Innovative Agricultural SME Finance Models

NOVEMBER 2012

GPFI Global Partnership for Financial Inclusion

IFC International Finance Corporation World Bank Group

2121 Pennsylvania Avenue, N.W.
Washington, D.C. 20433
Internet: www.ifc.org

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Acknowledgements

International Finance Corporation (IFC) is the lead technical advisor (implementing partner) to the G-20 Global Partnership for Financial Inclusion's (GPFI) SME Finance Sub-Group. This report was produced by IFC on behalf of the GPFI. The GPFI is the main platform for implementation of the G-20 Financial Inclusion Action Plan. The Group engages partners from G-20 and non-G-20 countries, the private sector, civil society, and others. It is chaired by the G-20 troika countries, currently France, Mexico, and Russia. The GPFI is supported by four Implementing Partners: the Alliance for Financial Inclusion (AFI), the Consultative Group to Assist the Poor (CGAP), IFC, and the World Bank. www.gpfi.org

The report "Innovative Agricultural SME Finance Models" was developed under the overall guidance of Peer Stein (IFC) and Susanne Dorasil (BMZ). The IFC working group team for the report was led by Panos Varangis and comprised Ulrich Hess, Heather Miller, Ghada Teima, Anushe Khan, and Patricia van de Velde. The work was undertaken in close collaboration with GIZ contributors Roland Gross, Achim Deuchert, and Jan Meise (BMZ).

The team would like to thank the World Bank-IFC internal peer reviewers Rolf Behrndt, Dave Chalila, Gary Reusche, Hans Dellien, Raiomand Billimoria, Ajai Nair, Marc Sadler, Don Larson and Maria Pagura. IFC would also like to thank external peer reviewers Claudia Schmerler (KfW), Birgit Holderied-Kress (KfW), Michael Hamp (IFAD), Eugenia Serova (FAO), Calvin Miller (FAO), Emilio Hernandez (FAO), and Anita Campion (AZMJ).

IFC especially thanks all of the organizations whose case studies are included in this report for sharing their information. The case study research was undertaken by Rabo International Advisory Services (RIAS) on behalf of IFC in 2011.

The report has also benefited from a broader collaborative effort with contributions from individuals at the following organizations: Agence Française de Développement (AFD), Alliance for a Green Revolution in Agriculture (AGRA), German Federal Ministry for Economic Cooperation and Development (BMZ), the Food and Agriculture Organization of the United Nations (FAO), Gesellschaft für Internationale Zusammenarbeit (GIZ), the International Fund for Agricultural Development (IFAD), Kreditanstalt für Wiederaufbau (KfW), Making Finance Work for Africa (MFW4A), Stanbic Bank, Technoserve, United Nations Capital Development Fund (UNCDF), and World Bank.

Last, but not least, this work was completed under the leadership of the co-chairs of the G-20 SME Finance Sub-Group: Susanne Dorasil (Germany), Ayşen Kulakoglu (Turkey), and Jonathan Rose (United States).

Introduction

What innovations can help bankers in developing countries who wish to finance agricultural small and medium enterprises (SMEs)? This report tries to answer this question by isolating promising cases of emergent and innovative financing, risk mitigation, and distribution models. The paper identifies key elements observed across case studies. In the report, case studies are documented, models are observed, and patterns are determined. The report primarily addresses private sector financial institutions in developing countries and therefore focuses on models from the private sector perspective.

A previous G-20 report (*"Scaling up Access to Finance for Agricultural SMEs — Policy Review and Recommendations"*)[4] addressed policy makers and discussed public sector banks and related policy issues at length. That paper was designed to contribute to the formulation of an agricultural SME finance policy framework.

The current report elaborates further on promising and innovative approaches to agricultural SME finance in three types of agricultural SME finance country environments. It therefore endeavors to summarily assess both the salience of these approaches, called "models" in this text, given various country environments. A banker in Malawi faces fundamentally different challenges from a banker in Mexico, and therefore different models might be more useful for her. At the same time, a banker in Ghana has quite different challenges in financing cocoa rather than maize. All of these innovative models can help the banker finance agriculture by: (i) replacing traditional collateral with new types of security ("financing" models); (ii) mitigating risks more effectively ("risk mitigation" models); or (iii) lowering transaction costs ("distribution" models). Each of these models is illustrated by the cases included in the annex. Most of the case studies are based on a background stocktaking report compiled by Rabobank International Advisory Services for IFC, as well as a databank with information compiled by IFC from other sources, on more than 100 cases.

Lending to agricultural enterprises can be an important opportunity for growth due to a variety of factors. There is a rapid sector expansion due to increasing demand for food and commodities in general. There is increasing emergence and development of profitable agricultural value chains. Small and medium-sized agricultural enterprises can be more productive and efficient if markets for their goods function properly. There appears to be a lack of correlation of the agricultural business with financial markets, and therefore an opportunity to diversify the bank's portfolio. There continues to evolve and emerge innovative lending and risk mitigation models that help to better manage the agricultural portfolios. And finally, data from 93 countries reveals comparatively promising lending spreads and similar non-performing loans (NPLs) in those countries with significant agricultural sector shares.

4 IFC (2011)

The need for agricultural commodities grows as populations grow and adopt dietary habits that demand higher protein content and higher quality foods for emerging middle classes in urbanizing populations. The total value of all agricultural activities in the world increased by more than a third from 2002 to 2010, to reach 7,043 billion dollars. With agricultural demand estimated to grow 50 percent by 2030, the world's 450 million smallholder farms will play an increasing role in food provision.

Highly organized value chains with strong buyers such as food processors, distributors, and commodity traders have emerged in many markets and can help to secure lending to those farmers supplying to these buyers. It must be noted, however, that the greatest benefits may be secured by those larger farmers capable of delivering high volumes at precise intervals while meeting stringent quality standards, thus reducing transaction costs for high-volume buyers.[5]

However, the vast majority of farmers in emerging economies are outside these high-value supply chains. Providing financial services to the agriculture sector has many challenges that multiply significantly as financial institutions move from larger farmers and high value chains to smallholder farmers and lower value crops, particularly subsistence food crops. It is indeed this very high degree of heterogeneity of farmers that makes it difficult to think of a single model and approach that can make a difference. Understanding and better classifying farmers while dealing with their specific challenges is the first step in thinking about potential solutions and innovative approaches.

Lending to farmers has a number of challenges. Recent innovative models show some promising signs in dealing with risk assessment and mitigation, lowering transaction costs, exploring delivery channels to farmers, and enabling better flow of information for banks to assess opportunities. The objective of this report is to collect information from case studies, draw observations, and derive lessons learned thus far.

This report is organized into three main sections. Section 1 sets out the context by describing the particular challenges and opportunities related to financing agriculture, followed by defining the target group of agricultural SMEs. Section 2 describes a set of innovative financing models. Section 3 then provides a framework for an indicative assessment of these models by gathering and forming observations from the case studies. The model observations are then highlighted in three types of country contexts in which bankers in developing countries may find themselves. Preliminary assessment results are presented. The report concludes with key lessons learned on innovative agricultural financing, relevant case studies, and an outlook on further work in this area. Annexes present methodologies and case studies representing the various models.

5 Wiggins, Kirsten, and Llambi (2010)

Executive Summary

Financial institutions face opportunities as well as challenges in providing financial services to the agricultural sector. The sector clearly lacks financing, with the one percent commercial lending share to agriculture in Africa often cited as an example. Farmers are a very heterogeneous group with varied plot sizes, production capacity, mechanization, resources, and expertise. However, they all share a limited ability to access appropriate financial services for their farming activities and overall household expenses. In this context, opportunities to expand financial services to farmers are highlighted by innovative financing, risk mitigation, and distribution models, observed in 100 case studies examined for this purpose. Innovation is defined by: (i) new models that are not widely used yet; (ii) adaptation of existing models in a developing country context; and, (iii) downscaling models for smallholders. Overall, these innovative models mobilize additional resources for agriculture through the private sector institutions that finance agricultural SMEs and farmers. The model cases also show the need to forge partnerships between various private sector actors along agricultural supply chains, as well as between private and public sector institutions.

The Opportunity

Three-quarters of the developing world lives in rural areas, and about nine out of every ten depend upon agriculture for their livelihoods.[1] Agricultural investment is often regarded as one of the most efficient and effective ways to promote food security and reduce poverty, with some studies demonstrating a four-fold reduction in poverty over other sectors.[2] Though widely recognized for its social impact, agricultural investment — particularly to small and medium enterprises (SMEs) — is also recognized by the financial sector as a profitable growth business. Agricultural enterprise finance offers banks and financial institutions a major growth opportunity for the following four reasons. First, global food demand is likely to grow 50 percent by 2030, led by emerging middle classes in urbanizing populations. Rapid sector expansion through strong buyers with profitable value chains will drive product procurement from SMEs. Secondly, financing allows farmers to invest in new technologies and access better inputs, thus increasing yields significantly and contributing to food security and better incomes. Thus, access to finance will help farmers move from the subsistence/semi-commercial level to become commercial farmers. Third, agricultural lending provides the opportunity to diversify larger portfolios; data from the economic crisis of 2008 particularly supports this point. Fourth, innovative financing, risk mitigation, and distribution models hold some promise that the risks and costs of agricultural SME lending can be managed. Given these factors, lenders are beginning to recognize the growing potential and profitability of lending to these "generally feared but little understood" agricultural enterprises.[3]

The Challenge

The leading challenges facing lenders that want to engage in the agricultural sector may be broken down into three main areas: the unique problems of agriculture,

1 World Bank (2007)

2 Oxfam (2009)

3 Ibid.

high transaction costs, and sub-optimal policy and regulatory environments.

Unlike with typical short-term loan schemes, agricultural loan products must reflect the unique characteristics of agricultural production. Namely, products must cater to seasonal production with long and diverse gestation periods. Lenders face irregular payments and slow rotation of invested capital and are sometimes challenged to design appropriate financial products due to lack of sufficient knowledge of local agricultural and environmental characteristics, as well as complex liquidity management. Agricultural lending also involves systemic, covariate risks — all of which are intensified for term finance or for enterprise development in general. Farmer diversification does little to divert risk from those systemic risks that affect all of the creditor's activities and potentially the entire agricultural finance portfolio.

While agriculture in general poses many unique risks to lenders, agricultural finance usually also involves high transaction costs due to low population densities, low infrastructure quality, and distant locations. Inefficient agricultural markets can limit the viability of rural financial services. Distortion in the production and financial markets can also affect the profitability.

Main Financing Models

The case studies used herein revealed a large number of financing models that reflect the heterogeneity of countries and commodities. To facilitate observations, these financing models are divided according to their repayment source or collateral into three categories: farmer, movable collateral, and buyer. In financing models targeting the farmer or groups of farmers, collateral generally involves cash flow analysis by banks in order to underwrite anticipated earnings, overall savings, and/or group guarantees. Financing models using movable assets as collateral often include leased equipment or harvested commodities in warehouses. Financing models that rely on buyers as the repayment source are based upon an overall value chain analysis in which strong business relationships persist between farmers and buyers, and formal or informal contracts provide security to lenders.

