeding and raising aquatic fauna and growing aquatic flora. In addition to flatfish, aquaculture encompasses molluscs, crustaceans, and commercial seaweed cultivation. Although it is a small segment of the market with 1 percent of written premiums for the worldwide agricultural insurance market in 2008, it is expected to develop rapidly as aquaculture becomes more important in the face of dwindling natural fish supplies. Cover is offered on a named peril or all risks basis. Cover is for loss of stock. Covered perils include meteorological events, acts of God, diseases, pollution, predator attacks, collision, oxygen depletion, changes in pH and salinity, theft, and escape. Both offshore cage systems and inshore pond cultures are covered. The sum insured is defined by the value of the stocks insured and it is customary to set a maximum aggregate limit per site. Premium rates range between 3 percent and 10 percent of the sum insured and deductibles range between 15 percent and 30 percent each and every loss, both depending on the species, location, and the conditions in which the stocks are kept. Aquaculture insurance is a very specialized field with complex insurance contracts reflecting the complexities of the production processes. Underwriting which involves risk assessment and frequently underwater inspections requires specific expertise, as does loss assessment, which is frequently outsourced to firms that specialize in the activity.

4.7.12. Forestry Insurance

Forestry insurance is also a small segment of the overall agricultural insurance market accounting for about 1 percent of the premiums written worldwide in 2008. It protects standing timber stocks against fire, lightning, explosion, and aircraft impact. Coverage can be extended to damage caused by wind, windstorms, volcanic eruption, flood, hail, freezing, and the weight of ice and snow. Firefighting expenses and debris removal are also covered and are capped at an annual aggregate limit.

The sum insured is determined on a tiered basis with young plantations valued at establishment cost, medium aged plantations at the lower of establishment cost or commercial value, and mature plantations at commercial value. Losses are frequently capped at an annual aggregate limit to avoid large exposures in high risk areas. Premium rates range from 0.2 percent to 1 percent of the total sum insured, depending on the species, location, and measures in place to prevent or suppress fires. Deductibles are common with a standard deductible of 10 percent of the loss subject to a minimum of between 0.3 percent and 1 percent of the sum insured. The terms and conditions of forestry

insurance contracts are comprehensive and complex. This reflects the nature of the risk being underwritten and the possible risk of moral hazard.

4.7.13. Greenhouse Insurance

Greenhouse insurance contributed 1 percent to the total written premium in agricultural insurance in 2008. Greenhouse production is a very capital-intensive activity and relies heavily on the serviceability of the infrastructure that the producer has put in place. In insuring the infrastructure, insurers typically provide comprehensive cover for material damage to structures, glass, equipment, stock, and other contents. Infrastructure is insured against damage from storm (including hailstorm), water, fire, smoke, lightning, explosion, malicious acts, aircraft impact, and earthquake. Cover may also be extended to business interruption, machinery breakdown, and electronic equipment. The sum insured is determined on either an agreed value or production cost basis. Indemnities are calculated as a percentage of damage to both the structures and the contents. A deductible of 10 percent of the loss subject to a minimum of 1 percent of the sum insured is usually applied. Rates for greenhouse insurance vary from 0.3 percent to 0.7 percent of the total sum insured depending on the construction of the greenhouse.

4.8. Pilot Level Innovative Micro-Insurance Products Delivered to Reduce Production Risks of Smallholder Farmers

The range of micro-insurance products is almost as varied as that of commercial insurance. Existing insurance product types have been re-engineered to accommodate the needs of low-income households (IAIS and CGAP 2007). As in the Ethiopian case, indicated earlier, MFIs and many SACCOs are currently self-insuring their loans through credit-life insurance, because of the lower cost structure, simplicity, limited risk, and the focus of the micro-insurance providers protecting their assets. In addition to these credit-life insurance products, a number of research teams in collaboration with local insurance companies—such as Ethiopian Insurance Corporation and Nyala Insurance Company, and MFIs (e.g., DECSI in Tigray and Buusaa Gonofaa in Oromiya) have implemented pilot projects on weather indexed insurance products and livestock indemnity insurance to reduce the risks of smallholder farmers. Many of these pilots are in progress and are yet to be seen if they can be scaled up. There are some hopes that some of the results documented from these pilots will be scaled up at commercial level by insurance companies and MFIs in collaboration with insurance companies. Four selected micro-insurance schemes focusing on mitigating the risks of smallholder farmers in Ethiopia are presented below.

4.8.1. Relief Society of Tigray (REST) Initiated Weather index Insurance (the HARITA Project)

An index insurance pilot known as Horn of Africa Risk Transfer for Adaptation (HARITA) was initiated in Ethiopian in 2007 by REST in collaboration with Oxfam America, International Research Institute (IRI), Nyala Insurance Company, Dedebit Credit and Saving Institution (DECSI), Swiss Re,[7] and other partners. The pilot was initially targeted on teff farmers in the village of Adi Ha in Tigray and expanded to other villages and crops. The HARITA project is taking a farmer-centered approach, and is working to integrate index insurance with other

[7] One of the world's leading reinsurance companies

risk reducing activities by complementing the product with improved agronomic practices, conservation measures, and seasonal and daily weather forecasting. The innovations of the pilot include the extension of weather insurance to communities that are technically challenging to serve, and methods that allow cash-constrained farmers to pay premiums with their labor (Hellmuth et al. 2009). The HARITA project compliments the country's innovative social protection scheme, the PSNP. The project has been exploring ways to build upon the PSNP model by enabling farmers to pay insurance premiums in-kind rather than in cash. Under the scheme, farmers have the option of working a few additional days in exchange for an insurance voucher that protects them against drought (Hellmuth et al. 2009).

Given the positive results from the pilot, the HARITA model was expanded into four other villages in Tigray—Geneti, Hade Alga, Hadush Adi, and Awet Bikalsi—along with Adi Ha, the original test site. The participants of the project increased from 200 to 1,300. After the expansion, Adi Ha showed a 9 percent increase from the previous year's take-up rate—demonstrating that expanding HARITA is viable. Out of the 1,300 households that purchased the insurance within the five villages, 39 percent were female-headed and 73 percent were participants of PSNP. In its two years delivery of weather index insurance in five villages in Tigray, HARITA has shown promising results for replication (Oxfam America 2011).

At the end of 2010, Oxfam America and the World Food Program (WFP) developed program strategies and plans to expand the pilot results of HARITA to reach smallholder farmers throughout Ethiopia and to other potential countries. The partnership is called the Rural Resilience Initiative or R4, referring to improved resource management (risk reduction), micro-insurance (risk transfer), microcredit (prudent risk taking), and savings (risk reserves). As per the agreement, HARITA will scale up to serve between 10,000 and 13,000 households in approximately 34 to 35 villages in 2011. Farmers will continue to have option to pay for insurance premiums with their labor through risk reduction projects in their communities (Oxfam America 2011).

4.8.2. Weather Index Insurance by Nyala Insurance Company

The overall objective of this index insurance pilot is to contribute to an ex-ante risk management system to protect the livelihoods of Ethiopian smallholders vulnerable to severe and catastrophic weather risks. The pilot uses a weather index to demonstrate the feasibility of establishing contingency funding. In the event of severe and catastrophic shortfalls in precipitation, the index is able to indicate the number of beneficiaries, and helps to give an effective aid response.

In 2009, WFP gave technical support to this pilot by providing a framework for the design of the insurance contracts. Nyala Insurance Company, with guidance from the World Food Program, designed the contracts for smallholders in the area of Bofat/Sodore near Nazareth. It insured farmers growing haricot beans in the *meher* season, and a rainfall deficit index was used to protect against drought. The contract was based on a simplified version of Water Requirement Satisfaction Index (WRSI) (which actually measures crop performance), measuring the balance between water supply and demand during the growing season. The water balance is updated every 10 days. WRSI is computed as the ratio between actual evapotranspiration (AET) and the seasonal crop water requirement.

The scheme proposed for this pilot is based on a simplified version of the full WRSI model. The simplified model assumes a zero soil water-holding capacity. In this case, the water

deficit is determined by the difference between the water requirement and the observed rainfall during a particular 10-day period. When actual rainfall exceeds required rainfall, the deficit is considered zero. Contract coverage targeted three cultivation phases:

- Initial phase: germination and vegetative phase (1 July–20 August);
- Mid-phase: flowering (20 August–10 September); and
- Final phase: seed formation and ripening (11–30 September).

At the end of each phase, the total deficit for a phase is equal to the sum of all the deficits in each 10-day period within the phase. Also at the end of each phase, payout is computed according to the value of the corresponding rainfall deficit and is related to a Rainfall Deficit Index (RDI). This index increases when rainfall decreases. The contract was structured from a micro prospective. Nyala promoted and sold the product through the Lume Adama Farmers' Cooperative Union. The Union was essential in securing farmer participation, as it is a trusted delivery channel for farmers that already buy seed and fertilizer through the union. LAFCU bought drought insurance for the rainy season (i.e. all three cultivation phases), covering a total of 137 farmers (seven of whom were women). When drought occurred in 2009, the growth of haricot beans was impeded and payouts were triggered. The indemnities were paid within 60 days and totaled 24,300 USD (309,000 Birr), or approximately half the maximum payout. This amount was paid to Lume Adama Farmers' Cooperative Union, which then distributed it to the 137 insured farmers.

A preliminary evaluation of the pilot indicates that the insured farmers understood the insurance policy well and were aware of its potential benefits. In addition, other farmers in the region have approached Nyala and its partners, asking to be included in the next phase of the pilot and expressing interest in a product that would cover crops such as maize and teff. Nyala signaled interest in this type of expansion, but it would only consider it feasible given significant capacity-building efforts and government support. The government considered the Nyala pilot a good learning experience in providing crop insurance in rural areas, and it supports continuing the program. It believes that index insurance has the potential to increase production by sharing risks and assisting farmers in adopting new technologies. It is particularly interested in replicating the experience in other regions, so that they might see similar benefits (e.g. reduced effects of natural hazards on susceptible crops). Together with international organizations, the government would be willing to provide financial support to insurers and farmers' unions to sustain the program. Priorities include creating incentives, providing access to credit, and improving farmers' understanding of the nature of insurance through organizing training workshops, identifying potential stakeholders, and creating awareness. Although generally favorable to the development of weather insurance, the government sees some areas in need of improvement. Adequate training for farmers, unions, and insurers (as well as its extension workers and National Meteorological Agency staff) would be essential to future success. Improvements in the timing of payouts would also be needed. In addition, some changes in the process of insurance development should occur. In particular, a major effort should be made to provide more access to credit for farmers. In this regard, farmers' cooperative unions have a central role in providing credit to farmers to pay premiums and possibly in marketing beneficiaries' products (IFAD and WFP 2010).

4.8.3. Crop Insurance Pilot of World Bank in Alaba Woreda

The World Bank implemented a pilot project on weather-based index insurance for rainfall risks associated with maize production in Alaba *woreda* of the Southern Nations, Nationalities and People's Region (SNNP) in 2006. The three major prerequisites for implementation of an index based weather risk management program include: (i) weather data; (ii) risk taker to write or intermediate the contract; and (iii) institutional settings and options for delivering the contracts to clients (World Bank 2006).

The Ethiopian Insurance Corporation (EIC) was selected to provide underwriting for the insurance project, while two cooperatives agreed to deliver the products to farmers in the project area. Farmers living close to the weather station in the Alaba *woreda* were identified as potential clients through a field-based assessment of their exposure to weather risk and demand for weather insurance. While, ultimately, individual farmers would be the policyholders, the cooperatives were used as client aggregators to facilitate the transaction with farmers. After the initial field research, based on the findings and scientific inputs such as agronomic research and crop growth models, a rainfall index was designed to serve as a proxy for yield loss due to drought.

The index that was developed looked at historical rainfall data as well as agronomic inputs and field based research to determine the impact of shortfalls in rain during the critical growth periods for maize. The index was used in turn to design an insurance policy which would payout when adverse weather occurred. The policy broke the growing season into three stages as well as an initial sowing period. After the policy was designed, it was field tested with the farmers to determine if the policy met their demands for a weather insurance product but also accurately reflected losses. Refinements on the product were made based on farmer's feedback, and the finalized policy was marketed to the two identified cooperatives with the assistance of a local development agent (World Bank 2006). Moreover, given that only 28 farmers decided to purchase the product, no reinsurance was required.

Upon completion of the pilot, it was concluded that significant challenges still remain for development of scalable and sustainable weather index insurance in Ethiopia. Foremost among these are the limited weather data and lack of a strong marketing channels and intermediaries for the product. The results of the Alaba pilot reveals the key issues that need to be addressed to scale up and sustain the weather index insurance in Ethiopia. These include:

- **Weather data:** While sufficient weather data were found for a number of districts in Ethiopia (including the district in which the pilot was run) the absence of an extensive, sufficient quality weather station network (spread over most geographical regions with little missing data) remains a challenge.
- **Intermediary networks:** The absence of an intermediary network with commercial incentive to distribute this insurance product beyond the cooperatives included in the pilot was also identified as an obstacle.
- **Limited penetration of agricultural credit:** Weather index products are often distributed via agricultural credit providers who are incentivized to encourage (or compel) the client farmer to take up cover as it also covers their credit risk. In this respect, the overall state of the agricultural finance and the limited penetration of agricultural credit were also identified as key challenges: "the general promotion of rural

and agricultural credit markets would need to be improved in order to promote a conducive environment for weather insurance products" (World Bank 2006).

- **Market distortions:** At the time of the pilot, the Ethiopian government's fertilizer guarantee scheme, provided guarantees on fertilizer that were provided to farmers on credit. The guarantee covered a variety of risks including drought thereby largely eliminating weather variability as a risk for the credit provider. There was, therefore, little incentive for farmers to take up any additional cover.
- **Capacity of cooperatives:** Furthermore, it was concluded that most cooperatives have limited capacity and skills to administer large weather insurance projects (Smith and Chamberlain 2009).

On the positive side, the results of the pilot project reveal that EIC understands index based weather insurance contracts and can design contract parameters. Moreover, the index based weather insurance could be used to assist the government in transitioning to a more market-based approach towards reducing risks. The final report of the pilot program indicates that the pre-requisites for the implementation of an index base weather insurance program in Ethiopia were met for the purposes of a pilot. However, without additional investment and potential policy changes, the environment is not currently conducive for the development of a larger weather insurance program (World Bank 2006). In our view, it would be very difficult for the World Bank group to generalize for the entire country by only conducting a pilot of 28 farmers in two cooperatives. As a matter of fact, the pilot was a success from the point of the insurance policy providers. Since there was no drought during the pilot period, EIC did not pay for losses. If the insurance company is not paying for losses, this could send a wrong message to farmers: why do they need to be insured?

4.8.4. A Pilot Livestock Indemnity Insurance for Smallholder Farmers

The objective of the Ethiopia Pilot Indemnity Livestock Insurance Project (PLIP) was to develop and test a livestock indemnity insurance product for high value livestock (cattle and sheep). The PLIP targeted smallholder livestock and dairy farmers in urban and rural areas around Addis Ababa. The pilot project had a broader goal of supporting the development of the livestock sector by enhancing the quality and quantity of livestock production and safeguarding smallholder farmers against inherent risks. After signing the contract with the World Bank, AEMFI invited the potential insurance companies in Ethiopia to participate in the piloting. However, only three insurance companies showed keen interest in the pilot project. Although there were consultations with the three insurance companies, Nyala Insurance Company, with solid experiences in multi-peril crop insurance and weather index crop insurance to smallholder farmers, was selected to pilot the livestock insurance. Thereafter, a Memorandum of Understanding (MoU) was signed between AEMFI and Nyala Insurance Company to manage and implement the PLIP under the supervision of the World Bank PLIP task team.

The pilot areas were selected on the basis of proximity to Addis Ababa, cost, livestock production potentials, and potential for replication. The Debreberhan area was selected for the pilot livestock insurance project for its potential in dairy production, while the Debrezeit area has a relatively higher potential in livestock fattening. Although the demand study identified MFIs and cooperatives as viable options to deliver insurance products to smallholder livestock farmers, only cooperatives (particularly the unions and primary saving and credit cooperatives) were selected as more appropriate channels to pilot the smallholder

livestock insurance products. Under the cooperative delivery channel, Nyala issues the master insurance policy to the cooperatives and, in turn, the cooperatives undertake formal agreements with individual farmers. Finally, a total of four SACCOs (two SACCOs, namely Kokeb SACCO and Angulala SACCO, around Debreberhan area and two SACCOs, namely Ude SACCO and Codino SACCO, around Debrezeit area) were selected as the delivery channels in the piloting process.