Main Risk Management Models

Although the financing models detailed in this report are designed to minimize the risk of default, various risk mitigation models may be a useful complement to transfer key risks to markets. Insurance products, such as credit life products, have been mainstreamed in the market. There are, however, emerging health, production, and weather insurance products that can significantly improve the security package and ultimately reduce the default risk to lenders. Personal insurance products may be formally tied to financing opportunities through health credit products, or informally tied as micro-insurance coverage expands. Crop and weather insurance products under certain preconditions and circumstances could provide solutions to dealing with crop losses. There are also risk management instruments that can deal with commodity price risks, but their use in most low-income emerging markets is still very limited.

Main Distribution Models

Distribution models — including mobile banking, branchless banking, and mobile payment systems — help support the financing models. As banks provide low-cost financial services to the rural agricultural sector, they connect with their clientele through a transaction history, learn about their needs, and develop relationships — all of which are essential to build and maintain a profitable loan portfolio. Distribution models may also reduce banks' transaction costs through efficient loan disbursement and repayment systems. Overall, distribution models provide access to a clientele that previously was out of reach.

Observations

Close examination of key elements within the collected case studies reveal information under two main headings. First, channels of distribution to farmers (such as banks, buyer, inputs, local cooperatives, or microfinance

institutions) can vary and should be tailored to specific needs and capabilities, depending on the type of farmer and their production (type of crops or livestock). In order to access farmers in value chains effectively, it is necessary to look at farmer linkages in value chains and to involve farmer organizations. This is particularly true for smallholder farmers. Providing technical assistance and/or extension services to farmers also potentially adds value to financing and may be associated with higher yields and incomes. The second observation derived from the case studies relates to characteristics of innovation and its role in dealing with credit risk. Some notable examples found in the cases were an increase in use of first loss guarantees, cases with credit risk assessment combined with agronomic models, and use of specific credit scoring systems for agriculture lending. Noted more extensively was the use of movable collateral and a more flexible approach to credit requirements. Alternative channels (e.g., mobile banking, payments, etc.) play an important part in mobilizing different types of collateral, savings, and repayment options. There are some cases where insurance, particularly weather insurance, seems to have played an important role as part of a broader package that included both access to improved inputs/technology and access to finance.

Country Environments

On the basis of three generalized types of country environments, this report provides an indication of where we likely encounter the various models described in Section 2. This country environment framework provides a strategic view of the cases that have been compiled for this report. Case information has been gathered through a combination of primary and secondary sources, and certain case examples have only limited information available. Different models are more or less relevant in the three types of country environments. Key findings are:

I. In Environment I (weak business environment, low agricultural productivity), buyer-driven financing models tend to reach larger numbers of farmers, and "tight" value chain financing seems to be the most relevant and sustainable model.

II. In Environment II (strong business environment, low agricultural productivity), we find more diversified models, including significant movable asset models, some farmer risk models, and buyer risk models, while warehouse receipt financing, indirect lending, mobile banking, and certain risk insurance models are most relevant given the better business enabling environment.

III. In Environment III (high agricultural productivity), there is a vast array of models, including a preponderance of farmer risk and buyer risk models, but most of the innovative models discussed can be relevant for this environment.

It is important to acknowledge that the inventory of case studies used in this report did not include many cases from countries in Environment III, as the focus of this report was on examining models in lower-income, emerging markets. Therefore, if the inventory were to include more cases from countries in Environment III, we would expect to see significant reach numbers in all model types.

Lessons Learned

Across cases, some patterns emerged in terms of what seem like good practices. For one, farmer segmentation is important to enable bankers to start differentiating classes of farmers. Segmentation allows banks and other financial institutions to locate specific growth opportunities for distinct farmer groups, and this is best accomplished by deepening knowledge of local conditions and understanding of the needs of agriculture. Looking at farmers within their value chains or organizations and combining the resulting information into financial packages is most likely to be effective in reducing risks and costs. Financing agriculture is more effective when it is part of a broader package that combines both financial and non-financial services to the farmers with the objective of improving yields and quality (through access to better inputs and extension) and ensuring access to markets for selling their produce. A third element

visible across case studies is that risk management matters: insurance and risk-sharing can be important, although they need to be appropriate for the specific situation. Furthermore, it seems that financial institutions would be better equipped to provide these with pre-existing risk management capabilities — meaning that banks need to have the capacity to assess farmer credit risk and be able to identify bankable opportunities. Insurance and risk-sharing arrangements can then increase the bank's level of comfort and enable them to increase their reach to more farmers that would otherwise be on the margin of the decision to lend.

The challenges of lending to small and medium agriculture are not insurmountable for institutions that rely on innovative and targeted approaches. Important among the lessons to apply in emerging solutions is to make use of value chains, local knowledge, and producer organizations to lower risk. The key issue is addressing the variety of risks in agriculture lending while keeping transaction costs contained. Emerging success stories of innovative approaches depend on the farmers, types of crops, locations, and conditions. In-depth knowledge and analysis of these can lead to the most added value for the financing of farmers.

Conclusions

We can conclude that many innovations in financing for the agricultural sector already exist, but they are not widely known nor have they been systematically monitored and evaluated. Many of the innovative models are still relatively new, but through time and the use of appropriate systems to monitor and evaluate their achievements, we will be able to draw more complete lessons that can help in scaling up and replicating them. This will help us better understand what works and what does not, and under what conditions. What seems to be missing at this point is some repository of innovative models, systems to monitor, and methodologies to evaluate them. In addition, we need to think of incentives to strengthen existing innovative models and also promote further innovation. This paper is a first attempt to collect existing innovative models in order to draw some early observations.

It can also be concluded that no single innovation can be considered the miracle or "silver bullet" solution, and this is despite the various calls over time to come up with grand schemes and search for big solutions. Observations from the innovative models show that success takes patience, careful planning, understanding of the local context, and attention paid to details during implementation. There are many small ingredients that, when put together, make the innovative case work. As seasoned bankers often say, you need to use "shoe leather" to make things happen. Thus solutions, rather than reliance on large schemes, need to be based on a number of coordinated actions aligned with the overall policies to improve access to finance in the agricultural sector. These, in turn, must have the objective of improving the livelihoods of farmers and promoting food security.

Potential Areas for Policy Interventions

The findings from the case studies support the policy recommendations made in IFC's previous report (*"Scaling Up Access to Finance for Agricultural SMEs: Policy Review and Recommendations"*, October 2011). They further highlight certain areas where policy interventions and the G-20 convening power could indeed strengthen the effectiveness and scaling up of financing for agricultural SMEs. These areas include:

1. Support for first loss/guarantee funds for agriculture, particularly focusing on smallholder farmers and agricultural SMEs. This support should leverage the Global Agriculture and Food Security Program (GAFSP) as well as the Global SME Finance Initiative, both of which have been supported by the G-20 already, rather than starting a new initiative. However, the effort may require additional resources if the scale of the activities is to expand significantly.

2. Provide support for catastrophic insurance approaches to protect farmers and financial institutions from severe losses. Since this industry is still evolving, donor and partner interventions can play a critical role in accelerating its development and deployment in emerging markets.

3. Promote the creation a forum of large agribusinesses that could be encouraged to leverage their networks in emerging markets and create opportunities for attracting financial institutions that could fund parts of their value chain, like local small traders, processors, farmers, etc. Financing could be linked and become the catalyst for technology improvements and promotion of environmental and social standards along specific value chains.

4. Create mechanisms to promote the adoption of technologies for agriculture ("agriculture pull mechanisms") that could increase yields and improve quality for crops, particularly food crops. There is a huge capacity to increase yields and improve quality, particularly in the African context. Mechanisms could be modeled after a a 2005 effort in the health sector to promote vaccinations in Africa.

5. Strengthen producer organizations as important aggregators for delivering financial and non-financial services to smallholder farmers. This can involve capacity building for financial and managerial skills as well as improved corporate governance. There are already a number of NGOs and initiatives that work to strengthen producer organizations, but a more conscientious effort and a bigger scale is perhaps needed.

6. Promote Private Public Partnerships (PPPs) by which governments could leverage private sector funding and management to improve longer-term investments in agriculture infrastructure and provision of technical services. Agriculture-related infrastructure could include warehouse facilities for improved storage of commodities, cold storage, irrigation infrastructure, basic processing of certain food commodities for local consumption, etc.

7. Support capacity building for financial institutions in emerging markets and facilitate its further support by donors, development finance institutions/international finance institutions (DFIs/IFIs) and foundations. Capacity building is critical to provide necessary skill transfer to financial institutions in order to better understand the agriculture sector, analyze risks, develop appropriate lending and other financial products, find cost-effective distribution channels to reach smallholder farmers, and develop the skills to forge value chain partnerships. Experiences thus far have indicated that it is also important to help financial institutions identify bankable opportunities in the agriculture space to quickly develop a pipeline of projects to provide financial services.

CHAPTER 1
Major Challenges and Opportunities

1.1 The Challenge of Lending to Agriculture

SEASONALITY WITH LONG GESTATION PERIODS

Agriculture is very seasonal, from planting or livestock birth to harvest or slaughter with long gestation periods. The result is that cash flows are highly seasonal and sometimes irregular, with earnings concentrated in certain times of the year. As such, there is a slow rotation of the invested capital as investments are spread over longer time horizons than for non-seasonal businesses. For the banker, this means that short-term agricultural credit may need to be repaid in "lumpy installments," sometimes over multiple seasons. It also means that farmers require flexible and targeted savings and term finance products to meet their specific needs. From the banker's point of view, irregular repayment schedules make liquidity management more challenging and require costly investments in developing customized loan products in an unfamiliar sector.

EXPOSURE TO SYSTEMIC RISKS

Most agricultural SMEs, in particular producers, are not truly risk diversified. Emerging farm businesses and SMEs tend to be either very concentrated in one activity or to have a portfolio of activities that are all exposed to similar key risks like droughts. Production and price risks have a large impact on the profitability and repayment capacity of the borrower.[6] Moreover, risk mitigation mechanisms such as crop insurance or hedging are rarely available.

Some of these risks, in particular weather and price risks are systemic, which means that ultimately whole agricultural finance portfolios are affected in addition to individual farm-level income losses. While the activities may be diversified (crops and livestock combinations, for example), the risks are still often concentrated (a drought would affect all activities and their market prices). Unless the banker manages to protect the loan portfolio against the most systemic risks, the lack of true risk diversification exposes the bank to the risk of default or at least frequent rescheduling.

The origins of this lack of true risk diversification lie in the risk-return dilemma that farmers face. In order to maximize profits, producers need to take on higher concentration and price risks by specializing, often by adopting high-yielding varieties, focusing on lucrative niche products, and generating economies of scale. By doing so, the farmer may have to adopt alternative risk mitigation strategies such as contract farming instead of diversifying into a range of small-scale activities. By contrast, a well-diversified portfolio including off-farm activities might be much less profitable but safer through less exposure to the risk of livelihood threatening losses and resulting loan defaults.

6 Supply disruptions mainly caused by weather vagaries along with high price elasticity for major agricultural commodities lead to significant price swings. For example, world sugar prices soared to a 29-year high of nearly 30 cents a pound in early 2010 before falling back to half that level by early summer, remaining at 50 percent higher than average over the past 20 years. McConnell, Dohlman, and Haley (2010)

This risk diversification vs. specialization returns dilemma is magnified for term finance for investment projects or for enterprise development in general. Here, the exposure is longer and the risks are much harder to assess, as outcomes depend more on the character and capacity of management, because the loan is not based on specific transactions.

LIMITED COLLATERAL

Agricultural financial service providers have few instruments at their disposal to manage these various risks; they therefore tend to protect themselves through excessive credit-rationing and by relying heavily on traditional land collateral. However, agricultural borrowers' assets are less suitable as collateral than for example, urban real estate. In fact, farmers and their producer associations frequently lack the collateral traditionally required by banks for larger and longer-term loans. Due to legal and administrative impediments as well as cultural factors, rural assets are often not registered and consequently may be more difficult to foreclose and sell. Even where these constraints are less binding, collateral is a poor protection against massive defaults due to covariant risks. The result is that required collateral ratios are much higher than they would be otherwise.

HIGHER TRANSACTION COSTS

Agricultural financing involves higher transaction costs than in urban areas given the distances, lower population densities, and lower quality infrastructure. Together, these factors make it hard to aggregate agricultural loans into portfolios that make branches viable. In addition, it can be costly to have branches and staff in remote areas, handling small transactions. One of the most prominent gaps in developing financial services particularly for rural Africa is poor infrastructure — for example, bad roads, erratic electricity provision, and lack of communications systems — which impedes effective outreach to customers or drastically increases the costs.

Financial institutions also face high creditworthiness assessment costs with agricultural SMEs that might exceed the profits they can make with these relatively small loans. If farmers evolve from smallholders to more specialized farmers, the lender must analyze the SME in all its details (e.g., the ability and character of the management, the prospects for the product, cash flow forecasts, the position of this SME relative to competitors, etc.) in order to understand the risks involved. To cover such costs, loans must be significantly larger, reaching a size that substantially exceeds the absorption capacity for capital of the SME — hence the financing gap.

Farming is also very heterogeneous, and deep sector information is often not readily available. Farming households in particular often have a wide range of crops and activities that can make the assessment of creditworthiness more complex and costly.

BANKS' COMPETING PRIORITIES

Many banks in emerging markets face a number of priorities such as expanding their product offering mostly to urban SMEs and consumers or leveraging their branch networks and presence in urban locations. They also need to improve their systems (e.g., IT, MIS, investment in risk management, etc.). In this context, expanding to the agricultural sector with all its particularities, without presence in rural areas, and with a lack of technical expertise, seems a significant challenge and appears to be a lower priority. The key issue here is for banks to understand the sector but, more importantly, to identify bankable opportunities in the agricultural space.

LIMITED ACCESS TO LONG-TERM FUNDING

External investment and long-term loans, other than informal loans from family and friends, are available only for a tiny proportion of SMEs in all economies. Formal external investment is appropriate only for the minority of SMEs that are both growth-oriented and have the business model and management to achieve the necessary growth. Professional investors taking significant shares in enterprises have to recover the

transaction costs of making and monitoring their investments and of absorbing the losses from the enterprises in their portfolio that fail. These costs are largely independent of the size of the investment, which discourages small investments. Investors need one or more reliable exit routes so that they can sell their stakes to realize profits and recycle their capital.[7]

Long-term finance can be inaccessible, denominated in international currencies, and therefore expensive. Financial institutions face a timing and currency mismatch. Lending maturities are shorter than funding maturities; SMEs usually generate local currency earnings and therefore require local currency loan and saving products.

POTENTIALLY SUB-OPTIMAL POLICY AND REGULATORY ENVIRONMENTS

Government activity in promoting food security indirectly affects agricultural markets through input and output prices and the overall credit culture. Agriculture is politically sensitive, because it is at the heart of food security, a primary concern of governments, and therefore prone to government interventions. These interventions can include mandatory lending quotas, preferential lending programs for specific target groups, interest rate subsidies, mandatory loan rescheduling, or even loan forgiveness in some cases.

Inefficient agricultural markets can be a barrier to developing rural financial services. Agricultural value chains can be poorly organized and lack transparent pricing. In some cases, the financial environment can be distorted by the presence of state banks and subsidized credit, casting agriculture more as a social issue rather than an economic activity, and thereby creating barriers for the evolution of private sector solutions in financing the agriculture sector. Low financial literacy rates, especially among small farmers, and a limited understanding of banking requirements compound these problems.

In addition, as a previous G-20 report on agriculture finance policies[8] has highlighted, there are gaps in regulations that inhibit the development of private sector instruments that could provide financing solutions in the agriculture sector. For example, the lack of a legal and regulatory environment for inventory financing and warehouse receipt lending inhibits the use of these financing mechanisms. Additionally, addressing the regulatory and taxation issues that discourage the development of leasing could improve mechanization and upgrading of equipment in agriculture.

1.2 The Opportunities in Lending to Agriculture

Three-quarters of the developing world lives in rural areas, and about nine out of every ten individuals depend upon agriculture for their livelihoods.[9] Agricultural investment is often regarded as one of the most efficient and effective ways to promote food security and reduce poverty, with some studies demonstrating a four-fold reduction in poverty over other sectors.[10] Though widely recognized for its social impact, agricultural investment — particularly to farmers and agricultural SMEs — is also recognized by the financial sector as a profitable growth business. Agricultural enterprise is identified as a major opportunity for banks and financial institutions for the following four reasons:

First, global food demand is expected to grow 50 percent by 2030, led by increasing global population (expected to reach 7.5 million by 2020), particularly in emerging markets where the middle class is growing as well. According to FAO figures, by 2018, world food consumption is expected to increase by approximately 30 percent compared to the 2005 reported figures.

7 Oxfam (2009)
8 IFC (2011)
9 World Bank (2007)
10 Oxfam (2009)

In addition to the population growth, the per capita caloric consumption is increasing and there is a major shift in caloric sources with a projected doubling of meat consumption in China, India, and Africa by 2030.[11] The consumption of non-staple crops such as coffee, cocoa, and tree nuts is also expected to increase in emerging markets. To meet the growing demand for staple food and non-staple crops, there needs to be significant investments in the agriculture sector. Some estimates indicate that additional investments of US$83 billion per annum may be needed, most of which would have to come from the private sector.[12]

Second, farmers in emerging markets can contribute to food security and improve their incomes by increasing their productivity and the quality of the crops they produce. For this they would need to invest in new technologies, access better inputs, improve farm and off-farm practices, and invest in sustainable production methods for their crops. In particular, the world's 450 million smallholder farmers, over 90 percent of whom are in Asia and Africa, could play an important role in food security and also improve their incomes. Access to credit can play a key role: without credit smallholder farmers use sub-optimal inputs and farming practices that lead to low yields and often resort to unsustainable practices of production. Access to finance will contribute thereby to moving farmers from subsistence/semi-commercial into commercial farmers and improve the livelihoods of those farmers that are already commercially oriented. According to a recent report, the demand for credit by smallholder farmers globally was very roughly estimated to be nearly as high as $450 billion.[13]

Third, for financial institutions, agricultural lending provides the opportunity to diversify into larger and broader portfolios. For example, during the economic crisis of 2008, agricultural commodities were enjoying high prices and commodity sectors were showing some very profitable opportunities. In fact, between 2004 and 2008 commodity prices almost doubled and, despite a dip in 2009, prices had again exceeded again their 2008 levels by 2011. Another possible indication is that the NPLs in countries with a high agriculture sector share in GDP saw their NPLs decline during the recent economic crisis, compared to developed countries with low agriculture sector share in GDP, which saw their NPLs significantly increase (see Annex B).

Fourth, innovative financing, risk mitigation, and distribution models hold some promise that the risks and costs of agricultural lending can be managed. Given these, lenders are beginning to recognize the growing potential and profitability of lending to these "generally feared but little understood" agricultural enterprises.[14]

The above factors indicate that there is an unmet demand for credit in the agriculture sector, while that credit is needed to address the growing demand for agricultural commodities and shifting preferences towards higher value food sources. At the same time, the supply of agricultural commodities is coming under pressure stemming from growing water scarcity, climate change impacts that can affect production in some areas of the globe, and fears of further deforestation. These pressures indicate that expansion in agriculture production needs to happen with the use of resources more efficiently. Thus, investments in sustainable production systems and methods will be a key driver in the agriculture sector.

In addition to resource efficiency, another growing trend is the reliance on smallholders. Many buyers consider sourcing from small farmers critical for securing adequate supplies and diversifying their sources. In addition, consumer preferences for sustainably produced agricultural commodities create incentives for buyers to shorten supply chains and source more directly from farmers to ensure that the goods are

11 FAO (2009)

12 According to IFC internal estimates.

13 Dalberg, Citi Foundation, and Skoll Foundation (2012)

14 Ibid.

sustainably produced. Also, buyers may source specific qualities of commodities that rely on smallholder production. The trend for greater traceability of production for quality purposes and for verification of sustainability creates stronger linkages along supply chains, improves information flow, and enables buyers and financial institutions to get closer to smallholder farmers. Smallholder financing models can contribute to farmers adopting better on- and off-farm practices that lead to sustainable production, improve the quality of crops produced, and reduce post-harvest losses.

In summary, the opportunities to lend or, more generally to provide financial services to agriculture, stem from the following trends:

- **Increased demand for agriculture commodities** due to increase of the population and the **change in dietary habits.** Financing is needed, among other solutions, to enable the use of improved inputs and better on-farm practices to increase supplies and improve yields, as well as to generate improvements in quality and better post-harvest practices to lower post-harvest losses and add value to the crops produced (further processing).
- **Climate change** impacts that are straining the supply of agriculture commodities. Financing is needed for investments in sustainable production systems and climate adaptation technologies.
- **Emergence of new markets for niche products, higher value crops, and certain crops/food products** with characteristics valued by consumers, such as certified products. Responding to new markets and meeting emerging consumer preferences and demands requires investments that bring smallholder farmers in particular closer to value chains and key growth markets.