The key features of the high-value livestock insurance product developed by Nyala Insurance Company include the optimal insurance premium price points, level of coverage, and other cost factors. The insurance product reflected the key interests of farmers, which include: (i) risk transfer which relieved them from seeking loans and family support, thus reducing social dependence; (ii) the insurance policy served as collateral for loans; (iii) insurance is considered as an input for improving income and livelihoods; (iv) educating farmers on financial services (loans, saving, and insurance) helps farmers to appreciate insurance products and increase the demand for micro-insurance; and (v) broadening or bundling the insurance coverage to include non-livestock insurance such as life, accident, and health will make insurance more valuable and feasible. Nyala charges the same rate of premium for cattle (3 to 4 months), milk cows for a year, and calves over 90 days. The product is a stand-alone product which was channeled through cooperatives, particularly unions and primary saving and credit cooperatives. Although the master insurance policy was issued to the primary cooperatives, each farmer is given a certificate which helps him/her to access loan from finance providers, serving as collateral. SACCOs paid the premium on behalf of the farmers; SACCOs also allowed premium payment by farmers in advance or through installments. The product is free of commissions and management fees by SACCOs. However, the management expenses of the insurer will be a charge to the premium account.

Once the product was designed by Nyala Insurance Company, there was a need to get an approval on the underwriting process and wording of the reinsurer (Swiss Re.) This includes product specification, conditions, exclusions, premiums, etc. The farmers had strongly reacted to some of the conditions and exclusions during the training and discussions. These conditions and exclusions were further discussed with the reinsurer. Although Nyala had found a reinsurer ahead of time, the reinsured put very strict conditions and exclusions which farmers may not accept. The negotiations and approving the insurance policy with the reinsurer took much longer time than anticipated. Moreover, the issue of reinsurance was not properly treated during the technical design of the pilot project. However, given the commitment of AEMFI and Nyala Insurance Company, the reinsurance problem was amicably addressed.

After a decision was made on the pilot areas, the staff of the micro-insurance service center of Nyala Insurance Company arranged a meeting with the managers of the Savings and Credit Cooperative unions and cooperative promoters. This was followed by focus group discussions with farmers, union and primary cooperative leads, experts of the w*oreda* Rural Development and Agriculture office. The objective of the focus group discussions was to orient the SACCO leaders, union managers, cooperative promoters, and experts of the *woreda* Rural Development and Agriculture office on the benefits and main features of the product and process of implementing the smallholder livestock insurance pilot project. Eight focus group discussions were conducted with the potential beneficiaries of the livestock insurance pilot project and key stakeholders. Training the farmers and stakeholders on

benefits of livestock insurance and the draft product document and details on the features of the livestock insurance product (policy conditions, coverage, premium, and modality) was a critical process which helped farmers to understand the importance and to declare their demand (filling the proposal forms). The focus group discussions assured the insurer that there is an effective demand for livestock insurance. This was followed by intensive training on the draft policy document (policy conditions, coverage, exclusions, premium, and modalities).

One of the serious issues that were raised by farmers during the focus group discussions was affordability or premium. Since the premium was not disclosed during the focus group discussions, farmers initially were skeptical on the insurance product. However, after they had the information on the premium, farmers tended to increase the number of livestock they wanted to insure. Finally, farmers expressed that the premium is reasonable and affordable. Farmers feared that they may not be able to advise the insurer within 24 hours about the death or loss of the insured cattle, as the contact numbers may not be reachable from the rural communities. However, Nyala proposed that farmers could report to the *kebele* Development Agents, who certify the incidence, in 72 hours. This was found acceptable by farmers. Farmers did not want any exclusion in the insurance policy, e.g. Mastititis (breast disease of milk cows arising from sanitation). The staff of *woreda* Rural Development and Agriculture offices were able to convince the farmers that this is not covered by pilot program, as farmers have to do their share to secure the safety and good health of their cows. Similarly, a number of conditions and exclusions of the insurance policy have been made acceptable to farmers through discussions.

Although the pilot project is in the process of selling the insurance policy, it has issued master livestock insurance policies to the cooperatives. A total of 233 farmers, owning 277 cattle, were covered through the policies. The main challenges during the implementation of the pilot project include:

- Limited capacity of the insurance provider in data collection and document the details of the process of piloting.
- The cost and time needed to get the right reinsurer was not properly considered in the technical design of the pilot project. However, this created a delay in implementing the pilot project. The issue of reinsurance has been amicably addressed by Nyala Insurance Company and AEMFI. Despite the challenge of reinsurance, there is a need to attract international reinsurers who could also supply international expertise.
- The unavailability of ear tags in the markets was another challenge. Although Nyala has already imported the ear tags, it took much longer time, which was not anticipated.
- Limited interventions to link the insurance products with other financial services, such as loans and savings.

The pilot program has been successful in attracting smallholder livestock farmers by providing affordable premiums. Nyala Insurance Company will continue to refine the product based on the experience of the pilot. Since the pilot was aimed at providing livestock insurance policy on market basis, this strengthens its long-term viability. The insurance company has a plan to expand the product to other regions in the country.

4.8.5. The Index Insurance Innovation Initiative (I4) Pilot Studies in Ethiopia

The objective of the I4 project titled "Interlinking weather index insurance with credit to alleviate market failures and improve agricultural productivity in rural Ethiopia" is to test whether innovative methods to provide insurance for smallholders can be designed exploiting local institutions such as the *iddirs* and cooperatives and that a simultaneous provision of credit and insurance to rural smallholders can solve the puzzle of interlocking market failures and low level equilibrium traps when credit and insurance markets are missing. Three of the five I4 financed pilot projects, discussed below, are being implanted in Ethiopia since 2011. These projects focus on (1) linking insurance to credit in rural Ethiopia, (2) providing weather indexed insurance products to smallholders through the *iddir* institution to minimize basis risk, and (3) providing index-based livestock insurance to pastoralists and semi-pastoralists.

1) Linking Insurance to Credit: Pilot Implementation and Progress so Far

This pilot is a collaborative project by the researchers from the University of California, San Diego, the Food and Agriculture Organization (FAO), and the Ethiopian Economic Association (EEA) of Ethiopia.

Risk-driven reluctance to invest in inputs such as fertilizer and improved seeds may be largely responsible for the fact that Africa has not undergone a ‘green revolution’. The obvious policy intervention to protect farmers against such risks would appear to be insurance indexed to local weather conditions, but when such products have been introduced in the field they have typically been met by surprisingly low uptake. The idea of the project is to use innovation in financial services by linking credit with weather index insurance to spur a meaningful expansion of the use of agricultural technology.

Rather than addressing only a credit constraint (in which case risk rationing can remain a barrier, as in Boucher, Carter, and Guirkinger [2008]) or insurance failures (which reverse the time-inconsistency problem and ask farmers to pay now in faith of a future benefit), the project seeks to test a form of rural credit that is interlinked with weather index insurance, in the sense that the latter will provide a collateral substitute. To this end, the project tries to implement a two-armed randomized trial in collaboration with Ethiopia’s largest private-sector bank (Dashen Bank) and one of the largest private insurance companies (Nyala Insurance). One arm will offer a standalone index insurance product, and the other arm will offer state-contingent loans, interlinking the provision of insurance with the provision of credit. The interlinked treatment arm addresses the intertwined nature of these two financial services but also may help to assist present-biased farmers in deciding to use improved inputs as well as resolving the credibility problem faced by insurers asking new clients to pay premiums up front.

In the original implementation design and timeline, the activities envisioned for the first year until August 2011 involved selection of the *kebeles* (villages) for the implementation, weather index construction, credit and insurance contract design, baseline survey, and product campaign and marketing. Product development, weather index design, as well as a baseline survey were to be completed before the start of the campaign of insurance sales and input use in early spring 2011. The project has completed all the pre-campaign activities, largely as originally planned. In particular the baseline survey, covering 2,399 households in 120 villages, was concluded. The survey was conducted by the Ethiopian Economics Association who has been excellent collaborators so far in the project. The fieldwork was concluded in a

very satisfactory fashion, and the data has been cleaned, including GPS coordinates for all the study households. The survey also included collecting information on the villages and financial and other operational details of the village-level cooperatives.

IFPRI has conducted extensive work on the probability distributions of rainfall in rainfall stations near the villages of implementation, as well as in the villages. Interpolation programs have been designed to translate rainfall observations in the existing rainfall stations to estimated rainfall in the villages. Weather indices have been constructed and proposed for all major crops in the 80 villages that will be the focus of the study in terms of product sales.

On the product deployment side, progress has been slower partly because it takes time to work out the details of the working guidelines with the local insurance company. This delay is particularly related to the novelty of the indices proposed, and the concept of interlinkage. The project has now developed both the index and the interlinked product complete in all details. However, additional work is required to establish a link between Nyala and a reinsurer. The project is hoping to establish such a link with an international reinsurer called Swiss Re, which is still a work in progress.

The most important lesson learned thus far is that it takes long time to promote new ideas at both the insurance and financial institutions, as well as the recipients. The capacity of the insurance companies must be carefully assessed and appropriate training must be provided. In particular capacity for index insurance product design is important. It is important to have infrastructure in the field by at least one of the partners (insurance and financial institution).

Another lesson is that whatever indices are designed, they have to be simple and transparent. Considerable time was spent during this year, in discussing an innovative index that was produced by the I4 team, but which was much less transparent than indices that the insurance company was familiar with. The result was that when an index was finally agreed it was very late in the season to organize and plan a proper marketing campaign.

Another lesson learned is that albeit there are ways to interpolate rainfall between rainfall stations, a fact that potentially lessens basis risk, this is considered as a non-transparent method by the insurers and hence must be abandoned for less accurate but more readily observed rainfall indices.

There is potential to lessen transactions cost by working through cooperatives and unions, but this has to be tested, as it has not been tried yet. The insurance companies as well as the financial institutions need training in the new ideas of weather index insurance and interlined products.

The uncertainty that surrounds the government policy for the provision of inputs is a potential hindrance to the development of insurance and interlinked products. The regulatory environment must be clear and stable. The fertilizer market is still not liberalized, and hence inputs must be obtained in a cumbersome fashion by farmers through the unions. This is problematic.

There are a lot of issues, including trust involved in public-private partnerships, and these must be worked out clearly before a partnership is launched. There seems to be a stronger scope for an interlinked insured credit product in Ethiopia. The financial institutions are not aware of such possibilities, namely to use insurance as collateral substitute, and they worry about the residual risks or providing credit in this fashion. It turns out that the non-repayment risks that worry the banks are still there, as weather insurance cannot insure all the risks

inherent in production. Hence, the banks must be willing to take up this residual risk, or obtain some guarantees from somewhere to this end. The country is not ready yet for a large scale insurance product application. There are a lot of issues relating to basis risk. Indices must be tailored to specific locations and this implies that there must be quick information on rainfall from the rainfall stations. Administrative and procedural steps need to be simplified and clarified at the National Meteorological Agency (NMA) which is not yet ready for large scale operations.

2) Using Traditional Groups to Promote Index-Based Weather Insurance in Ethiopia

This pilot is a collaborative project between the International Food Policy Research Institute (IFPRI), Oxford University, and Buusaa Gonofaa Microfinance Institution in Ethiopia.

Weather related risk remains a major challenge to households in low-income economies whose livelihoods depend on agriculture. With changes in climatic conditions, agriculture has become an increasingly uncertain business. Well organized insurance markets have the potential to help mitigate the adverse consequences of such risks, and consequently, the provision of simple and affordable insurance products to those households has received significant attention in recent years. Recent developments in index-based weather insurance offer new possibilities of providing insurance for smallholder farmers in those areas and, as such, become a glimmer of hope to help farmers adapt to and build resilience against ever changing weather conditions. However, basis risk—residual risk left uninsured by the index—remains a key challenge to index-based weather insurance reducing the latter's value for farmers.

This pilot study in Ethiopia is an effort to tackle this problem. A unique feature of the index insurance policy offered by this pilot is that products are sold through risk-sharing groups (*iddirs*), which, besides reducing transaction costs and increasing individual farmers' trust, can help mitigate basis risk.

Product design

Two policies are designed in this pilot for each month of the rainy season (May–September): a severe-loss policy that pays out 500 Birr with probability of 0.1 and a moderate-loss policy that pays out 500 Birr with a probability of 0.2. These policies would pay if rainfall in a specific month is short of a given threshold specified for each selected weather station. Weather station based historical (30–40 years) rainfall data is used to design this index. We checked whether or not these policies are good policies for smallholder farmers (i.e., whether the policies would insure a sufficiently large part of the rainfall risk reported by households), using historical rainfall data and long-run data on agricultural income and consumption. Several distinctive positive correlations are found between the years that these policies would have paid and reports of droughts, indicating that these policies would be useful to farmers. The policies also perform well when compared to qualitative data obtained through focus group discussions.

Pilot design and marketing

A total of 110 villages were randomly selected from Shashemene, Dodota, and Bako-Tibe woredas of Oromiya region in Ethiopia. These villages come from 15 kilometer around three weather stations in each woreda. The product was offered in 60 villages and 50 villages were controls. Of the treated, 35 villages were randomly selected to receive group marketing of the insurance contract through the *iddirs* ("*iddir* villages") and the remaining 25 villages

were randomly selected to receive individual marketing of insurance ("individual villages"). In the *iddir* villages, *iddirs* were also encouraged to strengthen their ability to make transfers to their shock-victim members. In 18 villages pre-specified rules were mandated ("mandated villages") and in 17 villages no rules were pre-specified ("non-mandated villages). To encourage groups to set up rules governing the loans, a cash payment was promised at the end of the insured period to all groups that participated. Similar cash transfers were made to selected individuals in the individual villages.

First insurance policy sale activities took place in April 2011. As very few policies were purchased in May and June, some discounts and free-insurance were offered for September 2011. A total of 1,281 policies were issued. Rains were poor, resulting in substantial crop losses for farmers, so payouts were made at the end of October. Second season sales took place in April 2012, with "gap insurance" added to the product; the feature allows farmers to get a second chance of claiming verification of their harvests in the event that the weather station fails to predict the rainfall situation on their plots. A total of 1,537 policies were sold in this second season. Payouts were also made for the May 2012 policies that were triggered in Dodota and Shashemene.

Preliminary outcomes and lessons learned

It is fundamental to note that pilots like this can be only sustainable if they are well grounded and well received by local institutions. This requires a number of iterative discussions, capacity building efforts in local institutions, and ensuring that the projects are owned by these local institutions. This pilot project has just done that and through the lessons learned from this pilot there are chances that the refined products can be scaled up to new areas on purely commercial basis. Buusaa Gonofa MFI is optimistic to continue this work in collaboration with Oromiya insurance, a partnership that has been worked out between the two institutions for quite some time now. There are hopes that an international reinsurer will come into play in this work. The final outcomes are to be seen in the coming years.

A number of interesting findings and lessons have been documented from the pilot level experimentations with regard to the potential welfare effects of the products offered so far. This is summarized as follows. The assessment made has first explored the impact of treatments on insurance take-up and changes in *iddir* rules. Results show that insurance purchases were higher in both individual and mandated villages, compared to the *iddir* villages in which there was no mandate on sharing rules. The results also indicate differences between individual and *iddir* villages in changes of perceptions regarding payout size and information flow. Compared to individual villages, those in *iddir* villages (both mandated and non-mandated) thought the size of insurance payouts were more likely to be large enough to help the family in a time of need, and those in *iddir* villages, especially those with mandated rules, reported they were more likely to know others that received a payout .

Payouts were found to have a significant impact on a household's trust in 'financial institutions would honor insurance policies'. This was the case both for the insurance payouts and the promised money to *iddirs* and individuals at the end of the period. This provides evidence to support the observation that nothing sells insurance like insurance payouts. Further, it highlights the importance of insurance payouts in encouraging and sustaining insurance demand over time. This is an important finding for index insurance where policies are designed to cover extreme events and payouts occur quite infrequently.

As expected, mandating increased lending by *iddirs*. Respondents in *iddir* villages were more likely to report that their *iddir* had started making loans for crop losses. However, this was driven by changes in mandated *iddir* villages, given that no difference was observed between the non-mandated *iddir* villages and the control villages. This suggests that the intervention did result in anticipated *iddir* rule changes in mandated *iddir* villages, and additional risk-sharing may have been crowded in. As a result, we find that the perceived and actual ability of individuals to receive transfers in times of need was higher in mandated *iddir* villages.

The above discussed effects on take-up and changes in *iddir* rules have plausible impacts on welfare outcomes for households in treatment villages. We found significant differences in a number of welfare outcomes between treatment and control villages in Shashemene. There are a number of differences between the Shashemene and non-Shashemene sites, but to the extent that making payouts is one of the differences, it does suggest that insurance payout (which encourages risk-sharing) results in positive welfare gains.