1.3 Target clients

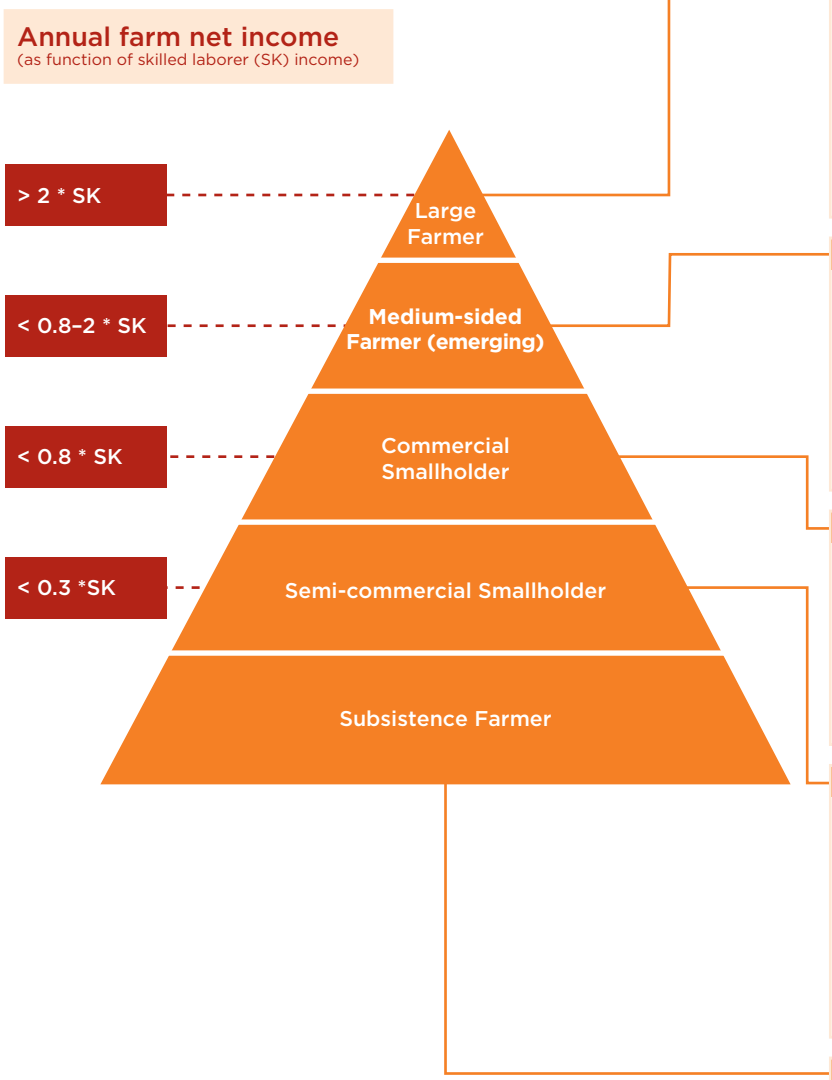
This report defines agricultural finance for SMEs as financial services for small and medium enterprises engaged in agriculture-related activities such as farming/production, input supply, trade, and processing. Agribusiness not involved on the production side can be segmented similarly into non-agricultural SMEs in terms of classification based on the number of employees or annual turnover, and thus differentiated from microenterprises and large agri-businesses.

FIGURE 1 WHERE THE FUNDING OPPORTUNITIES LIE

Objectives	Higher Productivity	Lower Post-Harvest Losses	Climate Change Adaptation	Increase Access to Markets	Explore New Market Trends
Farmers	●●	●	●●	●	●●
Input Suppliers	●●		●	●	●●
Traders/ processors	●	●●	●●	●●	●●
What to finance	Technology, inputs, mechanization	Post-harvest systems	Sustainable production systems	Market infrastructure and value chains	Value chains

●● = Very relevant ● = Relevant

FIGURE 2 FARMER SEGMENTATION AND KEY CHARACTERISTICS



Key characteristics

Large Farmer

Land	Size of cultivated land is large (>500 ha)
Labor	Mainly depending on skilled labor
Technology	Fully mechanized
Resources	Formal bank loans and or external capital, skilled management
Production	Fully commercial and often dollarized
Capacity	Good market access, own storage/logistics, and market information
Value Chain	Well positioned within the value chain

Medium-sized Farmer

Land	Cultivated land is medium-sized (20–500ha)
Labor	Combination of family members and external labor
Technology	Partly mechanized
Resources	Limited access to formal bank loans
Production	Largely commercial
Capacity	Reasonable market access but limited access to information
Value Chain	Weaker position, stronger in cash crops

Commercial Smallholder

Land	Size of cultivated land is small (2–20ha)
Labor	Primarily family labor
Technology	Minimal mechanization
Resources	Mainly informal finance
Production	Partly commercial (at least one cash crop)
Capacity	Marketing through group structures
Value Chain	Position depending on group strength

Semi-commercial Smallholder

Land	Size of cultivated land is relatively small (e.g., <2ha)
Labor	Primarily family labor
Technology	Low technology, little access to know-how
Resources	Limited resources (capital, skills, labor, risk mgt, etc.)
Production	May produce subsistence or commercial commodities, with on-farm and off-farm sources of income
Capacity	Limited capacity of marketing, storage, and processing
Value Chain	Often vulnerable in supply chains

Subsistence Farmer

Land	Size of cultivated land is relatively small (e.g., <2ha)
Labor	Primarily family labor
Technology	Low technology, little access to know-how
Resources	Limited resources (capital, skills, labor, risk mgt, etc.)
Production	Subsistence commodities, with part of their income from off-farm activities
Capacity	Limited capacity of marketing, storage, and processing
Value Chain	Extremely limited, no linkages to supply chains

WHO ARE AGRICULTURAL SMES?

Agricultural sector SMEs not involved in the primary production side (i.e., traders, processors, input suppliers) have their own financing needs just like any other SMEs. Working capital, funding for acquisition of assets (movable and real estate), cash flow management services, and insurance are often needed by these agricultural SMEs as well. As with SMEs in other non-agriculture sectors, non-primary production agricultural SMEs face similar obstacles in accessing financial services. There are, however, some key differences. For one, non-primary production agricultural SMEs face some of the systemic risks that affect agriculture production and products. Traders and processors are exposed to price swings of the commodities that they buy before selling them as processed or unprocessed goods. Price declines, for example, affect margins and the ability of these entities to repay their loans. Catastrophic crop losses could create financial problems for processors and traders, as they will not find produce to trade and process. Similarly, if there is a catastrophic crop failure, traders and processors will not find enough produce to purchase, which means that they will be operating well below capacity based on fixed assets, and therefore operations will be negatively affected. These systemic risks relating to price and crop production have a significant impact on the cash flows of non-primary production agricultural SMEs since commodity prices and crop production tend to be much more volatile compared to prices and volumes of industrial goods or services.

Aside from price and crop production risks, the rest of the issues for accessing finance are quite similar between non-agricultural and agricultural sector SMEs. In terms of innovations in financial services, agricultural SMEs not involved in primary production can access similar instruments as farmers, such as supply chain finance, equipment leasing, and warehouse receipt/inventory finance.

Agricultural sector SMEs involved in primary production are basically farmers (smallholders, medium, and large), large enterprise farm operators, agriculture production cooperatives, and other forms of producer organizations. For simplicity, we will call them farmers. When it comes to primary production (farming), the traditional SME segmentation is more challenging in these cases, as structural differences in farm size and income result in varying earning potential for farmers. For example, cash crops or generally high value crops (e.g., fresh fruits and vegetables, spices, etc.) generate much higher income on smallholdings compared to staple crops. Thus, it is useful to use a range of characteristics to segment farmers into subsistence/semi-commercial smallholders, commercial smallholders, medium-sized farmers, and large farmers, as the financial services they require and the security they can provide will vary significantly. The chart below illustrates a segmentation of primary producers.

The segmentation of agricultural producers is a challenging but very important task that those who wish to offer financial services need to undertake. The segmentation is challenging because farmers, or farming enterprises, are very diverse, and trying to categorize them is not an easy task. This may be partly due to country differences or differences among crops even within the same country. For example, a small maize farmer in Ukraine may have similar characteristics as a large farmer in Malawi or Zambia. The environment and context that a small rice farmer in Sri Lanka is facing may be very different from a small cinnamon or tea farmer in the same country. A survey of different crops in Tajikistan showed that net income per hectare fluctuated from around $400–600 per hectare for wheat, barley, and corn to well above $12,000 per hectare for vegetables (onions, tomatoes, garlic, and cucumber). Within the same survey, a farmer with 15 hectares under cotton production has the same net income as a farmer growing carrots in a 1.5 hectare farm. Thus even among smallholder farmers within the same country, which crops and crop combinations they choose to grow makes a great deal of difference in terms of income and cash flow. The importance of farmer segmentation is not so much to determine which farmers should or should not be offered

financial services, but to learn what financial services are needed in each market segment and how best to serve the various segments. Some financial institutions may also use segmentation to pick the "low hanging fruit" and begin offering services to the farmer segments that are easier to understand and work with before proceeding to others.

Large and medium-size farmers tend to be commercially oriented and often are customers of formal financial institutions. These farmers often produce large volumes and have a significant income from farming activities. They own farming equipment, have land titles, often employ labor, and usually have sufficient financial information and collateral that would satisfy formal financial institutions and attract their attention. Large and medium farmers usually demand specialized financial products, like crop loans, crop insurance, and loans or leases for farming equipment that are tailored to their needs and reflect the cash flow seasonality in terms of repayment. However, large and medium commercially oriented farmers are by far the minority in most emerging economies, particularly the poorer ones.

Smallholders are by far the largest and most diverse category of farmers in emerging economies. In terms of land area, estimates indicate that 85–90 percent of all smallholders have less than 2 hectares of land. For this reason, smallholders need to be segmented further in order to best meet their financial services needs. At the very bottom, we have the **subsistence and semi-commercial smallholder farmers.** These typically grow staple crops that are used primarily for household consumption while small surpluses are sold in local, informal markets for cash or exchanged for other goods. These farmers may also own some livestock, both for cash flow and for asset accumulation purposes, and they may draw income outside their own farm (e.g., working in larger farms) or even outside agriculture (e.g., working in a village shop). The income of these farmers tends to be diversified and it is more of a household income rather than individual farmer income.

Commercial smallholders are farmers (or farming households) most commonly growing cash and higher value crops (e.g., coffee, cocoa, cotton, tea, sugar, spices, fruits, and vegetables, etc.), often intercropping with some food crops and livestock to supplement the household consumption. Their income is more dependent on the surplus they produce from these cash crops, while some income may come from off-farm activities (e.g., working in other farms or in the village, etc.).

In the case of commercial or cash crops, larger farmers generally depend less on a single cash crop as part of their farm income, while smaller farmers depend to a much larger extent on a single cash crop as part of their farm income. For example, medium and larger cocoa farmers in Sulawesi draw around 56–62 percent of their farm income from cocoa (their primary cash crop), while small cocoa farmers have around 97 percent of their farm income coming from cocoa. On the other hand, larger farmers depend much less on non-farm income compared to smaller farmers, particularly the less commercially oriented ones. For the same sample of cocoa farmers in Sulawesi, larger and medium cocoa farmers have no income outside of farming, while smaller cocoa farmers have around 7 percent of their income outside farming.

When it comes to small farmers that do not have cash crops, their reliance on a single crop can be much smaller: in a survey in Andhra Pradesh, where there was no cash crop dominating the area surveyed, only 11 percent of small farmers planted a single crop such as rice. As with cash crop farmers, the smaller the size of the farm holding planted with non-cash crops, the higher the percent of total income derived from income earned off their own farms (in the case of the above sample, 8.5 percent of the smallholder rice farmer income came from non-farm activities versus 4.1 percent for the larger rice farmers).

Commercial smallholders can be further sub-divided into those that grow crops that form part of a **tight value chain** or a **looser value chain.** Tight value chains

capture the flow of goods and funds into a single channel, generally due to the characteristics of the particular commodity. For example, sugar is delivered to a specific neighboring sugar mill due to the low value per volume, which makes transporting further uneconomical. There are other examples of tight value chain goods, such as fruits, vegetables, and milk that require cold or atmospheric storage in order not to spoil because of their high perishability. Tea and spices have strong, large buyers that set up the infrastructure and buy from small farmers. There are certain cases where coffee and cocoa have tight value chains when buyers want to buy specific qualities (specialty coffees or cocoas) or want to buy coffee and cocoa of certain standards (e.g., certified, organic, Fair Trade). The key issue is that tight value chains generally involve greater control of the flow of goods and funds to ensure repayment (via delivery of the crop) and limit the opportunities of side selling (when the farmer delivers somewhere else to avoid repayment of loans extended under value chain financing models).

It is difficult a priori to determine the "tightness" or "looseness" of value chains, and one needs to be able to analyze each situation very well to understand the dynamics and the behavior of the actors along these value chains before determining how tight or loose they are. Strong relations between buyers/traders and producers enable formal financial institutions to leverage these relations and reduce the asymmetry of information and ensure loan repayment.

DEMAND AND SUPPLY

In terms of **demand,** there are vast differences in farmers' financial needs across the spectrum, even among smallholders. The less commercially oriented and more subsistence-based smallholders tend to have broader and more basic financial needs. Loans often fulfill a variety of uses, related to both farming and non-farming needs (e.g., school fees, weddings). These farmers treat money as fungible, borrowing to meet their overall household needs rather than financing specific farming activities such as the purchase of seeds or fertilizers. These smallholder subsistence and semi-commercial farmers also need savings, money transfers (e.g., higher dependence on remittances), and insurance (life and health). Most often, basic financial products with perhaps some adjustments to reflect cash flow seasonality (if it exists) is all that is needed. Innovation in this case would come more from reducing the costs to serve these clients, as they have very small transactions.

Moving up to the more commercially oriented smallholders, their financial needs start becoming more linked to specific farming activities: the need to purchase inputs, lease machinery, or perhaps even hire some seasonal help. Thus their financial needs reflect the higher percentage of their income drawn from the farming activities. The degree of financial product customization increases to reflect the particularities of the crops and cash flow seasonality. Of course, commercial smallholders tend to also have broader financial needs similar to the subsistence and semi commercial farmers, but overall their financial needs become more dependent on the investments needed to grow, harvest, and manage their crops after the harvest. Funding for commercial smallholders moves away from funding the household needs, and the distinction between household and commercial agricultural enterprises becomes more explicit.

In terms of the **supply** of financial services, smallholder farmers can get financing through informal channels (e.g., local money lenders), through supply chains (e.g., major buyers, input suppliers), microfinance institutions and, in some cases, banks. Usually, the looser the value, the more the reliance is on informal channels and perhaps in-kind credit in the form of inputs from local providers. Tighter value chains can attract bank financing and financing from buyers (e.g., sugar mills, cotton ginners, milk companies).

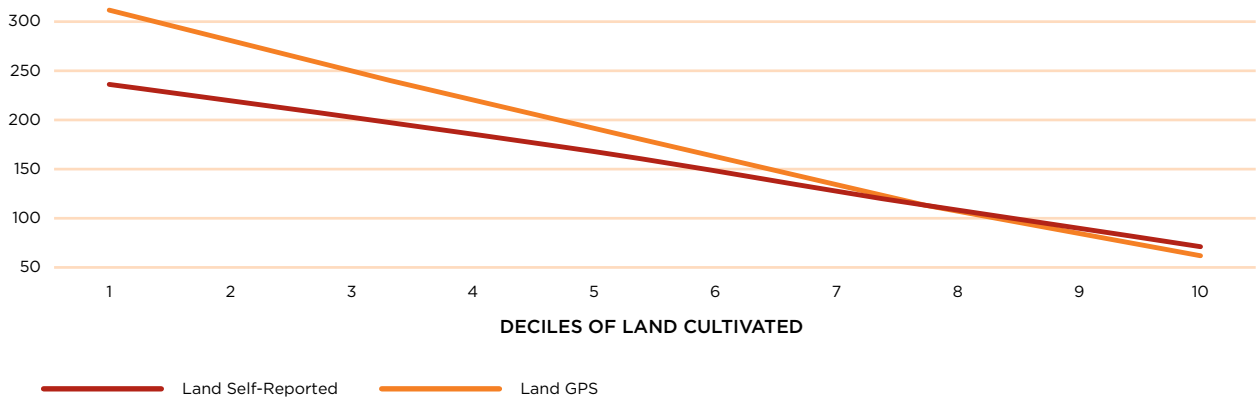
In looser supply chains where crops can be sold on the side and where repayment is difficult to capture through delivery, lenders who are near farmers have an advantage, as proximity closes the asymmetric

FIGURE 3 FARM SIZE AND PRODUCTIVITY — EVIDENCE FROM UGANDA

Can Small Still Be Beautiful in Farming?

Smallholders can be quite productive, and some evidence indicates that they are proportionately more productive than larger farmers. With the exception of plantation farming, an inverse relationship between plot size and productivity per hectare has been observed, and has found support in some empirical evidence. Recent research from Uganda has demonstrated that smallholding farmers typically over-report land holdings — discrediting longstanding claims that this inverse relationship is merely a function of under-reported plot sizes and inflated yield data. This same study found that average acre yields of medium farmers were 270 percent more productive than those of large farmers, while average acre yields of small farmers were over 300 percent more productive. These diseconomies of scale may possibly be explained through their labor structures. Small family farms can be maintained by a self-motivated workforce with expertise in local ecology and a labor supply that is easily adjusted for seasonal variability. However, this may not apply for all crops and environments. For example, evidence from Brazil and Argentina indicate that, at least for grains, larger farms tend to be highly productive and cost efficient. There are crops that seem better suited for smallholder farmers, such as coffee, cocoa, and vegetables, amongst others, where yields and productivity amongst these smallholders can be very high. These are more labor intensive crops, compared to grains that rely on scale and mechanization.

UGANDA: INVERSE FARM SIZE PRODUCTIVITY RELATIONSHIP



information gap, facilitates credit assessment, and makes repayment enforcement easier. Thus local money lenders, input suppliers in the area, local credit unions, credit cooperatives, and microfinance institutions (MFIs) in that location are more appropriate in reaching out to these farmers.

Banks and buyers tend to be involved with smallholders when there is a tight control in the value chain and repayment can be assured through the delivery of the crop. Banks can either lend directly to farmers, or receive repayment through the buyer when farmers deliver, or lend to the buyer, who can then lend to farmers. There are ways that banks and buyers could share risks, share information in credit assessment, and administer disbursements and repayment. These arrangements all depend on the level of comfort among the three parties: the farmers, the buyer, and the bank. The main collateral in these transactions is the future crop deliverable and the cash flow it generates.

Banks may ask for other forms of security, such as land, equipment, or third party guarantees, but mainly the reliance is upon the delivery of the goods.

Based on results from surveys, often smallholder farmers find the banks' processing takes too much time, involves burdensome requirements, and requires collateral levels that are quite high. Distance to the bank branches is also a negative factor. However, a survey for mostly smallholder farmers in India, in Tamil Nadu and Andhra Pradesh, found that 91 percent of the respondents listed banks as the most preferred option in receiving financing. There are cases where local credit unions or financial cooperatives are more flexible in their terms and processing and do not often require "hard" collateral, while offering loans as multiples of saving balances after accounts are maintained for some minimum time.

Given the diverse characteristics of farmers and the nature of agricultural economic activities, financial services for agriculture must tackle specific challenges in addition to those inherent in any financial service offerings in emerging markets. These specific challenges are primarily related to the characteristics of farmers, the nature of the agricultural sector and sub-sectors, and the policy and regulatory environment within countries.

Financial innovation models and approaches aim at overcoming these challenges and enabling the provision of financial services to farmers. Financial innovation here is related to ways that would improve one or more of the following perceived constraints in lending to the agricultural sector:

- Enable better risk assessment (e.g., through information by the value chain);
- Reduce administrative costs (e.g., through mobile technology, agency model);
- Combine with other financial services (e.g., savings, insurance) and non-financial services (e.g., extension, technical assistance, certification); and
- Improve security of the collateral and cash flows (e.g., warehouse receipt financing, price hedging, insurance).

Given the plethora of models that exist, we chose to classify them as follows:

- Models or approaches for lending directly to farmers, particularly focusing on smallholders (these are mostly for working capital purposes);
- Models or approaches that finance movable assets; and
- Models or approaches for lending through value chains, involving one or more of several parties such as buyers or input suppliers (again, most of the financing is used for working capital purposes).

CHAPTER 2
Innovative Farmer and Agricultural SME Financing Models

This report examines innovative models to finance farmers and agricultural SMEs with the goal of finding ways to deal with credit risks, given the lack of financial information, track record, or acceptable collateral by these entities. The vast majority of farmers and agricultural SMEs, particularly the smaller ones, operate in the informal sector and in rural areas that are not usually covered by financial infrastructure (e.g., credit bureaus) and where banks or other financial institutions have scant local presence in terms of branches. These factors, as well as the conditions and risks outlined in Section I, make it very challenging to assess credit risks. For purposes of this report, an important objective of seeking innovations is to identify models and approaches that would help financial institutions find ways to reduce impediments and risks in lending to farmers, particularly smallholder farmers. Additional objectives of this report are to find models that reduce the transaction costs of providing financial services to smallholders and provide risk management instruments to smallholders in order to protect them against risks, mostly systemic ones such as price and weather risks.

In defining innovation, we considered the following three criteria:

- New models and approaches not yet widely used (e.g., weather insurance, parametric credit scoring, mobile banking);
- Adaptation of established models and approaches in use elsewhere but adapted to the context of emerging markets, particularly those relevant to lower income (IDA) countries and smallholder farmers (e.g., warehouse receipts, price hedging, agricultural equipment leasing);
- Downscaling to smallholders those models and approaches that have worked in other sectors, commodity sub-sectors, and/or for the larger and medium-sized commercial farmers segment (e.g., value-chain financing).

Financial innovation has the overall objective of using models that would mobilize additional resources to the agricultural sector and increase the participation of private institutions in financing agricultural SME's and farmers. Innovation could also foster new partnerships between various stakeholders, both within the private sector (e.g., agribusinesses, input suppliers, farmers, financial institutions) and between the public and private sectors (PPPs).