In terms of welfare, although few systematic differences between households in individual villages and control villages are observed, the analysis shows a systematic difference between households in *iddir* and control villages in Shashemene, specifically in mandated *iddir* villages. Households in mandated *iddir* villages in Shashemene were more likely to make purchases of durable consumption goods (clothing, footwear, and mobile phones) and hold livestock assets than comparable households in the control villages. This may be driven by increases in risk-sharing encouraged by the mandating induced income effect that led to those purchases. Households in mandated *iddir* villages in Shashemene were also less likely to have purchased inputs for Belg production, but were planning more purchases for the forthcoming Kiremt. We do not observe any difference in food consumption between households with and without insurance. This may be because insurance payouts will have an impact on food consumption later in the year when the lean season is reached, but further analysis of data collected at that time will determine whether this is the case.

In sum, index-based weather insurance has a potential to minimize livelihood uncertainties in poor rural areas. However, basis risk remains a challenge. Traditional groups—such as *iddirs*—prevalent in rural Ethiopia are the most common forms of informal insurance in developing countries. However, they too are prone to covariant shocks that hamper wide areas. Integrating index-based weather insurance with traditional groups has the dual advantages of reducing basis risk, which will allow index-based insurance to function in those areas, and at the same time, enhancing the resilience and adaptation of traditional groups in the face of covariant shocks. Moreover, *iddirs* can be used as sustainable retail outlets for index insurance thereby reducing transaction costs, increasing trust, and potentially, elevating the organization of *iddir* functioning to a national level. Integrating formal insurance with informal insurance requires strengthening existing (*iddir*) rules to reflect new circumstances arising from the integration. Finally, institutionalizations of new rules to the *iddir* and insurance payouts have had significant impacts on insurance take-up, household welfare, and trust.

3) Providing Index-Based Livestock Insurance to Livestock Keepers in Kenya

The International Livestock Research Institute (ILRI), in collaboration with various partners, has pursued a comprehensive research agenda aimed at designing, developing, and implementing market mediated index-based insurance products to protect livestock keepers

from drought related asset losses they face, particularly those in the drought prone Arid and Semi-Arid Lands (ASALs). For pastoralists whose livelihoods rely solely or partly on livestock, the high livestock mortality rate resulting from droughts has devastating effects on asset levels, rendering them among the most vulnerable populations in Kenya.

Index-based insurance products represent a promising and exciting innovation that could allow the benefits of insurance to protect the climate-related risks that vulnerable rural smallholder farmers and livestock keepers face. Because index insurance is based on the realization of an outcome that cannot be influenced by insurers or policy holders (such as the amount and distribution of rainfall over a season), it has a relatively simple and transparent structure. This makes such products easier to administer and consequently more cost-effective to develop and trade. Indeed the success of several pilot programs conducted in India and various countries in Africa and Latin America have proven the feasibility and affordability of such products.

Much of the initial phase of the project, which included an extensive program of field work and stakeholder consultation, is now complete. The research has generated useful insights that have been used in the design of index-based livestock insurance (IBLI) products that are better targeted to the various needs of the expected clientele. Currently, an IBLI contract has been modeled, priced, and tested among the target clientele and has been implemented. ILRI, in collaboration with partners from the public, private, and non-profit sectors, piloted IBLI contracts for the long rain/long dry season scanning March 2010 to September 2010 in the Marsabit district. This piloting work is still ongoing on both sides of the border between Kenya and Ethiopia. It carries the following objectives: (1) To effectively introduce index-based livestock insurance products to pastoral and agro-pastoral populations to help them manage drought-related livestock mortality, and (2) To learn and document the effectiveness of index-based livestock insurance as a tool for managing weather related perils and to incorporate lessons learned in efforts to upscale the pilot for national rollout. The expected outputs include: outputs catalyzing a commercially sustainable market for index-based livestock insurance; understanding its possible role as a productive safety net within a larger social protection program; and stabilizing asset accumulation and enhancing economic growth, crowding-in finance for ancillary investment and growth, and stemming the downward spiral of vulnerable households into poverty.

5. Meso-Level Support Providers to Expand Micro-Insurance Services

Developing supportive meso-level technical service providers with the required human, financial, technical, and information resources to deliver quality micro-insurance services to the low-income households is a critical strategic intervention. The lack of technical capacity calls for micro-insurance providers to build their competence—including product development, delivery, collections, systems development, accountability reporting, as well as staff development and retention. In the Ethiopian context, many insurance and micro-insurance providers do not have appropriate systems, trained staff, client-centered financial products, etc. to expand their activities. To fill the gap, many of the insurance and micro-insurance providers offer in-house capacity building programs by the institutions themselves. Resolution of these challenges calls for an organized and well-coordinated meso-level support system. The meso-level infrastructure that supports the emergence of micro-insurance providers include: development of infrastructure, credit reference bureau, associations and networks, human resource development, information system designers, audit service providers, front-office IT service providers, etc.

5.1. Infrastructure

The population density in Ethiopia, i.e. 81 inhabitants per square kilometer, is lower than in Nigeria (166 persons), Uganda (1621 persons), Malawi (158 persons), and Ghana (103 persons) (World Bank 2008). Moreover, about 83 percent of the population in Ethiopia resides in rural areas. Only 12 percent of the road network in Ethiopia is paved and road density remains one of the lowest in Africa (i.e. 30 km road/km^2 land, compared to the African average of 50 km/km^2). About 70 percent of the population in Ethiopia has no access to all-weather roads as they live more than 20 km away from an all-weather road. Bringing 90 percent of the population in Ethiopia within 20 km of an all-weather road would cost 4 billion USD (equivalent to 75 percent of annual GDP) (World Bank 2008). According to the information from the World Economic Forum, the mobile penetration is also very low compared with other African countries. In 2011, mobile telephone subscription per 100 people was 16.7 in Ethiopia, compared to 67.5 in Kenya, 55.5 in Tanzania, 48.4 in Uganda, and 126.8 in South Africa. Percentage of individuals using internet in 2011 was 0.4 for Ethiopia, 28.0 for Kenya, 12.0 for Tanzania, 13.0 for Uganda, and 21.0 for South Africa (Bilbao-Osorio, Dutta, and Lanvin 2013). In 2009, the landline telephone penetration in Ethiopia, 1.1 lines per 100 people, was relatively better compared to Uganda (0.7) and Tanzania (0.4); Kenya did a bid better with 1.7 lines per 100 people (Dutta and Mia 2011). The above evidence indicates that poor communication and physical infrastructure in Ethiopia increase transaction costs and limit access to micro-insurance services. The relatively dispersed population living in remote areas and the long distances between the micro-insurance providers and the homestead of smallholder farmers increases administrative and transaction costs. There is a need to support micro-insurance providers which use flexible structures and appropriate distribution channels in order to reduce fixed costs linked to delivering professional quality micro-insurance services to low-income households residing in remote areas served with poor infrastructure.

5.2. Human Resource Development

Human resource development is an indisputable factor for the successful employment of insurance and micro-insurance. The insurance industry demands a specialized knowledge like any financial sector. In Ethiopia, only a low percentage of the workforce in the insurance industry has a qualified diploma. By the end of June 30, 2010, the industry had only one licensed insurance actuary, one loss assessor, and one insurance surveyor. Thus, all insurance companies depended on foreigners for actuarial valuation of long-term insurance schemes. Specialized training on insurance and micro-insurance is not given in any of the higher institutes in Ethiopia. Insurance companies are trying to fill this gap through in-house training and foreign correspondence learning (Zeleke 2007). Moreover, the Ethiopian Institute of Banking and Insurance (EIBI), which was established in 1975, has been playing a significant role in the human resource development of the insurance industry. The institute provides a three years banking and insurance diploma program, through evening classes, to the banking and insurance sectors. However, the industry needs a specialized training and research institution to produce skilled manpower in risk assessment, risk management, actuarial science, loss assessment, and rating in micro-insurance. Moreover, the inadequate technical skills for product development restrict the expansion of new micro-insurance products in Ethiopia. This is further exacerbated by the limited availability of data (e.g. mortality data, weather data, etc.).

5.3. Technological Infrastructure

Technology enables micro-insurance providers to deliver a wider range of products and services tailored to the needs of low-income households. The use of back-office and front-office technologies such as hand-held point of sale services, smart cards, bio-metrics, and mobile telephones can accelerate the growth and depth of outreach and performance of micro-insurance providers in the next five years. The use of debit, credit, and smart cards by financial institutions promise to significantly reduce the transaction costs of delivering financial services to rural clients and improve the effectiveness and efficiency of saving mobilization. Technology has the capacity to bring banking, insurance, and rural finance services to clients in remote districts which were previously beyond the practical reach of traditional finance channels. In the Philippines, for example, insurance companies minimize the cost of collecting many small premium installments by allowing payment through mobile phones. In Malawi and Uganda, insurance providers issue smart cards to poor policyholders to confirm identity and provide instant access to information on coverage and payment of premiums. In India, internet kiosks can be used to deliver insurance products to the rural population or provide back-end servicing, reducing the transaction cost for the insurer and the MFI (Ruchismita and Varma 2009). Ruchismita and Varma (2009) note how technology has improved the delivery of livestock insurance in India. It is often difficult to determine if a livestock insurance claim is for the animal that was actually insured. The use of radio frequency identification technology to identify the animal in the event of a claim significantly reduces false claims, thereby reducing premiums substantially. The IFMR Trust product also uses Herdsman software, which maintains each animal's health records, including de-worming and vaccination records, to help track each animal's health and productivity. In conventional livestock insurance, normal copper or metal tags are used for tagging, a cover note is issued that is matched against the tag number, and then the policy is issued. The entire process often takes five days, if not longer, and involves large-scale manual

intervention, data entry, and wastage of paper. For the new product rolled out by the IFMR Trust, livestock details are sent from branches to HDFC Ergo on a real-time basis, and the policy certificate is issued in real time. For the first time, Indian farmers can get their policy certificates over the counter at the time they pay the premium. In addition, this system reduces paperwork and manual interventions, leading to further cost reductions and lower premiums. By leveraging technology and focusing on rural customers' needs, the livestock insurance product piloted by IFMR Trust promises to be a useful product for productive risk mitigation in rural markets. In the Ethiopian context, although there are challenges in infrastructure, connectivity, back office and front office technology, etc., insurers are not even exploiting the existing opportunities. (See Annex B for more information on the livestock insurance in India).

Information technology could help significantly reduce costs and improve the viability of micro-insurance services in Ethiopia, which is also true for credit and saving products. The present dearth of formal financial institutions and underdeveloped infrastructure in Ethiopia makes the use of debt and credit transfer payment instruments difficult. In the absence of checks and electronic payments (debit, credit card, GIROs, and wire transfers) in rural Ethiopia, cash is the most used payment instrument. However, the situation is expected to expand with time. Although Ethiopia has limited experiences with technology based financial products or approaches, there have been positive developments in the last two years. Banks, insurance companies, and deposit-taking MFIs have been aggressive in addressing back-office and front-office technologies. Currently, the NBE is making significant efforts to promote ICT in the financial system. A feasibility study was conducted to assess the feasibility of a national payment system for banks, which has not fully covered the connection of MFIs and financial cooperatives to the payment system. However, in spite of the positive developments in using ICT in the financial sector, there is a need to create a critical mass of technical service providers to support and promote back-office technology and front-office technologies.

Currently, the Ethiopian National Meteorological Agency collects weather data from 900 weather stations across the country, but only approximately 140 stations have the required historic records to price index insurance. The lack of infrastructure necessary to create the weather indexes makes it difficult to scale up index insurance. The design and implementation of index-based insurance products depends on a fast and transparent data collection process. However, in the Ethiopian context, data are manually collected from weather stations on a daily basis and transferred to the main center once a month through mail where it is entered into the computer at the central office. This system is slow and susceptible to errors. Thus, there is a need to establish automated weather stations to process rainfall data on a real-time basis and provide reliable information to the insurance providers.

5.4. Payment System

An improved national payment system has a direct impact on the efficiency and outreach of micro-insurance providers and also reduces transaction costs related to the delivery of micro-insurance products to low-income households. However, the payment system in Ethiopia remains cash dominated—cash, checks, and letters of credit are the major financial instruments used in Ethiopia. With regards to electronic payments, some banking institutions have issued certain electronic forms of payments, such as SWIFT and Western Union, to

settle foreign exchange transfers. Total fuel station has introduced a debit card that permits customers to pay for fuel. Dashen Bank introduced a credit card, however it is not widely used, the exception being a few hotels and shops. A number of reasons are cited for the low level of development of electronic and internet based payment system which includes the low connectivity in lines, the low level of development of high speed internet, and the lack of institutional and legal framework for establishing better payment instruments. Cognizant of these, the National Bank of Ethiopia has been working on modernizing the payments systems in the country. Few, if any, Ethiopian insurers have implemented electronic management information systems and most still operate using paper-based systems.

5.5. Associations and Networks

The association of insurance companies in Ethiopia is an alliance of all the players in the insurance sector (institutions as well as professional bankers). The association promotes the activities of its members through coordination of new initiatives and policy dialogue to promote the insurance/micro-insurance sector. Although the Association of Ethiopian Microfinance Institutions (AEMFI) has been relatively strong in providing value adding support to MFIs and financial cooperatives, it has not been successful in supporting the development of micro-insurance in the country. There is a need to support and build sustainable associations and networks that focus on promoting the delivery of micro-insurance services to low-income households in Ethiopia.

5.6. Credit Reference Bureau

The NBE claims that it has a credit bureau where the list of all clients of the banks is made available, serving as blacklisting entity. However, the information of the credit bureau is not detailed and lacks the full credit history of each client. As a result, the credit bureau is unable to fulfill its function of assisting lenders and insurers in assessing risks and price credit and premium appropriately. Realizing the weaknesses of the existing credit bureau, the NBE has proposed establishing a functional credit reference bureau and developing the legal framework and necessary directives which clearly state the rights and responsibilities of various parties. Although establishing the credit bureau under NBE will prevent misuse of customer information, such as violating individual privacy by credit bureau employees, the stakeholders themselves could be more efficient, if such deficiencies are rectified through a stable and well-functioning legal framework. Moreover, the banks, insurers, and microfinance providers can obtain customer consent for sharing information as part of loan applications, share such information with credit bureaus, and affirmatively seek such information from credit bureau for new loan and insurance applicants. The establishment of a robust CRB will improve the quality of delivering credit and insurance services. There is a need to support the current initiative of establishing CRB by banks and extend its services to all inclusive finance providers.

5.7. Reinsurance

Reinsurance is a transaction in which one insurance company indemnifies, for a premium, another insurance company against all or part of the loss that it may sustain under its policy or policies of insurance. The insurance company purchasing reinsurance is known as the ceding insurer; the ceding company may incur under certain policies of insurance that it has

issued. In turn, the cedent pays a consideration, typically a premium, and discloses information needed to assess, price, and manage the risks covered by the reinsurance contract (Iturrioz 2010). The company selling reinsurance is known as the assuming insurer, or, more simply, the reinsurer. Reinsurance provides reimbursement to the ceding insurer for losses covered by the reinsurance agreement. The fundamental objective of insurance, to spread the risk so that no single entity finds itself saddled with a financial burden beyond its ability to pay, is enhanced by reinsurance.

The nature and purpose of reinsurance is to reduce the financial cost to insurance companies arising from the potential occurrence of specified insurance claims, thus further enhancing innovation, competition, and efficiency in the marketplace. Reinsurance is an important risk management tool available to an insurer. It can be used to reduce insurance risks and the volatility of financial results, stabilize solvency, make more efficient use of capital, increase underwriting capacity, draw on reinsurers' expertise, and permit insurance agencies to better withstand catastrophic events. Reinsurance allows making insurance companies' results more predictable by limiting larger losses and reducing the amount of capital needed to provide coverage. It also allows an insurance company offering higher limits of protection to a policyholder than its own assets would allow. More importantly, reinsurance facilitates efficient transfer of risk and expansion of risk acceptance capacity, which translates into a more balance risk portfolio, thereby enhancing the financial stability of operations.

The marketing research agency Data monitor (2008) indicates that the world reinsurance market has shown an aggregate annual growth rate of 5.5 percent for the period 2003–2007. The pace of growth accelerated to 9.7 percent in 2007 which can be attributed to the growing interest of reinsurers to use foreign markets (particularly developing and transition markets) as viable means of growth and diversification. The market size is measured by the total amount of underwriting premiums which accounted for 168 billion USD in 2007. Compared to 2008, the global reinsurance market slightly decreased to reach 157 billion USD in gross premiums written. The reduction of 1 percent in 2009 is by far smaller than the reduction by one-fifth in 2008. Gross premiums in life reinsurance amounted to 52 billion USD compared to 57 billion USD in 2008 and retrocession went down by 45 percent. Non-life reinsurance grew slightly to reach 105 billion USD (IAIS 2010). The US has the largest market share of the reinsurance industry at 55.7 percent.[8] The US is followed by Europe who accounts for 34.5 percent of the reinsurance market. According to market experts, the size of the reinsurance market could reach 223.5 billion USD by 2012. Among the leading global reinsurers are Munich Re and Swiss Re with 17.5 percent and 15.8 percent market shares respectively. Data derived from the annual Global Reinsurance Market Report (GRMR), produced by the International Association of Reinsurance Supervisors, indicates that notwithstanding rapid growth in emerging markets, North America retains the largest share of the reinsurance industry at 47 percent and Europe remained largely dominant with a 38 percent share of the market (Figure 5.1).