As noted earlier, the innovations outlined in this report are divided into three main types: financing models, risk mitigation models, and distribution models. Within the types of financing models, the approaches are divided according to their repayment source or collateral into three categories: farmer, movable collateral, and buyer. In financing models targeting the farmer or groups of farmers, collateral generally involves cash flow analysis by banks in order to underwrite anticipated earnings, overall savings, and/or group guarantees. Financing models using movable assets as collateral often include leased equipment or harvested commodities in warehouses. Financing models that rely on buyers as the repayment source are based upon an overall value chain analysis in which strong business relationships persist between farmers and buyers; formal or informal contracts provide security to lenders. A discussion of each of these types

FIGURE 4 FINANCING MODELS AND CASES

Financing Models by Main Secondary Source of Repayment

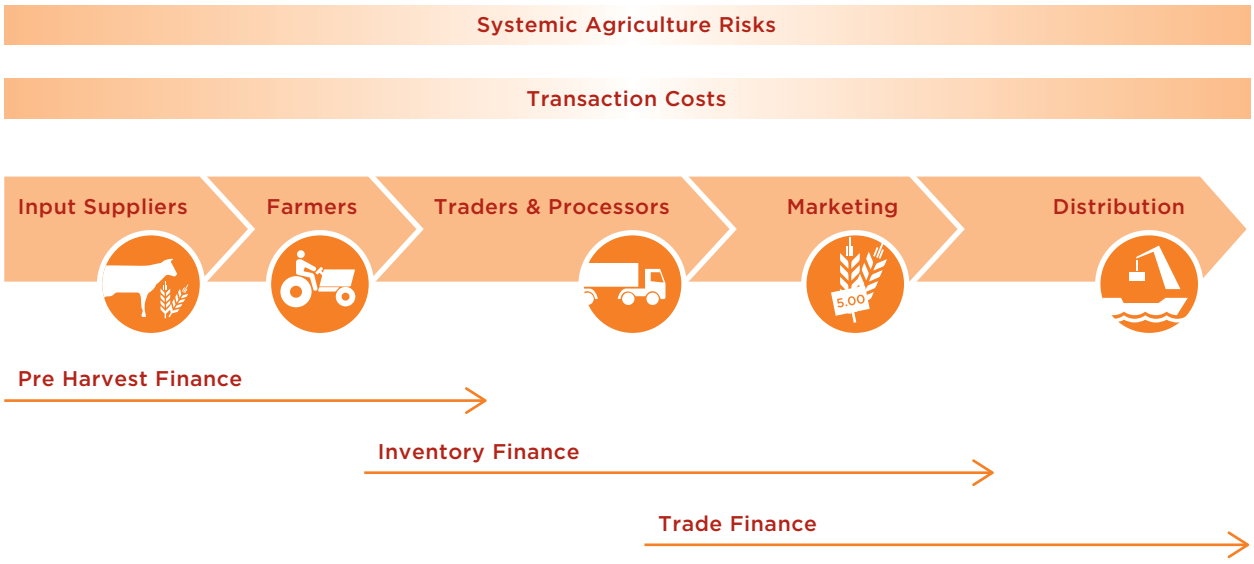
Farmer	Movable Collateral	Buyer
Direct Smallholder lending Kilimo Biashara, Equity Bank, Kenya; Opportunity International (OI) Informed Lending Model, Ghana, Rwanda, Mozambique, Malawi, Uganda **Indirect lending through FBOs/coops** Zanaco's Munda Credit Facility, Zambia **Emerging Farmers Finance** Finterra, Mexico; Zanaco's "The Zambia Emergent Farmer Finance and Support Program" (ZEFP), Zambia **Savings account linked input finance** NMB's Kilimo Account Product (KAP), Tanzania	**Equipment finance** Banco de Lage Landen, Brazil; Mahindra & Mahindra Financial Services, India **Leasing** IMON Agricultural Leasing program, Tajikistan; Development Finance Uganda Leasing Company IFC Coffee farmer bicycle Leasing, Rwanda **Infrastructure Finance** Jain Irrigation Systems Limited Microirrigation system financing, India **Warehouse Receipt Financing** NIB, Ethiopian Commodity Exchange, Warehouse Receipt Financing for Coffee Farmers NMB WHR fin, cashew, coffee, maize, sesame, sunflower Tanzania **Collateral Management** Ghanaian Financial services, Ghana	**Tight market Value Chain Finance (VCF) with output buyers** Palabana Dairy Cooperative Society, Parmalat, Zambia; Dunavant Cotton Contract Farming, Zambia; ECOM Trading Coffee farmer financing, Africa-Asia Facility **Loose market VCF with output buyers** Ghana Grains Partnership, Ghana **Nucleus Farm/Outgrowers** Mtibwa and Kilombero Sugar Cane Outgrower Schemes, Tanzania **VCF with input suppliers** NMB Agro-Dealer Financing Bayer/Raiffeisen Aval Bank, input financing, Ukraine; ITC-SBI Input finance for smallholders, India **Factoring** Centenary Bank/Technoserve Uganda Kenya Gatsby Trust, Kenya **Trade Finance** Trade finance for exporters from Root Capital

of financing models follows in the first three parts of Section II 1–3, after which both risk mitigation models and distribution models are discussed in Section II 4–5.

The classification of financing models is based on the sources of repayment or collateral on which the financial institution can rely. The first column in Figure 4, above, shows how the bank can look to the *farmer* by relying on his or her overall cash flow, on his or her savings, or a group guarantee. The second column outlines where the bank has access to *movable collateral*, either in the form of equipment or commodities. And the third column indicates where the bank looks to the *buyer* in value chain or trade financing, specifically looking at the relations the buyer has with other actors along the supply chain.

Before delving into the various financing models, it is important to put financing in context within the overall agricultural value chain. The various models of financing for agriculture can exist at many different points along a given agriculture supply chain, as depicted by the following figure.

FIGURE 5 ACTORS ON THE SUPPLY CHAIN



The figure above includes all the actors along a given agricultural supply chain and indicates the place of various financial instruments in relation to their target users. The target users include input supply SMEs, farmers, and agriculture SMEs in processing, trading, marketing and distribution activities. The financial instruments cover pre-harvest loans, inventory financing, and trade financing, as well as ways to deal with systemic risks and transaction costs. These risks and transaction costs apply to all actors along the supply chain but are much more pronounced in the case of financing farmers.

2.1 Financing Farmers

This section looks at models for financing farmers, either directly or indirectly, through farmer-based organizations (FBOs) or cooperatives. The primary source of repayment is usually the farm's conversion of working capital into cash flow through the production season. If, for some reason, this conversion fails to generate sufficient cash flow to service the loan requirements, the bank has to consider other options, many of which are still dependent on the farmer's ability to generate cash flow or liquidate various assets to repay the loan. Key success factors generally involve investment by the bank to understand the needs of the farmers and the primary cash flow strengths and weaknesses in order to adequately underwrite cash flow and rely less on collateral. Thus the following models innovate through new types of finance arrangements, such as group lending, parametric lending methodologies, emerging farm business finance, out-grower models, or savings linked approaches.

DIRECT SMALLHOLDER LENDING

Direct smallholder finance models seem to be more effective than indirect or wholesale models in providing access to financial services for agricultural SMEs. The main advantage of the direct model is that it enables distribution of a full range of financial services, whereas the wholesale model mainly focuses on credit. Retail models also allow for a segmented approach to agricultural SMEs. For example, smallholders may be served only with small credits, whereas growing farmers could

eventually apply for investment financing as well. Key risk mitigants for this model are: (i) deep knowledge of the farmer and his or her business; (ii) a cap on the exposure to a single farmer; (iii) group lending (collective responsibility); (iv) integration into a supply chain; and, (v) providing cash to the farmer during the lean season to lower the side selling risk. The direct model allows the bank to attract deposits as well, which lowers funding costs and facilitates more effective asset/liability management. The Kenyan Equity Bank (Case 1, page 60) and Opportunity International (Case 2, page 61) cases are examples of direct lending, while the HDFC case (Case 3, page 62) is a good illustration of an agency based model.

INDIRECT LENDING THROUGH FBOS/COOPERATIVES

This model, also known as a wholesale model, is based on a bank lending indirectly to smallholders through an aggregator organization, such as a farmer-based organization or cooperative. In the wholesale model, the entire group is the borrower, and therefore group members guarantee each other. In the agent model, the group's organization only administers the loans, and individual group members are the borrowers. The benefits of this approach are savings on costs of creditworthiness assessment and loan administration. The security of the model can be enhanced by cash collateral requirements at the organization level, instead of traditional collateral or claims on harvest proceeds at the individual farmer level, as well as direct integration with input suppliers to reduce the amounts of cash disbursed directly to farmers. The Zanaco case (Case 4, page 63) illustrates how these two factors combine into a zero-default lending scheme. Other success factors include strength of management, length of history, and commercial orientation of the FBO or cooperative through which the bank will lend.

EMERGING FARM BUSINESS FINANCE

"Emerging farm businesses" are those farmers who have proven entrepreneurial skills and track records, as well as minimum farming sizes and assets. All of these factors combined give them the potential to transform their business into larger, independent, commercial farms in the grains, livestock, and horticulture sectors. This class of farmers emerges from the segmentation of farmers. At the bottom of the triangle depicted in Figure 2, there is a large group of semi-commercial and commercial smallholder farmers. Emerging farm businesses in that category are generally medium-sized, situated between the large farmers and the semi-commercial and commercial smallholders. Generally, emerging farm businesses have access to reasonable plots of land (often >100ha) but only cultivate a small portion (perhaps only 15–20ha) due to lack of working capital and lack of agronomic, technical, and financial skills to grow their businesses. They may also lack or have uncertain land titles, which then prohibit them from access to commercial bank financing.

Although the number of so-called emerging farm businesses is difficult to determine, estimated between 1,000 and 10,000 farmers in Zambia for example, growth in agricultural production in many developing countries may very well come from this class of farmers as well as from smallholders. Unlocking their potential requires: (i) working capital finance and investment finance (irrigation and mechanization); and (ii) farm management skills, technical skills, and financial skills (cash flow planning). In addition, these farmers often need improved land security, which is particularly important for making significant investments in long-term capital for these types of emerging farm business. The Mexican Finterra case (Case 5, page 64) and the Zambian Zanaco cases illustrate both the difficulties and rewards of serving these emerging farm businesses.

SAVINGS-ACCOUNT LINKED INPUT FINANCE

Savings are a very important part of the financial services package that banks want to offer farmers. Savings accounts are a stepping stone to turning a smallholder farm into a more commercial business. In addition,

deposits are usually the most economical way for bankers to fund their business; they are de facto long-term savings. Finally, savings can be an effective part of the loan security package, and they can become the principal collateral to secure a loan. The Tanzanian case of NMB's Kilimo account (Case 7, page 66) illustrates the design of an effective lending product linked to a savings account linked. Success factors of this model are strong checks and balances that prevent farmers from "gaming" the system. "Checks" include "know your customer" (KYC) signals, such as requirement of references or membership of farmer associations, and "balances" include strong savings incentives and bonuses for high savings balances over longer periods of time.

2.2 Financing movable assets

This sub-section reviews the experience and cases with movable assets as secondary repayment source. Movable assets can be anything from equipment to small infrastructure and commodities (post-harvest). This sub-section discusses term equipment finance separately from leasing cases. Although there is essentially no economic difference between the two structures, often the choice between the two is driven by tax and preferences with regard to ownership.

Challenges to long-term financing for investments such as irrigation, replanting of cocoa or cashew trees, or farm equipment are even greater than providing seasonal working capital loans to agricultural SMEs in developing countries. In addition to constraints around enforceability of collateral, banks do not wish to have a long term local currency exposure and a mismatch with their liabilities on the funding side. Funding of long-term deposits in local currency is often problematic. Some multilateral institutions are interested in providing long-term funding to local banks, but these are often denominated in USD and thus create a risk of a mismatch with the local currency long-term loans. This is being addressed by multilateral institutions that have started to provide long-term funding in local currencies.[15]

EQUIPMENT FINANCE

Equipment finance denotes financing of usually movable assets acquired as additions or supplements to more permanent assets. An important factor in this type of asset finance is close collaboration between the equipment providers (vendors) and the bank. The Banco de Lage Landen case in Brazil (Case 8, page 67) underscores the need for a deep understanding of farming and farm equipment markets. For the Mahindra & Mahindra (Case 9, page 68) and De Lage Landen (DLL) (Case 8, page 67) cases, asset finance is based on a loan and pledge structure rather than a lease structure, due to specific local circumstances (tax issues) as well as the farmers' preference to own their equipment. The Mahindra & Mahindra case reveals the following key success factors for equipment finance, which are also supported by the other cases: (i) understanding the farmers' payment capacity; (ii) avoiding intermediates; (iii) local network and local decision processes with short response times; (iv) products that suit farmers and account for seasonal payment patterns; (v) a platform for effective repossession and remarketing of equipment for defaulting farms; and, (vi) efficient handling of cash payments in the absence of bank relationships with its clients.[16] The Jain irrigation (Case 10, page 69) case in India also reveals how equipment financiers can leverage government subsidies for equipment.