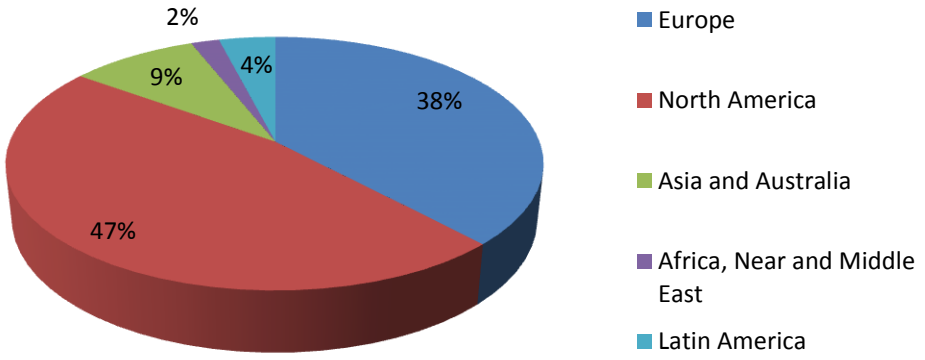
The level of agricultural insurance cessions to the reinsurance market in any particular country depends on the type of agricultural risks written and the financial strength of the insurance market. The types of agricultural risks written by the insurance companies have a great influence on their reinsurance strategy. Agricultural insurance portfolios that are

[8] Of the 220 reinsurers studied from 48 countries by Standard and Poor's, the U.S. had the largest number of reinsurers surveyed - shows the importance of U.S. reinsurers in the global marketplace.

exposed to systemic risks show higher cession rates than those that are exposed to non-systemic risk. For instance, in countries such as Brazil or Paraguay, where agricultural insurance portfolios are composed mainly of MPCI policies, reinsurance cessions for agricultural insurance can be as high as 80 percent. In other countries, such as Argentina and Uruguay, where the main agricultural peril written by the insurance companies is hail, levels of reinsurance cessions are below 50 percent. The market level of expertise in agricultural insurance also has a huge influence on the reinsurance strategies of insurance companies. The financial strength of the local insurance market has a significant influence on the level of agricultural insurance risk cessions to reinsurance. In countries where the insurance market is relatively weak, the use of insurance fronting[9] is a common practice; however, agricultural reinsurers are reluctant to provide reinsurance capacity to fronting insurance companies and do so only for very particular cases and under facultative agreements where they can control the underwriting and loss adjustment process (Iturrioz 2010).

Despite the limited share of reinsurance activity in developing markets, compared to total global activity, there appears to be increasing activity in developing and transition markets. Cole et al. (2010) in a recent analysis of the internationalization of the reinsurance market find that commonly cited factors for the increasing foreign market penetration include a rise in the number of countries participating in free-trade agreements, the continued growth in the domestic markets of developed and developing countries, benefits of diversification, and an overall increase in the demand for various goods and services. Developing countries are of key interest in the internationalization strategies of firms due, in part, to the potential opportunities of these untapped markets. These opportunities include the growth in wealth in these countries, the underdeveloped markets in many industries to serve this demand, and governmental incentives that are intended to help quickly foster the knowledge base to further develop these markets.

Figure 5.1. Gross premiums assumed by region of ceding insurer



Source: IAIS (2010).

[9] A fronting arrangement can be considered as an alternative risk transfer method where an insurer licensed in a certain jurisdiction (fronting insurer) issues a policy to cover local risks but all or virtually all of such risks are then ceded or reinsured with an unlicensed carrier (reinsurer), who will normally take over the administration of all claims related to the risks. In exchange for its services, the fronting company normally receives a small percentage of the total premium. It can be said, therefore, that the fronting company issues a policy and appears to the world to be an insurer, but in reality it has actually passed on to a given reinsurer most or all of the risk of coverage and most claim-handling obligations.

While historically the insurance markets in some of the developing countries may have been highly protective and immature in nature, the demand for foreign insurance (measured by the amount of reinsurance assumed from a particular country) in some developing countries is currently high. Cole et al. (2010) used the World Bank's categorization to distinguish between developed and developing countries and sampled 55 countries (28 of which were developing countries) between 1996 and 2004 and found that in every year at least one of the top ten countries in terms of total volume of net reinsurance was a developing nation (Cole et al. 2010). The demand for foreign involvement in insurance and reinsurance markets may be the result of several factors relating to the needs of the domestic insurance industry. For example, in developing countries, due to the nature and size of the market, there may not be adequate diversification of risk based on the business written by domestic insurers, thus creating a need for a substantial transfer of their portfolio to reinsurers (Outreville 1990). Moreover, economic and social conditions in developing countries—involving liberalization, privatization, and de-monopolization—are stimulating the demand for insurance as insurance companies in developing countries require indemnification in the case of major losses and consumers require protection to militate against external shocks.

Falush (2007) indicates that most countries have introduced insurance legislation and supervision and opened up their markets for foreign insurers, albeit some only allow minority interest. The bulk of this legislation is in a state of flux as the need for an effective supervisory structure is becoming evident. The principal objectives of supervisors are the authorization of new companies that can be relied upon to maintain their solvency, and the establishment of monitoring systems that assure continuing reserve adequacy. Conditions of rapid growth, high rates of inflation, and underdeveloped financial markets tend to expose both insurers and supervisors to challenging decisions. Beyond considering the impact of reinsurance on the solvency of domestic companies, reinsurance regulation has not received much attention, partly because of the absence of significant domestic reinsurance activity in developing countries and partly due to the absence of a reinsurance regulatory model (Falush 2007).

PartnerRe, a leading international reinsurer, has supported the design and implementation of programs in developing countries at both macro- and micro-levels. The company has stressed the importance of addressing several constraints existing in the marketplace to achieve the sustainable development of profitable insurance markets in developing countries. The main market requirements that have been identified by PartnerRe are as follows[10]:

- **Legal and regulatory framework:** Most emerging markets have not addressed the legal and regulatory implications of transfer mechanisms and its classification as insurance. Regulators need to understand the idiosyncrasies of micro-insurance products and approve the given level of basis risk and the trigger levels under the payout mechanism prior to product implementation.
- **Client capacity:** In order to successfully implement risk transfer programs, it is necessary to cultivate a risk management mentality among the targeted client base. Educating potential clients, especially smallholders, is time consuming. Surveys have

[10] Market requirements were outlined by PartnerRe in respect to parametric insurance products (an insurance contract where the ultimate payment or contract settlement is determined by a weather or geological observation or index) but can obviously be broadly applied to other types of insurance products being developed in developing countries requiring reinsurance facilities.

shown that a relationship of trust between the client and a local financial institution is the key to successful product launches in emerging markets.

- **Capacity building:** In order to develop a self-sustaining marketplace, local financial institutions must be trained with regard to risk transfer products. Many financial institutions in developing countries do not have the technical capacity to assess risk exposures or build accurate financial loss distributions. Since local institutions lack the technical expertise to design products, new programs do not get off the ground without the support of organizations that possess commercial expertise in these areas.
- **Alternative technologies for contract settlement:** Quality data is central to risk assessment and product development for specific micro-insurance products. For instance, the absence of quality weather data is a major constraint to the spread of weather index insurance in many regions. Given the importance of data and the potential cost of creating and maintaining new data systems, there is a need to explore alternative technologies for contract settlements that are acceptable to the end-user and the underwriter.
- **Alternative delivery models for micro-insurance products:** Insurance distribution systems in some developing countries may need to be enhanced to reach target markets. Most insurers' operational infrastructure is centralized in urban areas and access to potential clients in rural areas is limited. Recent literature has identified Africa's largely rural economy as an important source of potential demand, including possible applications for financial intermediaries, input suppliers, processors, and aggregators, etc.
- **Sustainable economics:** The economics of risk transfer must be viable for both the insurer and the insured. Clients must feel they are not overpaying for risk transfer and likewise, reinsurers must receive an adequate return for taking risk.
- **Viable risk transfer structures:** Risk management programs must be customized to the needs of individual clients. Products must be structured to manage basis risk and maximize customer confidence. Drought covers will have varying loss triggers depending on the crop. Structures have different levels of susceptibility to windstorms and earthquakes depending on design and construction methods. However, product design cannot succeed without consideration to data availability, the client's risk profile, the delivery model, the underwriter's appetite, and the regulatory framework. Product design without the participation of the financial markets often results in limited growth potential (Ibarra 2009).

In respect to agriculture reinsurance, the market is dominated by a few of the major reinsurance companies operating internationally, includeing Swiss Re, Munich Re, First RE and others. However, reinsurance support is available only for technically viable programs. Utilization of agricultural reinsurance can only be viable if certain constraints on the market, client and risk levels are appropriately addressed.

Market level: Adequate insurance regulations should be in place—with emphasis placed on capital requirements, legal security, and free flow of capital. Insurance industry regulation is necessary to ensure that companies are financially solvent and can act as a catalyst for attracting inflows of capital and business. The intensity of industry regulation often has a direct relationship with the perceived risk of insolvency of insurance companies in a particular market. Governments are expected to ensure that there is stability in the insurance market in order to protect investors and policyholders. That should be done through the

establishment of a strong supervisory authority, which handles issues such as licensing, capital adequacy corporate governance, and human resources development (Nduna n.d.).

Client level: As indicated above insurance agencies must develop expertise in the agricultural business in order to develop a self-sustaining marketplace and technical skills including actuarial, loss adjusting, risk management, underwriting skills and information technology skills to handle the reinsurance industry itself and to assist clients. Managing capacity issues is a skilled process which has to be done properly. The industry should develop its skills continuously, budgeting for it, and participating in cooperation and technical assistance programs with other regional and international institutions. The reinsurance industry should come up with Research Centers of Excellence on the continent and attempts like the Centre for Natural Catastrophes in Morocco should be emulated. In South Africa, the Southern Africa Special Risks Association (SASRIA) should be extended to cover similar risks outside South Africa. In Zimbabwe, the Special Risks Consortium meant to cover political motivated and dreaded risks should be strengthened and the concept developed in other markets.

Risk level: The complexities of agricultural insurance (i.e., asymmetries of information and potential moral hazard) have promoted the development of specialized underwriters and loss adjusters who have the skills and expertise to practice in this market. The design of suitable agricultural reinsurance programs is subject to the same complexities and requires skills and expertise. Only a selected group of approximately twenty reinsurance companies worldwide are currently providing reinsurance; an even more limited group of reinsurance companies are able to provide terms and conditions for reinsurance treaties. The public sector plays a role in agricultural reinsurance through public–private partnerships. Governments play a part where the private sector cannot offer reinsurance at affordable rates. The private sector has proven to be more cost effective than the public sector in providing reinsurance for other than catastrophe cover, while the government, through the establishment and administration of catastrophe funds, can offer catastrophe cover effectively. The role of reinsurers in agricultural reinsurance is not limited to providing reinsurance capacity for insurance companies. The agricultural insurance industry requires services that go beyond the provision of financial capacity. Reinsurers that are involved in agricultural reinsurance assist insurance companies in providing advisory services in risk assessment, risk modeling, pricing, and risk structuring, as well as in the design of loss adjustment and operational manuals, risk rating and risk accumulation control software, and the wording of insurance contracts. Several forms of reinsurance cession are used by the insurance industry to cede agricultural risks. Quota share reinsurance cessions and stop loss reinsurance protections are the most common forms. For aquaculture and forestry reinsurance it is also common to find surplus share cessions and catastrophic excess of loss protections in use (Iturrioz 2009).

Although some argue that the cross-border reinsurance provides insurers professional expertise, knowledge transfer, capacity in terms of financial leverage, and foreign exchange in times of claims (Outreville 2002), many stress that full cross-border reinsurance aggravates the outflow of the very limited hard currency of developing countries, increases the cost of reinsurance services due to exchange rate depreciation, and contributes to balance-of-payment deterioration. Moreover, it has a negative impact on the domestic insurance industry due to excessive recourse (Wang 2003). The study of Mihretu (2004) indicates that in spite of the continuous two-digit growth in the Ethiopian economy in the last

seven years, the insurance industry in Ethiopia is still entirely dependent on the cross-border reinsurers. The results of the study reveal that dependence on full cross-border reinsurance does have a negative influence on the insurance industry and the economy in Ethiopia. Moreover, the outflow due to reinsurance business disproportionately outweighs the claims recovered from the reinsurers (Table 5.1).

Table 5.1. Premium, claim, cross-border premium and claim of 9 insurance companies in Ethiopia ('000 Birr)

Year	GP	NP	NCP	NCC	NCI
2000	420,101	323,344	96,757	50,426	-
2001	450,272	330,755	96,368	59,611	368,129
2002	554,331	356,262	110,538	-351	386,143
2003	555,574	385,979	203,259	-31,794	219,947
2004	568,226	403,063	154,738	51,488	236,427
2005	640,228	455,841	158,551	18,540	256,776
2006	796,867	551,973	193,510	113,421	323,950
2007	1,002,680	714,055	241,813	116,006	441,099
2008	1,174,217	832,383	323,438	115,891	549,431
2009	1,341,048	928,441	351,431	140,745	640,105

Source: National Bank of Ethiopia.
Notes: GP = Gross (underwriting) premium; NCI = Net claims incurred; NCP = Net ceded premium; NCC = Net ceded claims; NP = Net premium (gross premium less net ceded premium).

6. Regulatory Framework to Deliver Micro-Insurance in Ethiopia

Expanding and improving the quality of micro-insurance services in Ethiopia requires a clear legal and regulatory framework. The objectives of micro-insurance regulation is expected to include: (i) safeguarding the solvency of institutions involved in the provision of insurance policies or ensuring the stability of the sector; (ii) protecting clients or policyholders; (iii) increasing the competitiveness of the insurance market and its efficiency (including the adoption of new technologies and innovations); (iv) developing the insurance market, including formalizing insurance services to low-income clients; and (v) supporting other strategies (non-insurance) objectives such as compliance with international standards or law enforcement (IAIS and CGAP 2007). The intention of regulation and supervision should focus on creating a more conducive environment to the expansion of micro-insurance, thereby stimulating the development without compromising prudential aspects.

The Licensing and Supervision of Insurance Business Proclamation No. 86 of 1994 governs all insurance activities in Ethiopia. Insurance sector players in Ethiopia fall under the regulation and supervision of the National Bank of Ethiopia (NBE). As per the Proclamation No. 86 of 1994, NBE is empowered to formulate policy to promote the business of insurance in the country and issue directives related to various areas of insurance business. The minimum paid up capital to establish an insurance company in Ethiopia is low. For an insurance company to get involved in general insurance, the paid up capital requirement is 3 million Birr (177,514 USD). On the other hand, establishing an insurance company providing long-term and life insurance requires 4 million Birr (236,686 USD); and 7 million Birr (414,201 USD) is required for both a general insurance and long-term insurance business license (composite). According to the proclamation, only a share company fulfilling the minimum capital requirement is allowed to write insurance policies. As per the law, foreign insurance companies and investors or partial foreign ownership are not allowed to operate and invest in the insurance sector. Moreover, insurance companies are prohibited in the placement of investments offshore.

There is no separate definition of micro-insurance in Ethiopia and accordingly the regulatory framework and proclamation do not make any concessions for micro-insurance. However, the regulatory framework does not restrict insurance companies from expanding into the micro-insurance market. On the other hand, the new microfinance proclamation No. 626 of 2009 allows deposit-taking MFIs registered under NBE to deliver micro-insurance services to the excluded. Since the insurance companies in Ethiopia have limited capacity to serve the low-income households, the revised microfinance law in 2009 has given MFIs the legal bases to issue insurance policies to excluded populations. Moreover, MFIs have registered remarkable growth and performance in the last ten years and can complement the delivery of loans, saving, and money transfer services with micro-insurance products. Cooperatives are not allowed to directly issue insurance policy to their members. Given the limited capacity of cooperatives, particularly in rural areas, it would be appropriate to link them with insurance companies, as agents, at this stage. In general, the current framework may not be considered a stumbling block to expand micro-insurance services in Ethiopia.

Ethiopia's legal framework regarding the insurance sector is devised of a hierarchy of proclamations, codes, and directives that outline its policies, governing structure, management, administration, and supervision. Except for a few insurance-relevant definitions in the Commercial Code of 1960, the insurance activities are governed and guided by the Licensing and Supervision of Insurance Business Proclamation. However, a

number of regulatory directives from NBE as well as several other pieces of legislation also form part of the framework and help to determine who may write insurances (Smith and Chamberlain 2009). These pieces of legislation include the following: (i) Commercial Code of 1960; (ii) Monetary and Banking Proclamation No. 83 of 1984; (iii) Licensing and Supervision of Banking Proclamation No. 84 of 1994; (iv) Licensing and Supervision of Microfinance Institutions Proclamation No. 626 of 2009; (v) Cooperative Societies Proclamation No. 147 of 1998 and Societies (Amendment) Proclamation No. 402 of 2004; and (vi) Vehicle Insurance Against Third Party Risks Proclamation 559/2008 (Table 6.1).

Table 6.1. Ethiopia's insurance industry regulation framework

Legislation	Applicable sector	General framework
Licensing and Supervision of Insurance Business Proclamation No. 86 of 1994	Insurance Sector	Governing proclamation for insurance sector. Addresses institutional set-up, prudential and some basic market conduct regulation. Institution must be a share company to be an insurer; does not allow institutional form of a financial cooperative to become insurer. No separate definition for or special treatment of micro-insurance.
Commercial Code (1960)	Insurance Sector Commercial Business	It has a negative impact when insurance policies are sold on credit. Relevant sections that currently apply are definition of insurance and insurance policy (Article 564) and section on payment of premiums (Article 666). New Commercial Code currently being drafted. It's likely that relevant insurance sections of the Commercial Code will be moved to the new insurance Proclamation.
Monetary and Banking Proclamation No. 84 of 1994	Financial Sector	Proclamation establishes National Bank of Ethiopia as separate and independent from national government. Proclamation provides Banks with the power to supervise insurance industry.
Microfinance Proclamation No. 626 of 2009	Microfinance sector	Promotes loans and saving services to the excluded population. Allows MFIs to issue insurance products.
Cooperative Societies Proclamation No. 147 of 1996	Cooperative Sector	Governing proclamation for Cooperatives sector. Places no limits on ability of cooperatives to an insurance company or intermediary.
Vehicle insurance against third party risks	Insurance Sector	Makes third party liability insurance compulsory.

Source: Adopted from Smith and Chamberlain (2009).

The Licensing and Supervision of Insurance Business Proclamation (Proclamation No. 86 of 1994) provides all power to NBE to formulate policy and to promote the business of insurance in Ethiopia and formulate policy in respect of reinsurance and of investments of insurance funds. It is also empowered to formulate policy on such other matter as may be conducive to the attainment of sound insurance business in Ethiopia. To this end, NBE established the supervision of insurance directorate to supervise insurance activities through on-site and off-site supervision. Moreover, insurance agents and brokers are licensed by the insurance supervision directorate as specified by Directive No. SIB/18/1998 and Directive No. SIB/29/2007, respectively.

In May 2011, there were 39 registered insurance brokers and 832 active sales agents in the country. Given the limited number of insurance companies in Ethiopia, NBE has been effective in regulating and supervising the insurance sector. On the other hand, although NBE is expected to promote the development of insurance, including micro-insurance in the country, it has limited capacity to promote and effectively regulate the sector. While the regulatory framework does not currently present any significant barriers to domestic players in expanding the micro-insurance market in Ethiopia, there are some gaps that need the attention of the regulators and policymakers. The key challenges include:

a) Deposit-taking MFIs were created after the issuance of Proclamation No. 40 of 1998. Although this proclamation prohibited MFIs from delivering insurance products, the revised proclamation (Proclamation No. 626 of 2009) allows MFIs to provide insurance services. This has created opportunities for the expansion of micro-insurance for low-income households. However, there has not been a clear regulatory and supervision framework to implement the proclamation. It is not clear whether all MFIs can issue any type of insurance policy to clients. There is need to issue directives which guide MFIs to issue insurance policies and build the capacity of insurance supervision directorate to effectively promote and supervise micro-insurance activities.

b) Proclamation No. 147 of 1998 regulates all types of cooperatives (multipurpose, product, and financial cooperatives). There is no separate regulation for financial cooperatives or saving and credit cooperatives (SACCOs). The Federal Cooperative Agency under the Ministry of Trade and Industry is mandated to regulate and supervise cooperatives. As per the insurance proclamation, since cooperatives are not registered as share companies, they are not allowed to write insurance policy. However, cooperatives can serve as insurance intermediaries. A cooperative wanting to engage in insurance business would be able to establish a share company insurer, 100 percent owned by the cooperative.

c) Prohibiting foreign insurance companies to operate in the country limits the possibility of partnerships which could facilitate transfer of international learning and business models, while placement of the insurers' investment funds offshore may relieve the constrained investment environment in the insurance sector and incentivize market expansion.

d) The insurance proclamation treats the issue of reinsurance as something to be specified in the insurance directives to be issued by NBE. No directive on this particular topic has yet been issued by the insurance supervision directorate. However, insurers are required to file their reinsurance agreements with insurance supervision directorate, but they are free to place their business to any reinsurer which they see fit to receive their business (Smith and Chamberlain 2009).

e) Consumer protection has not been given the necessary attention by regulators, practitioners, and development partners. There is a need to focus on the six principles of consumer protection, namely (i) prevent over-indebtedness of clients, (ii) transparency and responsible pricing, (iii) appropriate collection practices, (iv) ethical staff behavior, (v) mechanism for redress of grievances, and (vi) privacy of client data (see the details in Box 6.1 below). The regulators are expected to protect micro-insurance policyholders who are unaware about insurance products and may have limited options for responding to market conduct violations.

f) The treatment of payment terms in the Commercial Code of Ethiopia (1960) has a negative implication for cases where insurance policies are sold on credit. The commercial code states that the policy shall not terminate as of right when the premium is not paid in due time. The policy shall be suspended after one month from a demand made by the insurer. When the period of one month has expired, the insurer may claim payment of the premium or require the termination of the policy. Given the normal practice in Ethiopia, where there is the selling of insurance policies on credit in order to win clients in a heavily contested market, this has led to a lengthy process and complications with the collection of unpaid premiums (Smith and Chamberlain 2009).

g) Directive No. 25 of 2005 restricts investment options of insurance companies mainly to treasury bills and deposits (65 percent for general insurance fund and 50 percent for long-term insurers, including bonds); the rest is invested in company shares (15 percent for both general and long-term insurers), real estate (10 percent for general insurance funds and 25 percent for long-term insurers), and investments of the company's choice (10 percent). Since investing in treasury bills, bonds, and bank deposits has relatively low returns, insurance companies find it difficult to expand their activities from earned income. As a result, insurance companies have relatively lower average rate or return (16.5 percent) in 2008 compared to commercial banks. Moreover, to restrict having excessive shareholdings in any insurance company, the proclamation states that no person shall hold more than 20 percent of the company's share with his spouse and/or with any person who is below the age of 21 and related to him consanguine in the first degree relationship. Although banks are not allowed to engage in insurance business, they can hold up to 20 percent in an insurance company and up to a total of 10 percent of the bank's equity in such a business.

h) Neither the insurance proclamation nor any of the insurance directives place limits on the percentage of commission that an insurance broker or agent may earn by selling insurance policies. However, insurance companies are required to submit a commission schedule to the insurance supervision directorate.[11] There is a need to revise the directive to protect clients.

[11] The Ethiopian Insurer's Association has voluntarily agreed on rates of commission for each class of insurance business and these agreed rates are captured in the individual commission schedules of insurance companies

Box 6.1. The six principles of client protection

1. **Prevent over-indebtedness:** The financial institution carefully establishes the client's ability to afford the loan or premium and repay it. Clients should be able to handle debt or premium payment without sacrificing their basic quality of life.

2.a. **Transparency:** The financial institution ensures that complete information is made available to customers in clear language that is not misleading and that the customer is able to understand.

2.b. **Responsible pricing:** The financial institution offers quality services for the price, demonstrating its competitiveness in the marketplace, and favoring a long-term beneficial relationship with the customer over short-term profit maximization. Consistent practice of transparent pricing is a pre-condition to adequate implementation of this principle.

3. **Appropriate collection practices:** The financial institution treats customers with dignity even when they fail to meet their contractual agreements.

4. **Ethical staff behavior:** The financial institution creates a corporate culture that values high ethical standards among staff and ensuring safeguards are in place to prevent, detect and correct corruption or customer mistreatment.

5. **Mechanisms for redress of grievances:** The financial institution has a mechanism for collecting, responding in a timely manner, and resolving problems for customers.

6. **Privacy of client data:** The financial institution respects the privacy of customer data, ensures the integrity and security of their information, and seeks the clients' permission to share information with outside parties prior to doing so.

Source: Reed and Brusky (2011).

Unless insurance or micro-insurance are properly regulated, it only takes one or two failed insurance companies to destroy the sector. However, regulators and supervisors should be willing and able to embrace the development function and provide tailored support to expand the outreach of micro-insurance (regulators should not treat micro-insurance in the same way as the conventional insurance). The regulators need instructions from policy makers that micro-insurance is a priority in Ethiopia. Moreover, micro-insurance providers need to make a commitment to serve the low-income households. This needs the decision of the executives and the board members of micro-insurance providers who are convinced that expanding the micro-insurance market will meet developmental and financial objectives of the institutions. To this end, regulators and supervisors should embrace certain strategic elements in their policies and actions, and thereby foster an environment that makes micro-insurance sustainable and feasible in an integrated manner by combining, among others, the following aspects:

- Develop a micro-insurance policy or strategy and promote and monitor its implementation
- Facilitate the availability of key information/statistical data on micro-insurance business
- Promote learning processes and dialogue among relevant sector stakeholders
- Enact clears laws and directives in accordance with internationally accepted standards that encourage insurance coverage for low-income households and its compliance while limiting regulatory arbitrage
- Limit moral hazard and fraud by promoting awareness, and putting in place controls and incentive systems

- Promote consumer education and raising awareness to instill an insurance culture among low-income households
- Protect micro-insurance policyholders (consumer protection), who by definition are unaware of insurance products and may have limited options for responding to market conduct violation (IAIS and CGAP 2007).
- Create an enabling regulatory framework which can enhance outreach and innovation in micro-insurance without undermining prudential regulation.

7. Conclusion and Proposed Interventions/Inputs to the National Micro-Insurance Strategy for Ethiopia

In Ethiopia, the livelihood of the poor (particularly the rural poor) is susceptible to high production, marketing, and health risks. These risks cause persistent/relentless poverty in the country. Unless they are managed properly, they not only reduce the current welfare of low-income households, but also threaten opportunities for future income growth, discourage risk taking and innovation (avoid more profitable and riskier investments) in the long-run, and thus perpetuate poverty. Moreover, short-term shocks can have long-lasting effects. Micro-insurance is one of the tools to break the link between poverty and risk. Financial instruments—that make it easier for low-income households to save and borrow—and informal networks of assistance play a role in protecting the poor households, complementing micro-insurance tools. By increasing access to assets and providing transfers when shocks occur, social protection programs can play an important role in insuring poor households. Insurance is not necessarily the best policy intervention to deal with many types of risk, especially in the context of high poverty. First, rather than insurance, risk reduction and management may be the most relevant response for many types of risk—the obvious examples are conflict and crime. Other examples of risk reduction are preventive health measures, water management, and environmental protection. Second, many types of risk are not easily insurable, simply because they cannot be actually priced (as in the case with many of the more common risks in developing countries because even basic data on health, longevity, and climate are often incomplete) or because the risks are unknown (as in the case of rare natural disasters or catastrophes). Third, offering insurance does not remove the need to find ways of actually lifting the poor out of poverty; insurance will prevent a worsening of poverty and may allow more risk-taking by the poor, but it is not a substitute for more general policies to promote income growth (Dercon 2009).

The main unrecognized challenge in rural financial instruments in Ethiopia is the problem of overcoming the systemic risks arising from the undiversified nature of the local economies. This limits the opportunity for diversification for both the smallholder farmers and finance providers. Facing a spectrum of risks—the most frequently cited of which are price, weather, production, health—farmers respond by adopting low-risk and low-yield crop production patterns to ensure minimum income at the expense of growth and accumulation of capital. Alternatively, in the absence of insurance markets, farmers try to cope with price and other risks by: (i) asset accumulation, saving, and access to credit; (ii) income diversification; (iii) sale of assets; (iv) reduction of consumption; (v) increase labor market participation; (vi) informal insurance arrangements, etc. Although systemic risk affects all households in a given geographic area, it adversely affects only the poor. For example, a drought might lead poor households, who are rainfall-dependent, to sell assets to richer, non-rainfall-dependent neighbors. When agricultural commodity prices decline, everyone faces a lower price for their produce. Drought reduces yields and results in spatially correlated risks affecting the entire community. Traditional insurance contracts are more difficult to offer when risks are covariate. Finance providers such as banks, MFIs, and financial cooperatives have limited capacity to handle the effects of covariant risks, particularly in agriculture. As a result, some of the finance providers tend to avoid agricultural lending or drastically limit their loan exposure to smallholder agriculture. Some of the government supported MFIs in Ethiopia have taken a rational decision through loan diversification to minimize credit risks. Instead of ex-post coping strategies, farmers preferred risk management strategies through affordable

micro-insurance services. Thus, insuring low-income households for systemic risks such as drought and price risks poses challenges beyond the usual information asymmetries (moral hazard and adverse selection).

It is important for finance providers to be equipped with accurate information on agricultural crop cycles; the pattern of risks; how low-income households earn, spend, save, and borrow money; what risk management and risk-coping strategies and instruments are used by those households; the variety of farm and non-farm activities; and understand the risk of providing loans to specific crops and diversity of the local economies. This information will help the finance providers to familiarize themselves with the borrowers, their business activities, and the local economy which enables them to manage risks and extend loans based on the borrowers' cash flow and to tailor-fit the loan repayment in accordance with the cash flow. Moreover, finance providers without effective risk management strategies would be ruined by covariant risks in agriculture. This is aggravated by the lack of insurance markets and important institutions for overcoming systemic risks and complementary institutions such as credit information bureaus.

Systemic risks brought about by insufficient diversification in local economies, changing weather patterns, seasonality of supply, and fluctuations in domestic and global markets have discouraged not only private investments but also the participation of finance providers in agriculture. However, the problem of correlated or systemic risks is not insolvable. Innovations in the rest of the world, which can deal with correlated risk and reduce the risk exposures of finance providers such as drought and market prices, have been developed. Weather risks are covariant and typically affect entire farming communities and regions at one and the same time. Weather-based index insurance has been developed as a risk management instrument. Under this scheme, a farmer can insulate himself/herself from production risk by purchasing an index insurance that pays in case rainfall falls below a certain threshold. Farmers can make a choice of coverage for a given period, taking the production cycle into consideration. Farmers who purchase such index insurance would receive a payment if the rainfall index level fails below an agreed rainfall threshold; the farmer has to evaluate the trade-off and make a decision. Price risk management instruments tracked in loan agreements can lower default risks arising from falling commodity prices. An example of such a price risk management instrument is a put option, a hedging instrument for price risk. When price rises during the option contract period, the producer receives no payout from the contract but still sell his physical product at the prevailing market prices. In this situation, the producer benefits from rising prices. When the price falls during the option contract period, the producer receives a payout equal to the difference between the price the producer chose to insure within the option contract and the market price on the last date of the option coverage.

The high level of exposure of rural households in Ethiopia to production, marketing, and health risks, and their consequences implies the need to focus on a range of policy areas to reduce risks as a core part of the growth and transformation strategy of the country. Although local informal insurance practices are very important in Ethiopia, there remains vulnerability to covariant shocks and individual household risks which require a comprehensive strategy to be accessed through formal mechanisms to manage the risks of low-income households. The strategy should focus on a market-based and demand-oriented system in which rural households are able to access services supplied by the private sector and whose premium reflects the true long-term cost of assuming those risks. However, given

the current lack of supply of micro-insurance products by the insurance providers, the government can play a catalyzing role to expand the micro-insurance market. The micro-insurance strategy in Ethiopia should consider key interventions in four distinct levels, namely, macro-level, meso-level, micro-level, and client or policyholder level.

7.1. Macro-Level Interventions

A conducive, stable macroeconomic, policy and regulatory environment is necessary to expand micro-insurance in Ethiopia. Moreover, on top of the commitment of the government in implementing large social protection schemes such as the PSNP, promoting privately owned micro-insurance schemes to take care of the risks of low-income households in the country will be required. This can be linked and complemented with the delivery of micro-insurance services by sustainable insurers. The macro-level interventions can take different forms as indicated in the following section.