LEASING

A lease is a contractual arrangement between two parties whereby a party that owns an asset (the "lessor") lets another party (the "lessee") use the asset for a predetermined time in exchange for periodic payments. Leasing focuses on the lessee's ability to generate cash flow from business operations to service the lease payment, rather than on the balance sheet or on past credit

15 IFC and other IFIs have started offering longer-term loans in local currencies in a number of emerging markets.

16 An additional case, the BrazAfric case in Kenya, illustrates that Public Private Partnerships (including a partial credit guarantee) can be pivotal to the scaling-up of these projects.

history. This explains why leasing is particularly advantageous for young companies, as well as for small and medium businesses that do not have a lengthy credit history or a significant asset base for collateral. Furthermore, the absence of traditional collateral requirements (such as land) offers an important advantage in countries with weak business environments, particularly those with weak creditors' rights and collateral laws and registries. Because the lessor owns the equipment, it can be repossessed relatively easily if the lessee fails to meet lease rental obligations; this is particularly advantageous in countries where secured lenders do not have priority in the case of default.

The leasing entities that do have a focus on the agricultural sector are often linked to manufacturers or distributors of agricultural equipment in one way or another. Lease financing only partially overcomes the typical constraints to credit financing. Leasing firms often take additional collateral from rural clients in developing countries;[17] this practice is different from the typical lease transaction in developed economies, in which the leased asset itself is considered adequate security. The security deposit or down payment required tends to be higher than typically demanded in developed economies. In addition, a World Bank study finds that nonfarm enterprises account for a significant proportion of rural leases; rural leasing can be profitable, but jumpstarting rural leasing may require government and donor support; and, rural leasing companies may not always be viable. Given that leasing is a very specialized financial activity, economies of scale, cost, and risk factors may require leasing companies have large urban operations.[18] The Ugandan case of DFCU (Case 11, page 70) illustrates all of these challenges and limitations.

WAREHOUSE RECEIPT FINANCING

Warehouse receipt finance is a form of secured lending to owners of non-perishable commodities, which are stored in a warehouse and have been assigned to a bank through warehouse receipts. Warehouse receipts give the bank the security of the goods until they have been sold and the proceeds collected. Given the limited collateral available to support farmers' financing needs, such post-harvest commodities and warehouse receipts represent a liquid form of collateral against which banks can lend. When a well-functioning warehouse receipt system is in place, farmers have a choice in deciding whether to sell immediately after harvest (when prices are often lowest) or to store in a licensed warehouse and to apply for a short-term credit (thus enabling farmers to sell at a later date, when prices may be higher). Warehouse financing also enables aggregators and processors to secure their sourcing throughout the year and to purchase their raw materials.

There is significant upfront work required to create, operate, and monitor a full warehouse receipt system. Necessary preconditions for a warehouse receipts system in which smallholder farmers can participate are many: (i) a legal environment that ensures easy enforceability of the security, and makes warehouse receipts a title document; (ii) reliable and high-quality warehouses that are publicly available; (iii) a system of licensing, inspection, and monitoring of warehouses; (iv) a performance bond and/or indemnity fund; (v) banks that trust and use the system; (vi) agricultural market prices that reflect carrying costs; (vii) supportive public authorities; and, (viii) well-trained market participants.

Even with the necessary preconditions in place, there remain risks in warehouse receipt systems, including: (i) fraud or collusion; (ii) credit and counterparty risk; (iii) storage risk and misappropriation by warehouse operators; (iv) price risks, given the volatility in agricultural commodity prices and government price intervention; (v) marketing or buyer risks; and, (vi) legal risks concerning perfection of security, registration of prior claims, and enforceability. Nevertheless, both the Tanzanian NMB (Case 12, page 71) as well as the HDFC (Case 13, page 72) cases illustrate how warehouse receipt schemes can thrive sustainably.

17 World Bank (2006)

18 Ibid.

COLLATERAL MANAGEMENT AGREEMENT FINANCING

A collateral management agreement (CMA) is a tripartite agreement between a collateral manager/warehouse operator, a named depositor or owner of the commodities, and a bank. The collateral manager acts as the custodian of the commodities held in storage at the warehouse on behalf of the bank. The collateral manager will not release the goods to the depositor or a buyer until the bank provides a written form of release to the collateral manager, usually only upon receipt of loan repayment or other payment assurance against its loan secured by the goods in storage. CMAs are generally costly and thus are often not accessible to smallholder farmers and agricultural SMEs. Nonetheless, agricultural SMEs might benefit from CMAs. Banks in developing countries often provide financing to aggregators, processors, and exporters backed by agricultural commodities held in warehouses under collateral management agreements in the absence of a fully-developed warehouse receipt system (according to the defined pre-conditions above). The same risks as outlined above for warehouse receipts also apply to CMA-backed financing, such as fraud, collusion, storage risks, credit risks, price volatility, and buyer risks. However, as the bank maintains physical control over the commodity in storage via its custodian (the collateral manager) until its loan repayment is secure, there is limited risk that the bank's security interest will not be perfected. The Ghana case (Case 14 page 73) tries to illustrate some of the issues involved with CMAs.

2.3 Financing Farmers in Value Chains

Rather than relying on the creditworthiness of individual farmers, value chain financing and other approaches that rely upon buyers are based on business relationships in the value chain. Broadly speaking, value chain finance includes financial flows between value chain actors, such as buyers or input suppliers, as well as flows from financial institutions into the chain, or combinations of both. The buyer security models are structured so that the bank relies upon the buyer contracts (verbal or written) to help secure its loans. From the bank's perspective, having a strong buyer in the chain in itself provides comfort, because it helps to reduce or manage the risks of limited market access and price volatility, especially if the farmer has an off-take agreement[19] with a trusted counterparty, and is therefore less likely to default. Bankers may be further secured when the buyer helps to minimize default risk with the pledge of buyer receivables to the lender or some other form of guarantee, and by sale proceeds flowing through the bank. Under these models, bankers base lending decisions on the strength of the value chain as much as on the creditworthiness of individual farmers.

The downside of these arrangements is the dependence of farmers on a single buyer: when the buyer disappears or defaults on his or her obligations, the whole supply chain collapses and takes farmers repayments with it. An additional constraint of value chain finance is that it does not address other financial services needs of the farmers, given its focus on credit only. These models do not facilitate development of the smallholder into an emerging farm business. At least in traditional contract farming models, the farmer's role is limited to execution of the production plan of the off-taker/processor. The advantage for the farmer is that he or she hardly needs any working capital and that the income becomes predictable. The major benefit for the farmer and the bank is that cash flows become more predictable compared to standalone farmers, and that there is a risk of side-selling in tight value chains. A risk for the bank is that the buyer gets into financial/operational problems and is no longer capable of buying the produce under the contract. In addition, there is often a strong monitoring role for the buyer and there are often high set-up

19 In Africa, many rural smallholder farmers are illiterate and often off-take agreements in the traditional sense are non-existent. However, there are aggregators that are fully entrenched in the local community and have an unwritten understanding that the farmers will sell their produce to them, usually because the aggregator has provided credit, inputs, and advice to those farmer. Nevertheless, the risk of side selling remains high, especially when unscrupulous traders prey on vulnerable farmers. The strength of such a value chain is based not on written agreements but on relationships with a foundation of respect and trust in local communities.

costs, given that the financing structure, related contractual arrangements, and procedures for monitoring and enforcement need to be tailored to each specific value chain situation. Buyers are interested in involving banks in the farmer financing, because they do not want to use significant capital for the non-core business lending to farmers. Bringing banks into tripartite arrangements allows buyers to leverage banks' balance sheets. Banks benefit from the buyer's knowledge of the chain and some level of buyer guarantee of farmer risk, given its higher risk tolerance.

The value chain finance (VCF) models are divided into four categories, according to the characteristics of different value chains: (i) tight VCF with output buyers; (ii) loose VCF with output buyers; (iii) nucleus outgrower models; and, (iv) VCF with input suppliers. These distinctions are made according to the tightness of the value chain, which affects the magnitude of side-selling risk, and according to the actor in the chain with which the bank interacts to implement its financing model (output buyers vs. input suppliers). The risk of side-selling is the biggest challenge for any actor that provides inputs, input finance, or working capital to farmers in a value chain with the expectation to generate repayment via sale proceeds, whether it is the bank, the buyer, or an input supplier. *Tight value chains,* such as sugar and cotton, have integrated value chains where farmers face only one de facto buyer for certain types of crops: highly specialized export crops; highly perishable crops; and crops with constriction points in the chain, usually transport costs or specialized processing. In these tight VCs, side-selling is very costly or even impossible. These characteristics are also applicable to most *nucleus outgrower financing models,* in which nucleus farms typically give outgrower farmers access to processing, transport, and markets for cash crops. *Loose value chains* are typical of crops that are more easily marketable and therefore attract third-party buyers to purchase crops directly from farmers in the value chain. While farmers may have contracts with value chain buyers, they can be tempted to side-sell to these third party buyers. *VCF for input suppliers* includes farmer financing by other value chain actors, such as agro-dealers, who access financing from banks for their own working capital to finance their farmer customers.

TIGHT VALUE CHAIN FINANCING (TVCF) WITH OUTPUT BUYERS

Tight value chains are characterized by multiple "constriction" points for farmers that ultimately prevent side-selling. These constriction points can be incentives (technical assistance for farmers, loans, club membership, prizes, cash advances during the lean season, sustainable price premiums, etc.) as well as penalties and constraints (such as perishable crop or enforced legal sanctions). Integrating the financing of inputs into supply chain activities is more common for "tight" value chains for a variety of reasons. Often, the values at stake are higher, including higher input loan sizes for specialized seeds, fertilizers, etc. These models are predicated upon strong commercial intermediaries with a focus on the physical trade and optimization of production, quality, logistics, storage, processing, and risk management functions in between. Successful commercial intermediaries with integrated supply chain management recognize that a profit-making opportunity exists in continuously working with smallholders to increase productivity and secure stable supplies. Thus providing finance to supplying farmers plays an important role in increasing production, yields, and quality for the benefit of the buyers and farmers. Finance mechanisms may be either through the buyer or from the bank to the farmer directly with the security of a tri-partite agreement between bank, buyer, and farmer. Input finance is a crucial added service that the buyer facilitates for the farmer, one that ultimately increases loyalty and more stable supplies.