Improving regulation: To establish a sound insurance market, public confidence in the micro-insurance providers is of prime importance. Confidence can only be strengthened and maintained if insurers deliver reliable and quality services and if customers' interests are protected; which needs monitoring the financial soundness and protecting the policyholder (IAIS and CGAP 2007). Moreover, insurance activity which is not well regulated and supervised is rarely priced on actuarial principles and schemes or institutions are found lacking in terms of providing sufficient technical provisions and reserves. However, there is a need to balance the protection of policyholders and promoting innovations and flexibility to facilitate and expand micro-insurance services. Although the regulatory framework in Ethiopia is relatively conducive, there is room for regulators to make the regulatory environment more conducive to micro-insurance; thereby stimulating its development without compromising on the prudential aspect. There is enough experience in Ethiopia in promoting and regulating deposit-taking MFIs. The same framework can be adopted to promote and regulate micro-insurance in the country. There is a need to focus on regulating distribution channels that are familiar with and have the trust of low-income households and providing incentives or even mandating risk carriers which are unregulated or under other institutions such as FCA to become licensed. Moreover, deposit-taking MFIs providing micro-insurance products should separately report on their micro-insurance activities.

Capacity building of regulators: The capacity of the regulatory institutions such as NBE and FCA to promote and supervise the micro-insurance activities is limited. To address this gap, there is a need to build the capacity of NBE and FCA, in terms of training, developing supervision manuals, exposure to best practices, and other technical supports to promote and effectively regulate micro-insurance activities in the country.

Client protection: Ethiopia has a small financial sector which is properly regulated to protect depositors, policyholders, and shareholders. However, given the high illiteracy rate and limited knowledge about micro-insurance, existing and potential clients are exposed to various types of abuses. To this end, there is a need to focus on consumer protection by regulators and other stakeholders. This will require availing efficient and effective procedures and processes for lodging complaints and resolving disputes between the insurance providers and policyholders.

Infrastructure: Insurance providers fail to expand their rural network mainly due to poor physical infrastructure. Improving roads, electricity, telecom, absence of national ID, and

security infrastructure is associated with reducing the transactions costs of doing business (lower interest rates and premiums) for loan and insurance providers. Thus, intervention of government and donors in Ethiopia in improving the physical infrastructure will have a positive impact on the expansion of micro-insurance and inclusive finance at large.

Subsidies and tax reliefs where possible: Given the motive to mitigate production and marketing risks and protect the lives and assets of the low-income population, governments have been subsidizing weather index insurance and other related schemes with systemic risks. For example, a government weather index insurance scheme in India (providing insurance to 27 million smallholder farmers) pays for about 60 percent of the premium, while the policyholders pay 40 percent of the premium. The Ethiopian government and donors have been heavily involved in funding the entire PSNP. Thus, there is a possibility of giving tax break relief incentives to micro-insurance providers as an incentive to motivate them to serve the low-income market. However, this should not crowd out the private micro-insurance providers and undermine the sustainable delivery micro-insurance providers in the country.

Financial education: As indicated in this study, lack of awareness and education about insurance is one of the greatest challenges of the low-income households in Ethiopia. Potential micro-insurance clients are often skeptical about paying premiums for an intangible product with future benefits that many never be claimed—and they are often not too trusted in micro-insurance providers (IAIS and CGAP 2007). Less information and understanding of insurance services leads to weak demand for micro-insurance services in Ethiopia. Promoting consumer education about the value of insurance is a priority intervention in expanding micro-insurance services. The government is expected to take the lead in promoting consumer education and awareness or financial literacy.

Coordination and establishing partnership: On top of linking the micro-insurance providers with a range of players, there is a need for coordination of various policies, strategies, and programs in Ethiopia—such as the social protection policy, climate change national adaptation program of action, etc. The strategy of micro-insurance for low-income households can be implemented at macro-level. The coordination role should be the responsibility of the government.

7.2. Meso-Level Interventions

The meso-level overall infrastructure and support providers of the micro-insurance sub-sector include: actuaries, networks and associations, rating agencies, audit firms, apex organization to promote micro-insurance, transfer and payment systems, data warehousing, and information technology, market researches and technical service providers. In the Ethiopian context, there are very limited infrastructure and technical service providers to support micro-insurance providers. The networks/associations, federation and unions of cooperatives, etc. have very limited capacity to support the delivery of micro-insurance to low-income households. To address the gap and contribute the sustainable delivery of micro-insurance services to the excluded population, the meso-level support providers need to be strong, capable, and responsive. The key supports required at meso-level include:

Training: Improving efficiency and expanding outreach of micro-insurance providers depends on building up the human resource capacity of the sector. Given the lack of insurance and micro-insurance training in the country, establishing a micro-insurance

research center should be given due priority. On top of providing training, the center will also be engaged in promotion and research in micro-insurance. The center could be involved in conducting policy oriented research and conduct various studies to understand the excluded segments of the population. The specialized research might also be used to develop critical market analysis or underwriting information for use by micro-insurance providers. There is also a need to support and build the capacity of other training providers such as EIBI, the private sector training providers, and the training units of the micro-insurance providers.

Networks and associations: There is a need to have strong and sustainable networks such as the Association of Ethiopian Insurance Providers, Association of Ethiopian Insurers (AEI), and the federation of cooperatives. The networks will help to provide value adding services such as lobbying and dialogue, monitoring and self-regulation, code of conduct development and their enforcement, research, and product development and performance monitoring.

Reinsurance: Reinsurance is a powerful risk management tool to expand micro-insurance services to low-income households in Ethiopia. However, the country does not have a reinsurance provider requiring providers to seek insurance cessions from the international market. There is a need to establish an agricultural insurance company, duly funded through donor guarantees (similar to the credit guarantee scheme by donors such as KFW) and linked to international index reinsurance programs such as the global index reinsurance facility initiated by the IFC.

Availing quality data: One of the limitations in delivering micro-insurance services to the low-income population in Ethiopia is related to information asymmetry, which makes it difficult to distinguish good and bad risks. Insurers, with little experience or understanding of the low-income insurance market, tend to avoid this market because of information asymmetry leading to adverse selection and moral hazard. There is very limited data in the country to enable actuarial, underwriting, and business decision-making in Ethiopia. There is a need to have both credible long-term statistical information and actuarial models to define the relevant risk probabilities and to predict the likelihood of various events. There is a need for public support to develop the information base such as risk maps that improve the institutional capacity of micro-insurance service providers to identify and analyze risk.

Support technical service providers: The government, donors, and other development partners should assist in building the capacity and the market for technical service providers, who will offer specialized services in the field of training, consultancy, accountancy, auditing, management information system, and technical support to micro-insurance providers. Although micro-insurance providers are expected to specialize in the delivery of sustainable micro-insurance services to low-income households, there is a need to coordinate and integrate their activities with technical service providers.

Establishing a Credit Reference Bureau (CRB): The establishment of a functional CRB will play a positive role in increasing outreach and improving the efficiency and the quality of delivering loans and micro-insurance services. The bureau will also be a useful tool in increasing outreach and efficiency of banks, microfinance, insurance and micro-insurance providers. However, establishing CRB will require conducting a detailed study to assess the institutional and legal challenges, management and governance, and identifying the institution where it should be housed.

7.3. Micro-Level Interventions

Although micro-insurance providers can take different institutional forms in different countries, insurance companies, deposit-taking MFIs, and cooperatives are relatively sustainable micro-insurance providers in Ethiopia. Intermediaries such as agents and brokers are also important actors at micro-level. Establishing sustainable micro-insurance providers is very critical in expanding coverage, providing affordable and accessible products, and meeting the needs of low-income households. Moreover, the use of innovative delivery channels may lower the transactions costs of insurers. The interventions to improve performance and outreach of micro-insurance providers include:

Product development: Unless there are appropriate micro-insurance products to mitigate the risks of low-income households, any improvement in food security, poverty alleviation, or agricultural transformation in Ethiopia may be quickly lost due to the impact of various types to risks. To this end, there is a need to develop innovative micro-insurance products that reduce transaction costs through the development of cost-effective delivery channels, developing efficient premium collection methodologies, simple and efficient client assessment, and paying out small premiums. Other key product design issues include setting appropriate insured amounts, avoiding complex exclusions and incomprehensible legal policy language, and flexibility in premium payment and quick processing of claims.

Distribution systems: The existing insurance companies use brokers, agents, and direct sales which is generally appropriate for corporate customers. If insurance providers are to reach millions of low-income households in rural and urban areas, they need to design different innovative distribution channels which lower transaction costs. These could include linkages between the licensed insurance providers and traditional organizations such as *iddir* and grassroots level finance providers.

Education and training staff: There is a need to train the workforce insurers about micro-insurance. This includes training the staff on assessing the risk of micro-insurance clients without historical data, product development, customer handling, etc.

Technology platform: This includes improving the back-office technology (Management Information System), and front office technologies ranging from sophisticated electronic solutions as using cell phones to social technologies in the form of premium collection through self-help groups. This will have a significant impact on increasing outreach and performance of insurers and reduce the transaction costs to clients.

Educating policyholders and potential clients: Although educating clients on insurance may not be left only to micro-insurance providers, they can play a critical role in providing financial literacy to their policyholders and potential clients. This will have a direct effect on increasing the demand for micro-insurance.

7.4. Client-Level Interventions

The target groups or existing and potential clients of the micro-insurance providers are those who are excluded from the formal insurance sector. They are typically the smallholder farmers, self-employed, low-income entrepreneurs, micro, small and medium enterprise operators, marketers, and agro-processors, those who are employed in low-salary jobs, the disadvantaged groups and employed in the informal sector both in rural and urban areas.

The experience in microfinance in Ethiopia reveals that the low-income households are credit worthy and can save if they are given the right financial products. Similarly, the low-income households can pay premium, if they are given affordable and accessible micro-insurance products. The experience of some micro-insurance schemes indicates that dropout signals an ill-designed product, a misunderstanding about terms and conditions cited in the policies, and lack of focus on marketing. Thus, on top of the support from policymakers, regulators, meso-level technical service providers, and micro-level micro-insurance providers, there is a need too for client-centered interventions. These include:

Client education on micro-insurance: The intervention would involve a series of capacity building activities focused at increasing the poor's knowledge of micro-insurance concepts, skills, and attitudes and to translate this knowledge into behaviors that results in good outcomes both for the micro-insurance providers and users of micro-insurance services. Financial education in micro-insurance should be bundled with the provision of knowledge and skills on how to develop a saving culture, manage finances (savings and loans), manage cash flow, manage relations with lenders and insurers, etc.

Education on client protection: Low-income households are often ill-informed about the negative consequences of non-payment or late payment of premium (lack of insurance cover due to the lapse of the policy) (IAIS and CGAP 2007). There is a need to educate clients on the details of the insurance products which can assist them to protect themselves from abuses of micro-insurance providers.

Alignment of the micro-insurance strategy with other development programs at grassroots level: Although micro-insurance providers are expected to specialize in delivering micro-insurance and other financial services to clients, there is a need to align and integrate their activities with social protection programs and other development strategies/programs focusing on building the capacity of clients at grassroots level.

There are various stakeholders that play a critical role in implementing a micro-insurance strategy. These include: (i) governments at various levels, policymakers and regulators at macro-level; (ii) support institutions and intermediaries at meso-level; (iii) private sector insurers, government-owned insurance providers and cooperatives, which are regulated or unregulated; and (iv) the existing and potential policyholders, low-income households. Moreover, donors, NGOs, and international agencies can support the development of micro-insurance in the country. There is also a need to create, promote, and coordinate public–private partnership. Since there is a need for significant investment in capacity building at all levels, donors, governments, and other development partners can be involved in providing technical assistance, financial support, and transfer of knowledge. Government, donors, NGOs, and other development partners can also assist in the promotion of insurance awareness and consumer education.

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Annex

Annex Table A.1. The regional distribution of the branch networks of insurance companies in Ethiopia, May 2011

Company	Addis Ababa	Dire Dawa	Afar	Amhara	Tigray	Oromiya	SNNP	Beneshangul Gumuz	Harar	Total
EIC	11	1	1	4	2	9	9	1	2	41
Nile	11	1	-	4	1	2	2	-	-	21
Nyala	8	1	-	3	1	2	1	-	-	16
Nice	8	1	-	2	1	2	2	-	-	16
Awash	18	1	-	-	1	7	2	-	-	29
United	15	1	-	3	1	2	1	-	-	23
Nib	14	1	-	3	1	2	1	-	-	22
Africa	6	1	-	3	1	1	1	-	-	13
Global	6	1	-	-	-	1	1	-	1	10
Lion	6	-	-	2	1	1	1	-	-	11
Oromiya	8	1	-	-	-	6	1	-	-	16
Abay	1	-	-	2	-	-		-	-	3
Total	112	10	1	26	10	35	22	1	3	221
Percentage	50.7	4.5	0.5	11.8	4.5	15.8	10.0	0.5	1.4	100

Source: NBE (2011).

Annex Table A.2. Outreach of deposit-taking MFIs in Ethiopia, as of March 31, 2011

No.	Name	No of active borrowers	Loans outstanding	Voluntary saving	Compulsory saving	Total saving	Total asset	Total liabilities	Total capital
1	ACSI	633,659	1,756,235,000	766,998,000	345,013,000	1,112,011,000	2,956,063,000	2,121,363,000	834,700,000
2	ADCSI	149,482	481,350,000	94,253,000	48,591,000	142,844,000	646,310,000	271,667,000	374,643,000
3	Aggar	5,153	17,232,108	9,127,263	2,619,665	11,746,927	22,542,659	16,817,482	5,725,177
4	AVFS	16,426	13,092,540	736,220	4,287,470	5,023,689	18,774,141	7,761,146	11,012,995
5	Benshangul	28,874	51,762,087	8,946,458	11,787,676	20,734,134	68,423,657	48,829,270	19,594,387
6	Bussa Gonofa	42,319	54,431,690		10,973,272	10,973,272	73,226,645	37,214,545	36,012,101
7	DECSI	402,661	1,679,947,100	782,113,980	55,141,793	837,255,773	2,602,226,429	2,025,441,195	576,785,234
8	Dire	6,200	16,652,728	1,842,203	5,324,907	7,167,110	43,909,880	16,454,037	27,455,843
9	Degaf	1,220	1,344,680	149,060	491,300	640,360	1,573,480	709,960	863,520
10	Eshet	24,836	33,102,983		6,125,960	6,125,960	46,501,596	34,455,680	12,045,916
11	Gasha	6,991	14,736,312		5,298,377	5,298,377	20,732,067	15,952,049	4,780,018
12	Ghion	233	286,268		311,112	311,112	492,236	319,805	172,431
13	Harbu	14,934	17,990,251	3,997,708	4,096,218	8,093,926	27,639,087	13,355,955	14,283,132
14	Letta	992	4,773,850	386,060	1,428,070	1,814,130	6,063,160	1,919,970	4,143,190
15	Meket	3,017	2,435,951	165,473	108,002	273,475	3,103,703	870,019	2,233,684
16	Meklit	14,224	23,029,053	2,318,819	6,333,899	24,749,112	19,152,812	16,316,428	2,836,384
17	Metemamen	10,218	8,720,938	49,800	2,700,000	2,749,800	16,784,140	3,270,000	13,514,140
18	Ocssco	469,713	1,092,029,328	252,070,496	98,058,321	350,128,817	1,603,372,802	1,208,683,201	394,689,601
19	Omo	327,888	585,102,740	133,736,807	242,781,752	376,518,559	713,468,141	484,388,720	229,079,421
20	PEACE	16,565	40,208,878	7,491,626	4,597,312	12,088,938	54,338,730	31,890,600	22,448,130
21	SFPI	32,796	43,489,387		21,397,207	21,397,207	66,999,235	36,236,946	30,762,289
22	Shashemene	3,512	10,358,679	1,455,446	1,583,825	3,039,271	15,391,435	8,131,399	7,260,036
23	Sidama	47,810	28,334,552	5,028,331	6,222,633	11,250,963	36,267,057	24,665,404	11,601,654
24	Wasasa	46,091	76,350,116	15,221,598	13,118,568	28,340,166	115,618,933	73,910,273	41,708,660
25	Wisdom	46,188	91,080,173	4,459,374	20,097,241	24,556,615	136,143,742	68,814,071	67,329,671
26	Harar	2,649	6,586,000	736,000	790,000	1,526,000	19,605,000	8,505,000	11,100,000
27	Lefayeda	303	623,441	246,065	168,412	414,477	946,880	486,908	459,972
28	Dynamic	261	2,224,932	966,990	553,534	1,520,524	3,005,065	1,605,404	1,399,661
29	Gambella MFI	880	1,173,831	60,351	73,657	134,008	1,537,441	367,909	1,169,532
30	Tesfa	162	203,576	5,950	27,900	33,850	694,890	223,230	471,660
	Total	**2,356,257**	**6,154,889,172**	**2,092,563,078**	**920,102,081**	**3,028,761,553**	**9,340,908,043**	**6,580,626,604**	**2,760,281,438**

Source: AEMFI (2011).

Annex B. Livestock insurance in India[12]

The livestock sector in India accounts for roughly 11 percent of the world livestock population. Research has shown that India has the largest cattle and buffalo population, being responsible for 55 percent of the world buffalo population, 20 percent of the goat population, and 16 percent of the cattle population. Therefore, it is no surprise that livestock rearing is central to the livelihood and survival of over 100 million Indians, particularly small and marginal farmers and landless agricultural laborers across the country. This economy provides a diversified source of income for much of the population as well as acts as a source of self-insurance for farmers allowing them to mitigate the risks of seasonal income, such as that from the agricultural sector.

Rural populations are mostly involved in dairying, and thus the majority of smallholders in India possess dairy farms. However, the risks associated with cattle production are large as it is a high value asset and exposed to calamities such as income fluctuation and catastrophic risk. The government of India has instilled many regulations and vaccination schemes in an effort to reduce the vulnerability caused by rearing livestock. Despite these actions, livestock rearing remains a risky business due to factors including:

- Lack of suitable education/training in rearing for skill development
- Inadequate finances and poor rural infrastructure for veterinary care
- Non availability of timely inputs for heath care of animals

However, risk reduction schemes such as providing proper vaccination, de-worming, and curative measures have not been developed efficiently in India. Often households are pushed into poverty once they lose their livestock to calamities such as disease or scarcity of water and have no funds available to rebuild their stock. Therefore livestock insurance is a much needed productive risk management product, particularly in rural India. Although various livestock insurance products have been offered in India since 1971, only 7 percent of India‘s cattle are insured. Problems such as the high adverse selection, poor spread of animal healthcare services, rising incidence of fraudulent claims, lack of data on animal mortality, and the long time taken to settle claims mean that insurers need to charge a very high premium to cover the losses accrued. This creates a situation where much of the rural population is not able to afford the insurance.

Pilot study

Due to the high demand and need for efficient livestock insurance, an innovative structure for livestock insurance was introduced in areas such as Tamil Nadu‘s Thaniavur district in September 2009. This is through a joint collaboration of IFMR Trust Holding and Dairy Network Enterprise (DNE), together with Housing Development Finance Corporation (HDFC) Ergo GIC set up in order to maximize the financial well-being of rural households. The livestock insurance scheme offered was created to provide a comprehensive risk mitigating tool for the dairy farmers. It enabled access to dependable information for insurance companies, access to preventative healthcare services, as well as cheap and affordable premiums to farmers.

Product information

This is an especially innovative scheme as it tackles many of the problems associated with conventional cattle insurance. Some of the major components of this project include:

[12] Source: Care International (2010).

Cheap affordable premiums

One of the major drawbacks to conventional livestock insurance is the low uptake by farmers due to the high premiums. The cattle insurance that are currently offered by most insurers range from between 4–5 percent for a one year policy to around 12 percent for a 3 year policy. Many farmers cannot afford risk mitigating mechanisms such as insurance as their disposable incomes are low and premiums are high. However, with high operational and transaction costs as well as risks of moral hazard, insurance companies have no choice but to offer high premiums. However, a reduction in the premium has been made possible due to risk mitigation mechanisms. Therefore, the livestock insurance product offered at PKGFS is 2.9 percent for a year plus healthcare charges and 7 percent for three years.

Radio Frequency Identification (RFID) tags for tagging

One of the complications with conventional livestock insurance is that it is difficult to determine whether the livestock insurance claim is for the animal that was actually insured. The use of this electronic RFID tags help to identify the animal. They are uniquely coded and their usage permits faster and error free reading of tag numbers as well as enables immediate electronic recording of cattle data.

Furthermore, the RFID tag serves the additional function of storing information on the details of the cattle, such as information on healthcare, breeding, and feeding. Not only does this create a data pool but also leads to future benefits in cattle valuation and breed improvement. This method of identification significantly reduces false claims and thus reduces premiums substantially, consequently making insurance attractive to many farmers.

Health services with cattle insurance

Along with the cattle insurance, each cattle is guaranteed access to preventative healthcare measures such as de-worming and vaccination, which was previously not provided by other programs. Also included are veterinary drugs and access to local veterinarians for preventive healthcare facilities and animal registration are provided at the farmer‘s doorstep, a service that could cost up to 100–150 Rs but is free.

Additionally, a detailed history of the health status and productive details of the animals are recorded using a customized dairy health and productive management software called Herdsman which has been made to suit the individual needs of the cattle insurance product.

Data provided in real time

In conventional cattle insurance, normal copper or metal tags are used for tagging. Therefore, when an animal dies, a large-scale, manual,, data-entering process occurs which includes issuing a cover note that is matched against the tag number and then the policy can be issued; a process that can take longer than 5 days and a ton of wasted paper. However, in this new livestock insurance scheme livestock details are issued in real time and thus for the first time, farmers can get their policy certificates over the counter at the time they pay their premium. This lowers the manual intervention and paper work and thus reflects in lower costs and lower premiums.

Claims settlement process

When an insured animal dies and a claim is made, wealth managers from PKGFS verify the genuineness of the claim and coordinate the submission of the relevant documents. This greatly increases the speed of the claim settlement process allowing claims to be settled

within 72 hours of the animal‘s death thus allowing farmers to replace livestock, preventing large-scale financial shocks.

Evaluating study

This insurance scheme offers solutions to the conventional insurance problems and strives to tackle the demand side by attempting to make the scheme as attractive as possible to farmers. By offering complimentary veterinary visits, the farmer not only saves the cost of vaccinations, but also benefits from the convenience as transporting animals to the vet normally results in loss of wages for the day as well as incurs a cost in carrying the animal to the nearest veterinary dispensary. Furthermore, this scheme is made attractive to farmers as PKGFS can give loans to rural households for the payment of the insurance premium.

The technological advancements in this project such as the use of the RFID tags are ideal as they are cheaper and more convenient then many of the other methods such as retina identification. Although it is costlier than options such as bar codes, it is more reliable as bar coding for the purpose of cattle identification tends to be limited. This is because a simple scratch or dirt accumulated on the surface of the bar codes impairs readability. Furthermore, the use of the electronic cattle registration enables issuance of on-the-spot cattle insurance. This is especially rare as it normally takes up to 15 days for issuing cattle insurance and also eliminates paperwork and operational costs. These all have a direct impact on the premiums charged allowing this insurance scheme to have not only the best products available on the market but also offer the most affordable and cheapest premiums.

By having a short and effective claims settlement process, it greatly reduces the long Turnaround time (TAT) that is present in much of the conventional cattle insurance. This allows farmers not to sink into chronic poverty and instead can carry on with their daily businesses. Therefore, this product would act as a safety net and protect the clients from financial shocks and provide support for buying cattle again. Additionally, in order to limit the moral hazard problem, only 85 percent of the value of cattle is paid out upon death of the cattle. This also acts as a deductible in health insurance and is expected to minimize the risks that farmers will let their animals die. Therefore, the technological innovations created by this project address many of the prevailing issues associated with micro-insurance such as high transaction costs and information asymmetry therefore allowing for a lower premium (2.9 percent compared to the 4.5 percent offered normally) and increased efficiency and efficacy. Some of the major issues that livestock insurance faces are:

High transaction costs

- High incidence and risks of fraud: This leads to insurance companies adopting cautious measures at the time of policy issue thus leading to higher and more unaffordable premiums.
- Moral hazard: Often farmers let their animals die in order to claim insurance. This is made more attractive as the skin and hide of the dead animal can be sold resulting in a net positive income from the death of the animal.
- High operational costs: Paperwork involved in issuing policy and settlement requires intensive manpower. This increased cost affects the premium charged.

Lack of information

- Lack of historical data on mortality rates: There is a lack of actual data pertaining to the mortality rates by both government and insurance company. The data available is not digitalized and thus usable.
- Lack of information on coverage of vaccination programs: Benefits of government and NGO programs to promote preventative cattle healthcare is not passed on farmers as they are not publicized or available on their coverage. Therefore, farmers do not benefit from reduced premium.

Unfavorable coverage terms

Conventional cattle insurance takes around 40–60 days to get claims settled in the event of death of an animal. Therefore, farmers need to wait for almost 3 months before they can be compensated. As this is their primary source of income, this initial delay in settling claims pushes the famers to financial shocks which are supposed to be avoided by buying cattle insurance.

Poor risk reduction strategies

Despite governments knowing the importance of improving the dairying and animal husbandry sector, other commitments and the effects of the global economy and budgetary constraints mean that some governmental institutions are not able to deliver most of the preventative livestock support services such as vaccination and de-worming. This is noted by the insurers who then are forced to charge higher premiums.

Demand related challenges

Rural farmers who are already having a low disposable income are unable to afford the premiums put forward by the insurance companies. Their ability and willingness to pay is also due to their lack of awareness about the benefits of taking on insurance.

Annex C. Subsidized agricultural insurance in Turkey (TARSIM)

In Turkey, the agricultural sector has an especially significant share in the economy which is characteristic for developing countries. Accordingly, recent processes in global economy such as rising food prices, climatic change and other natural risk factors have increased the crucial role of agricultural production and the policy makers have paid relatively more attention to the problem of sustainability of agriculture in governmental policies. According to the data of 2008, the share of agricultural sector in GDP is 11 percent with the employment of 28 percent of the total labor force in Turkey. The share of the agricultural sector in the whole economy is in a decreasing trend, but it still plays an important role in the economy of Turkey.

Though a significant part of the population is engaged in agricultural activities, the national income has been distributed unfavorably for rural areas. The rural areas contribution to GDP was negligible due to continual divisions of agricultural territories via inheritance, the decreased areas of agricultural enterprises, and the occurrence of further problems in agricultural regions (infrastructure, education, health, organizational structure, etc.). Moreover, vulnerable household incomes fluctuated year by year as a result of natural risk factors such as drought, hail, flood, storms, and other calamities.

One of the overriding reasons for high levels of vulnerability in Turkey was a weak *Risk Management Systems in Agriculture*. To address these agricultural problems an agricultural insurance system was initiated allowing public–private partnership that offered technical and economic resources to protect the agricultural sector from the consequences of difficult conditions. The objective and scope of the new law were as follows:

- **Objective:** Article 1 — The aim of this law is to determine the procedures and principles regarding the implementation of agricultural insurance in order to compensate farmers for losses occurring due to the risks set out in the law.
- **Scope:** Article 2 — This law comprises the principals and procedures related to the establishment of the Pool, risks to be covered by the Pool, income and expenditures of the Pool, subsidies for premiums and support for damages exceeding the premium, insurance contract, provision of reinsurance and the duties, competence and responsibilities, contribution and participation of the insurance companies.

Agricultural insurance systems have been established in a number of countries around the world, albeit that some have proved more effective than others. Turkey has adopted a very similar system to the Spanish management structure, which allows those involved to cooperate on an effective platform in order to further develop the system defining risk management responsibilities. It meets all the following requirements:

- Mechanisms for public–private dialogue.
- Continuous updating using the contents of agendas.
- Development of policy tools for dialogue with the government.

The agricultural insurance market in Turkey was underdeveloped because of the lack of farm credit. The fact that small farmers in Turkey did not have enough collateral to obtain low-interest agricultural credit affected their ability to invest in farming and hence their demand for agricultural insurance. The government has taken over the responsibility for preparing a regulatory framework to facilitate the growth of the insurance market. The government has

supported farmers by financing 50 percent of agricultural insurance premiums since the beginning of the new private–government partnership agricultural insurance system.

The new agricultural insurance system has been formed by the contributions of government, private agencies, and organizations which have run activities in the field of insurance and agriculture. Main feature of the new agricultural system is the inclusion of an agricultural insurance pool. The management committee of the agricultural insurance pool (TARSIM) is established as a corporation of the insurance companies writing agricultural businesses and carries out tasks of the pool within the context of the agricultural insurance law. Insurance companies (22 companies in 2008) participate in TARSIM with equal shares, and the management committee consists of 7 members from 5 different actors, which is Ministry of Agriculture and Rural Affairs (2 members), Undersecretaries of the Treasury (2 members), Association of the Insurance and Reinsurance Companies (1 member), Union of the Turkish Chambers of Agriculture (1 member), Managing Company of the Pool – TARSIM (1 member) (TARSIM 2008).

The basic duties of the management committee and TARSIM is to cover the creation of the main principles applied within the new system and determine studies related to the issues of crops, ratio of subsidies, risks, and regions to be supported. Moreover, fixing problems faced, loss adjustment procedures, making contracts with TARSIM, and determination of the commission for insurance companies in return for their premium transfer enter the scope of main responsibility of the management committee. TARSIM plays an important role in the system to carry out all kind of works related to loss adjustment activities, risk sharing, risk transfer and implementation of reinsurance plan, as well as the collection of premiums and payment of indemnities. The Ministry of Agriculture and Rural Affairs (MARA) is responsible for the development of new agricultural insurance system within the country covering such issues as monitoring and evaluation of the system, organization of seminars, training programs and publications; MARA has also to present proposals for approval to the Council of Ministers regarding premium subsidies on the basis of crops, risks, and regions.

All insurance companies issue policies on the same terms and conditions, using the same premium, exemption rates, and technical terms in TARSIM Pool system (TSRSB 2007). Premiums paid by the farmer to insurance companies and aid premiums paid by the government are collected by the pool operated by TARSIM to which 22 insurance companies have been participated in the first 10 months of 2008. Government's premium subsidies have been kept at the level of 50 percent. TARSIM utilizes the following risk transfer mechanism:

- All premiums are collected by the individual insurance companies, and the total risk is transferred to the Pool.
- The Pool is authorized to retrocede risks to insurance companies (voluntarily participation).
- Where retrocession does not take place, reinsurance cover through domestic and international reinsurance companies is required.
- As a last resort, if the reinsurance cover provided by domestic and international reinsurance markets is insufficient, the government will provide Catastrophe Stop Loss protection.

An issuance of government supported policy was implemented. The first requirement to be met by farmers in order to have government support for agricultural insurance is that they

have to be registered in the farmers' registration system. The registration of farmers and their activities also plays an important role in the modernization and restructuring of the Turkish agriculture. In addition, the largeness of the agricultural sector in the total economic activity and the small size of single farms, as compared with the EU average, have caused difficulties with the registration of the agricultural sector. Consequently, the registration system can be found to be necessary for the process of implementing insurance in the agriculture sector.

In Turkey, the farmers have been registered based on their products. These registration systems are operated by: National Farmer Registration System (NFRS) for crops; Integrated Administration and Control System (IACS) for greenhouses; Preliminary Pedigree and Pedigree System for livestock; National Aquaculture Registration System for aquaculture.

Despite the success of the agricultural insurance sector, the system needs more time to be developed and to cover other risks, such as drought related to global warming. As the system is still unknown to the farmers, they need more education and training programs. However, taking the economic and social potential in this field into account, it is expected by companies and the Ministry of Agriculture and Rural Affairs (MARA) that 40 percent of the farmers will be covered within this system by 2012. The structure of agriculture in Turkey is an important barrier for the development of agricultural insurance. Thus, registration of the agricultural sector is regarded as a necessity for the government to solve the problems and to develop the sector. For this reason, registration of agricultural activities is the main point of the new agricultural insurance system in Turkey. In addition, the farmers have to update their information to the registration system each year, in order to be able to get government support for their agricultural insurance. According to the first data, the government supported agricultural insurance system shows a growing trend in terms of both volume and the number of policies. Most of the policies have been concluded in respect of crops. The average premium on livestock is high when compared to crops, because this insurance is popular among large farmers.

The levels of risk vary considerably from one region to the next, from one type of farm to the next, and from small to large farms, due to the different topography and climatic conditions found in different parts of Turkey. The development of agricultural insurance in each country is linked to farmers' needs. Designing an acceptable new crop insurance scheme is a fine art that involves jointly analyzing all available local data (yield, climatic conditions, and affordable prices for cover). Otherwise, weaknesses in underwriting guidelines may adversely affect the economic basis of TARSIM, or farmers may not be able to afford the cover. This could affect TARSIM's ability to meet its obligations to farmers, which in turn could severely erode confidence and cause instability in the first few years of TARSIM's existence.

TARSIM has given great weight to actuarial conditions in determining its strategy. In order to implement this policy, the Hail Premium Tariff, based on Hail Risk Zones and Crop Hail Sensitivity Classes per village, has been revised, using available data compiled by insurance companies and the hail insurance statistics of altogether 6,800 villages. Phenological stages of fruit varieties and meteorological data have been correlated on village basis. A "Frost Premium Tariff" and Frost Risk Zones have been set up based on this correlation. For Storm Risk Zones, long-term wind speed and meteorological data have been analyzed and a "Storm Premium Tariff" has been established. For Flood Risk Zones, records from the

Ministry of Agriculture and Rural Affairs and the Public Waterworks Administration covering more than 30 years have been compiled and analyzed.

The above tariffs mean that Hail, Flood, Storm, Whirlwind, Fire, Earthquake, Landslide, and the Frost risk for fruits, all of which have a direct systemic impact on the economic activities of the rural sector in general and on the agriculture sector in particular, can be covered all over Turkey under the Crop and Greenhouse insurance lines of business. In addition, any kind of registered animals which are raised for commercial purposes are covered by TARSIM against all risks except epidemic diseases. Where agricultural insurance claims are concerned, TARSIM's own business activities and the insurance sector's traditional loss adjustment activities have been integrated and are now carried out by TARSIM.

The previous patchwork of loss adjustment activities has been centralized by implementing improved and better-organized loss adjustment activities. In insurance business it is generally the case that indemnity payments are slow to reach policyholders and costly to administer; this will deter farmers from buying the insurance. TARSIM can overcome such difficulties by making use of its own web-based system.

Obligatory use of IT systems information is vital for assessing and evaluating risk but tends to be expensive to obtain, process, and analyze. When the underwriting principles are examined more closely, it becomes clear that rapid, easy access to reliable data is key to TARSIM's business. Information is the oxygen of TARSIM's business. The IT system allows us to collect, store, sort, distribute, and use information anywhere in Turkey that has an internet connection.

The flexible web system provides full and up-to-date information about the way we deal with agricultural insurance business and claims organization. The web system allows to review operations, policies, and projects to identify any needs and requirements of farmers that may be enhanced by a different approach or that may warrant being abandoned altogether. It also illustrates how TARSIM actually puts the principle of standardization into practice. Moreover, one of the important conditions for improving the system, especially when considering their introduction in Turkey, is suitable technology that will allow the monitoring and collection of data to become more reliable, efficient, and accurate. One example of a technological innovation is the web-based interactive system. Its benefits:

- Accessible anytime from anywhere via internet connection.
- Information is available in real time.
- Immediate processing.
- Compatible with Office tools, does not require complex software products.
- Adaptable to changes in insurance underwriting conditions.
- Better control and more comfort.
- Information can be shared among diverse platforms.
- Functions for tariffs, underwriting, document production, claims processing, reporting and accounting are managed for insurance companies, brokers, and agents.
- Implementation of new lines of business is done through flexible tools available within the system.

Farmers' information is checked through the National Farmer Registration System on the TARSIM web system before any policy is issued. To buy a TARSIM policy, it is sufficient to

provide a citizen identity number. All policies are stored in the TARSIM database. The data can be transmitted from TARSIM headquarters to insurance companies in real time or later. The vast majority of paper-based reports, policies, and other paper documents are scanned and turned into electronic, editable files in a variety of data formats to facilitate the management of documents and records. Success and efficiency in agricultural insurance depend on a multitude of interacting factors: economic conditions, climate change, farmers' behavior, confidence, and so on.

Annex D. TATA AIG Life Insurance Company in India[13]

The TATA-American International Group (AIG) Life Insurance Company is a joint venture between the TATA group, one of the largest industrial conglomerates in India, and AIG, one of the world's largest insurers. The partnership was established in 2000 following the privatization of the Indian insurance industry. TATA-AIG first entered the low-income market in response to licensing conditions for working in India, but it soon developed a specialized micro-insurance unit and an innovative distribution and servicing strategy for reaching the poor.

In 2001 the Insurance Regulatory and Development Authority imposed quotas to compel insurers to sell a minimum percentage of their life insurance policies in specified rural areas, where the penetration of insurance is low and a majority of India's poor live. This regulation created enormous pressure for insurance companies that largely were servicing urban and higher-income segments. Some companies approached the regulation as a cost of doing business and merely down-scaled their existing products (by reducing benefit levels and premiums). Others, such as TATA-AIG, saw it as an opportunity to expand their presence in the low-income market. The company created a specialized micro-insurance unit whereby the sales, servicing, and administration was consolidated under one division. They understood that the key to reaching the poor was finding innovative delivery channels. They started to work with a network of microfinance organizations (MFIs) by partnering with a microfinance wholesaler, the Bridge Foundation. They experienced high lapse rates, however, largely related to the difficulty in servicing long-term insurance products with shorter-term loan financing. TATA-AIG thus decided to pursue alternative distribution channels.

In 2003 TATA-AIG received support from the U.K. Department for International Development to test a partnership using NGOs and community-based sales agents to distribute insurance, and they created a two-tiered structure to outsource their front-office functions to these partners. The micro-agents are individuals or groups who promote, sell, and collect premiums in return for ongoing training and a sales commission. The NGOs supervise and train the agents, and transfer the premiums and renewals to TATA-AIG. The community-based model has several advantages over working with MFIs: it provides a new livelihood opportunity for poor women and an incentive for them to increase sales (incentives for loan officers can be more challenging to institute), it can draw on a much larger base of NGOs to supervise the agents, it is not limited to the target market of MFIs, and it helps to overcome the difficulty of servicing long tenure micro-insurance with credit products. On the downside the model is expensive in terms of training, experiences high transaction costs as individual agents may have to travel to find new clients, and clients cannot benefit from immediate claims payments, an option that may be available when working with MFIs or NGOs.

TATA-AIG's micro-insurance product line is now managed by a forty five member team within the company, working in partnership with over 250 NGOs and 2500 agents. The products are available in 11 Indian states and have experienced substantial growth in new and renewal premiums. Between April 2007 and March 2008 individual micro-insurance policies constituted 23 percent of the company's policy count. TATA-AIG's micro-insurance unit alone has thus exceeded the regulatory mandate of ensuring that 18 percent of its policies are in rural areas, and the company is looking for ways to make the micro-insurance initiative run on a sustainable basis.

[13] Source: Roth and Athreye (2005).

Annex E. National Agricultural Insurance Scheme (NAIS) in India[14]

In India, the agriculture share in GDP, although declining, still remains significant at around 18 percent in 2008 and the sector continues to account for more than 60 percent of the labor force. India has 116 million farms (operational farm holdings) covering 163 million hectares with a vast majority of farm holdings being small and marginal in size (approximately 80 percent of farmers operate less than 2 hectares) and a significant proportion of such households are below the poverty line. For these reasons agriculture remains an important priority for the Indian government. The mandate from the last general elections and recent announcements reinforce government's intention that considerable attention would be placed on this sector.

The vast majorities of India's 116 million farms cultivate rain-fed crops and are particularly vulnerable to the vagaries of the Indian monsoon. An international disaster database estimates that 350 million people were affected by drought in the ten year period ending in 2009. In this context, agricultural risk management products, particularly for the small and marginal farmers, are of critical importance.

The main instrument for provision of risk management to the farming community was the Comprehensive Crop Insurance Scheme (CCIS) introduced in 1985–86. In 1999, this was replaced by the National Agricultural Insurance Scheme (NAIS) which is now offered by the public crop insurance firm, Agriculture Insurance Company of India (AICI). The main features of the NAIS include availability to all states/union territories, coverage of food crops, oilseeds, and selected commercial crops, and use of an "area yield" index (see Annex Box E.1). This "area yield" approach reduces the traditional problems of adverse selection and moral hazard and lowers the administrative costs relative to traditional, individual yield based crop insurance. AICI is the only player offering such a product to farmers.

Annex Box E.1. Area Yield Index

- It operates on an "area-yield-based" approach: if the observed seasonal area-yield per hectare of the insured crop for the defined Insurance Unit falls below a specific threshold yield, all insured farmers growing that crop in the defined area will get the same claim payments (per unit of sum insured);
- The "seasonal area-yield" estimate is determined by harvested production measurements taken at a series of randomly chosen Crop Cutting Experiment (CCE) locations;
- The probable yield is based on a three-year moving average of seasonal area-yields estimated from CCEs for rice and wheat crops and a five-year moving average for all other crops;
- Three coverage levels are available and the threshold yield can be set at 60, 80, and 90 percent of the area probable yield fixed by crop at the state level, offered based on coefficient of variation for yields in the ranges of: greater than 30 percent, 16 to 30 percent, and 15 percent or less, respectively;
- The program is available to all states and inion territories on a voluntary basis, but once introduced in a state/union territory, it must be offered for a minimum of three years;
- The scheme is intended to be compulsory for borrowing farmers and voluntary for farmers without loans; and
- Farmers have the option of buying additional Rupee coverage to a maximum of 150 percent of the threshold yield multiplied by a defined price (market price or floor price established by government).

[14] Source: World Bank (2011b).

In 2008 the NAIS program covered about 18 million farmers during the Kharif season (June to September) and the Rabi season (October to December)[15]. That is, the annual crop insurance penetration is approximately 16 percent. Small and marginal farmers account for two thirds of the farmers covered under NAIS. Borrowing farmers account for approximately two thirds of the insured farmers.

The average premium per farmer insured slightly exceeded 400 Rs. (9 USD) in 2008, ranging from 250 Rs. (5.5 USD) for non-borrowing farmers to about 500 Rs. (11 USD) for borrowing farmers. The average area insured per farmer has slightly decreased since 2004 and reached 1.4 ha in 2008. The NAIS premium volume reached almost 800 Rs. crores (178 million USD) in 2008 and it has steadily increased since 2003. Food crops represent about 75 percent of the total NAIS premium volume and small and marginal farmers contribute to about half. Despite the large numbers of farmers covered, which makes NAIS the largest program worldwide (even though, as yet, a large proportion of farmers are not insured), several problems need to be addressed. The demand for crop insurance is concentrated in the states where crops grow under rain-fed conditions and natural risks are greater. These states include Andhra Pradesh, Gujarat, Karnataka, Orissa, Uttar Pradesh, and Rajasthan. Two crops, paddy and groundnut, are representing 40 percent of the total premium volume.

Since its inception, the annual loss ratio (claim/premium) has been always higher than 100 percent, i.e., the total indemnities paid to farmers exceed the premiums received (including premium subsidies). This is a direct consequence of the caps imposed on the premium rates for oilseeds and food crops: less than 1.5 percent and 3.5 percent, or the actuarial assessed rates, for food crops and oilseeds respectively. The loss ratio averaged 250 percent in 2007, but this hides a large disparity between non-borrowing farmers and borrowing farmers. This disparity illustrates the impact of adverse selection: non-borrowing farmers choose to insure their riskier crops. It should also be noted that the loss ratio of the small and marginal farmers tends to be less than the loss ratio of all farmers.

Yet another critical problem has been the long delay in payment of indemnities. This has been partly caused by the time taken for the CCE data to be collated, but perhaps more importantly by state and central governments' inability to expeditiously contribute to claim settlements, since they have typically not budgeted adequately for such liabilities. Farmers not receiving claims payment on time may default on their bank loans and become ineligible for loans for the next crop cycle. This has also contributed to the relatively low take up of crop insurance, despite significant increase in outreach in recent years.

To address these issues, the government of India has reviewed the NAIS with dual objectives of making the scheme more attractive to farmers (especially in terms of timely payments) so as to increase the crop insurance penetration levels, and to place the scheme on actuarial regime. Premiums would be charged on a commercial basis and the government's support, where necessary, would provide up-front premium subsidies differentiated by the economic category of farmer. AICI would receive up-front premium subsidies and would be responsible for all claims.

Properly functioning crop insurance could improve access to credit for farmers through reducing risk for lenders and timely payments of indemnities, improve resource allocation,

[15] In 2009, it is estimated that the outreach increased to around 20 million farmers.

and improve fiscal management. With some careful attention, the Indian crop insurance program could more effectively contribute to the rural sector.

The Technical assistance (TA) was requested by AICI/government in this context. This TA follows a first TA, whose findings and recommendations have been presented in the World Bank report 'India National Agricultural Insurance Scheme: Market-based solutions for better risk sharing' (World Bank 2007b). The overall objective of the study and this report is to offer follow-up technical assistance to AICI in order to assist the insurance company in moving towards a market-based approach in the design of actuarially-sound area yield and weather-based crop insurance products. The TA aims at improving further the contract design of insurance products and suggesting a methodology to AICI to develop insurance products designed and rated with actuarially-sound actuarial techniques using lessons from international best practice. The main audience for this report is a technical audience. While the primary audience is AICI senior management, the methods and tools can also be of interest to policy makers and agricultural insurance practitioners in India and other emerging counties.

This market-based approach, relying on a sound actuarial regime, could help the government to (i) reduce its fiscal exposure as it can better forecast public financial support; and (ii) develop a more cost-effective agricultural subsidy program as subsidies can be better targeted, for example to catastrophic risks. It could also help the insurance company AICI to build up adequate technical reserves to cover their insurance risks, expand outreach amongst farmers, and access reinsurance markets. Finally, it would benefit farmers because it would allow for a more timely payment system and, ultimately, a more equitable crop insurance subsidy scheme.

The main proposed modifications of the NAIS by the Joint Working Group (2004) and by the World Bank (World Bank 2007b) are broadly consistent and highlight the need to follow actuarial and underwriting international standards to facilitate the shift to a market-based regime. The government of Inida is piloting a modified NAIS (*mNAIS*) in up to 50 districts. This is a significant development and the technical and policy suggestions from this and earlier reports are directly relevant to such a move. The *mNAIS* is to operate on an actuarial regime, where the government's financial liability is predominantly in the form of up-front premium subsidies and farmer premiums are risk-based. Other changes include the addition of an early part-payment to farmers based on weather indices, a reduction in insurance unit size from the Block level to the Village level for major crops, the enforcement of early purchase deadlines in advance of the crop season, and additional benefits for prevention of sowing, replanting, postharvest losses, and localized risk, such as hail losses or landslides. If well implemented, an improved program could result in increased benefits for millions of current farmer clients, and can be expected to lead to far greater coverage of the insurance program in the medium term.

Annex F. CARD MBA in Philippines[16]

The Center for Agriculture and Rural Development (CARD) Mutual Benefit Association (MBA) in the Philippines has undergone a fascinating growth process that provides important lessons for the development of the sector. CARD MBA is part of a network of CARD Mutually Reinforcing Institutions (MRI) that includes CARD NGO, CARD Bank, CARD MRI Development Institute, CARD Business Development Services, and CAMIA (a non-life insurance agency). More recently, CARD has been instrumental in forming a regional based micro-insurance provider, the Risk Management Solutions Limited (RIMANSI) to promote the CARD MBA model in Southeast Asia. Together, this network of affiliated institutions offers a combination of core financial services, training, and technical assistance that builds on each other's efficiencies and markets.

CARD MBA has its origins in a non-profit NGO, CARD Inc., that was founded in 1986 as a lending institution targeted to low-income women. CARD MBA was formed as a spin-off of the Members Mutual Fund (MMF) originally housed under CARD Inc. The MMF offered pension and life benefits to members linked to its credit products; however, the design of these products was based on member demand and not on actuarial projections, thus resulting in unsustainable plans. In 1999 CARD separated its credit and insurance functions and created an independent insurance company. It professionalized its operations with insurance specialists but retained the member-owned ethos by forming an MBA. The regulatory environment in the Philippines was supportive of MBAs, with low capital requirements and an easy licensing process. By obtaining an MBA license, CARD was supervised by the Insurance Commission and able to offer protection to its members.

The MBA model has advantages in terms of tax-exemption, focus on member satisfaction, and involvement of members in product development. On the downside, however, the MBA model is limited to its members and cannot offer services to the public at large. The CARD MBA has capitalized on the membership of its partners under the CARD umbrella, particularly the NGO and bank, and thus overcomes this limitation. Its insurance products (life insurance, loan redemption insurance, and a long-term savings product) are mandatory, providing scale to the institution and preventing adverse selection. In fact, the CARD Bank and NGO act as the distribution channel for 98 percent of the premiums that the CARD MBA generates. The relationship with its partners also offers other cost-savings and efficiencies, in terms of shared technologies and training to members. As of December 2007 CARD MBA was insuring over 2.5 million individuals.

The CARD network also has formed a technical-assistance support institution for the micro-insurance industry, RIMANSI. It provides fee-for-service technical assistance to MBAs in market research, compliance with regulations, risk management, and product development. RIMANSI builds the capacity of MBAs and facilitates access to reinsurance services. CARD MBA also has supplemented its core insurance products by partnering with the government health insurance scheme, PhilHealth, to distribute health coverage to its members. It recognized the high demand for health financing among its members and saw the opportunity to outsource this product to PhilHealth, which was looking to increase distribution of its products in the informal sector. Interestingly, there has been a low uptake of this voluntary product among the CARD membership, likely a function of the product quality and benefit levels.

[16] Source: McCord and Buczkowski (2004).