There are several benefits of TVCF models. Value chain actors tend to have better knowledge of the key risk and profitability factors in a particular sub-sector, and banks can benefit from this knowledge of the value chain. These models often bundle finance with other services, such as improved inputs, extension services, and training, which can lead to increased cash flow for farmers

and better quality for buyers. Tying credit with existing touch points and commodity flows can reduce the transaction costs of lending. Since buyers and other agribusiness companies have a core interest in obtaining the crop, they have every incentive to monitor the farmers closely and ensure delivery of the produce, which also will ensure the repayment of the loan. This provides value chain buyers with an incentive to control delivery and thus defaults. Value chain financing can be provided either through the key buyer or through a financial institution in close collaboration with the buyer. Close collaboration can involve various arrangements from introducing farmers to the financial institution, to distribution and collection of funds, to risk sharing arrangements between the parties. The Dunavant cotton case (Case 15 page 74), the Parmalat case (Case 16 page 76), and the Ecom case (Case 17 page 77) illustrate the widely varying types of arrangements under this model.

LOOSE VALUE CHAIN FINANCING (LVCF) WITH OUTPUT BUYERS

As described in the introduction to the buyer-based models, VCF for tight value chains is generally easier and more prevalent than VCF for loose value chains, which typically feature easily marketable, staple crops. There are few success stories of value chain finance in staple crops such as maize, cassava, wheat, and ground nuts. For these crops, the side selling risk is naturally higher, because there are many buyers and crops can be sold in local markets. Additionally, government interventions are more frequent and sometimes unpredictable, causing market distortions and price volatility. Even in the case of rice, a value chain structure would only work if there were a strong relationship between the farmers and the mill. However, in many countries there are multiple smaller mills and middlemen absorbing paddy production and undermining any potential value chain finance structure. Thus VCF for these loose value chains has been notoriously difficult, if non-existent. The Ghana Grains partnership case study (Case 18 page 78) documents a notable exception to this pattern.

OUTGROWER SCHEMES

Outgrower models, often based on a central processing unit or estate, can allow farmers to access input finance thanks to the additional security the buyer provides to the lender. Such schemes bring together four elements: a central farm and facilities surrounded by growers who produce on their own land under contract; the provision of inputs and technical assistance to growers by the nucleus farmer; guarantees to purchase the growers' crops subject to meeting predefined standards; and, growers typically receiving an agreed-upon percentage of the final sales price of their products. Although this still leaves growers exposed to price and weather risk, it allows them to allocate a portion of their farmland to growing a cash or export crop they otherwise would not grow due to limited market access. The nucleus farm is generally engaged in primary production on a large farm plot, but also has other operations such as storage, processing, transportation, and market distribution for its own produce. However, engaging nearby farmers allows the nucleus farm to increase volume and achieve higher economies of scale than would otherwise be possible through their own production.

There are several key success factors for effective nucleus farm models according to a Technoserve review: (i) direct access to a viable market (local, regional, global) for the end product; (ii) a clear, transparent pricing mechanism, a price that is attractive to farmers, or both; (iii) avoiding mono-cropping systems, especially low-value, high-volume annuals; (iv) avoiding overreliance on credit to purchase inputs; (v) leveraging a competitive advantage in production, product attributes (e.g., brand, certifications), and/or proximity to the end market; and, (vi) credibility of the buyer and trust among farmers via regular direct interaction between the buyer and the farmers. This review also notes evidence suggesting that ad hoc, opportunistic investments that do not pursue and sustain an integrated and comprehensive farm-to-market approach are likely to fail.[20]

20 Technoserve-IFAD (2011)

Though similar to VCF for output buyers, outgrower schemes are distinguished by the centralized estate that both sources from local farmers and acts as a primary producer. Estates may have processing capabilities, but often sell aggregate production to end line processors. Strong, local linkages offer additional security to lenders. Proximity with outgrowers promotes supervision, limiting the side selling that is often a function of distance. Local sourcing also simplifies the provision of extension services and other supportive functions, providing additional opportunities to build trust and establish working relationships.[21] The Tanzanian sugar case of Kilombero (Case 19 page 79) seems to fit this pattern. Tanzanian banks lend to sugar outgrowers based on the additional security the sugar estates and mills provide.

VALUE CHAIN FINANCE WITH INPUT SUPPLIERS

Most commercial banks have limited branch networks outside of major urban centers, and no branches in rural areas. Banks interested in financing smallholders may choose to pursue lending directly to local agricultural input dealers, but leave the provision of credit to individual farmers completely in the hands of the agro-dealers themselves. Lending through the agro-dealer leverages the benefits of farmer facing trusted parties. Lending decisions are made through local knowledge of farmer capacity and commitment as overall transaction costs are reduced. Value chain finance with input dealers is a special type of model, because the lender generally assumes the agro-dealer risk, which requires a very different type of creditworthiness assessment and security package, often involving cash collateral.

Over time, the bank may be able to begin to lend to individual farmers, while still using the agro-dealer to support borrower screening to address "Know Your Customer" concerns and handle administration of loans to reduce distribution costs. This may also enable the bank to begin to provide non-credit services to farmers by using agro-dealers as agents in the village. Once a bank advances to this type of direct lending to farmers via input suppliers, it is important to note that these agro-dealer arrangements do not inherently involve buyer agreements and thus do not address a banker's concern with strong, stable procurement arrangements. Tanzania's NMB agro-dealer scheme (Case 20 page 80) and the Ukrainian Bayer guaranteed input credit scheme (Case 21 page 81) as well as the Indian e-choupal supported input finance scheme (Case 22 page 82) illustrate this model.

FACTORING

Factoring can be a powerful tool in providing financing to high-risk, opaque agricultural SMEs. Factoring is based on a company selling its accounts receivable (A/R) to a bank or factoring company at a discount. Factoring differs from the VCF models described previously, because the A/R are only generated once goods have been delivered but cash payment is still forthcoming. The company selling its A/R benefits by receiving cash earlier than it would under the terms of the receivable and is thus able to immediately utilize the cash received to invest in working capital needs. From the bank's perspective, the key virtue of factoring is that underwriting is based on the risk of the receivables (i.e., the buyer) rather than the risk of the seller of the A/R; there is no delivery risk as in VCF models. Therefore, factoring may be particularly well suited for financing receivables from large or foreign firms when those receivables are obligations of buyers who are more creditworthy than the sellers themselves.

Factoring can provide important export services to SMEs in both developed and developing countries. Like traditional forms of commercial lending, factoring provides SMEs with working capital financing. Factoring only requires the legal environment to sell, or assign, receivables and depends relatively less on the business environment than do traditional lending products, because factored receivables are removed from the bankruptcy estate of the seller and become the property of the factor. In this case, the quality and efficacy of bankruptcy laws are less important. However, factoring may still be

21 Ibid.

hampered by weak contract enforcement institutions and other tax, legal, and regulatory impediments. For example, factoring generally requires good historical credit information on all buyers; if unavailable; the factor takes on a larger credit risk and will apply a larger discount against the A/R portfolio. In general, a small firm sells its complete portfolios of receivables in order to diversify its risk to any one seller. In fact, many factors require sellers to have a minimum number of customers in order to reduce the exposure of the factor to any one buyer and to the seller's ability to repay from receipts from other buyers, in the case that a buyer defaults. However, this diversified portfolio approach requires factors to collect credit information and calculate the credit risk for many buyers. In many emerging markets, the credit information bureau is incomplete (i.e., may not include small firms), or non-bank lenders, such as factoring companies, are prohibited from joining. In the case of exporters, it might be prohibitively expensive for the factor to collect credit information on firms around the world. The Ugandan Centenary Bank case (Case 23 page 83) illustrates the factoring model for matoke farmers, the Kenyan Gatsby Trust case (Case 24 page 85) for SMEs more generally.

TRADE FINANCE

Trade finance in this report refers to financing international trading transactions of agricultural SMEs. In such a financing arrangement, the bank or other institution of the importing SME provides for payment for goods traded on behalf of the importer. Similarly, exporting agricultural SMEs must offer their customers attractive sales terms supported by the appropriate payment method to win sales against competitors or import goods. The primary goal for each export sale is getting paid; therefore, an appropriate payment method must be chosen carefully to minimize the payment risk while also accommodating the needs of the buyer. There are four primary methods of payment for international transactions: cash in advance, letters of credit, documentary collections, and open account. Cash in advance is the most secure for the seller, the open account the least secure. Banks may assist by providing various forms of support. For example, the importer's bank may provide a letter of credit to the exporter or the exporter's bank, providing for payment upon presentation of certain documents, such as a bill of lading. Alternatively the exporter's bank may make a loan by advancing funds to the exporter on the basis of the export contract. The Root Capital case (Case 25 page 86) shows how powerful trade finance can be to ultimately finance farmers.

2.4 Risk Management Models

The various risks for the agricultural borrower could lead to default risk. Some of these risks, in particular systemic risks such as weather or price risks, can be managed through insurance (e.g., yield risks); forward contracts, futures, and options (e.g., price risks); or other similar contracts. This section outlines innovative ways to manage key risks encountered in the agricultural space, in particular related to health, weather, yields, and price. There are other more traditional risk management mechanisms, in particular credit-life products, but given that they are "mainstreamed," they are not discussed here. The following box provides an overview of the risk management models and cases.

FIGURE 6 RISK TRANSFER MODELS AND CASES

Risk Transfer Models

Credit-Health Insurance

Kilimanjaro Native Cooperative Union, Tanzania

OI and APED, Ghana

Credit-Weather Insurance

TSKI MFI, Philippines;

UAP Insurance, Syngenta Foundation for Sustainable Agriculture, Kenya;

PepsiCo, India

Commodity Price Risk Management

Bagsa Agricultural Commodity Exchange, Nicaragua

PERSONAL INSURANCE

The personal risks of the borrower and the borrower household affect both household income and the borrower's repayment capacity. Sometimes, severe health shocks or deaths in the family that lead to large healthcare bills or funeral expenses can jeopardize the viability of the farming business for years to come, as households often have to sell essential livelihood assets such as livestock or resort to borrowing from money lenders to obtain the necessary liquidity quickly and simply. Thus, insurance to cover these main personal risks can significantly enhance the security package and ultimately lower default rates for the banker. The principal three products that help to secure farmer credit are: (i) credit life insurance; (ii) credit health insurance, and; (iii) health insurance. Life insurance tends to become a mandatory part of the loan package. For example, NMB bank Tanzania and Basix in India connect life insurance cover to their loan; NMB has incorporated the premium for the life insurance into the interest payment so that borrowers are automatically insured. Some banks created "credit life *Plus*" insurance products that also cover funeral costs, disability, acute illness, and even property.

Health insurance is less common given the moral hazard issues that make health insurance a difficult insurance product to design and administer. The two innovative cases — OI in Ghana (Case 2 page 61), and KNCU, a Tanzanian Coffee Cooperative (Case 26 page 88) — therefore focus on credit health and health insurance. The KNCU health insurance plan links cooperative member beneficiaries to a Dutch non-profit health organization and to a micro-insurance broker.

PRODUCTION RISK INSURANCE FOR FARMERS

Farmers face a variety of production risks that make their incomes volatile from year to year. In many cases, farmers also confront the risk of catastrophe, for example, when crops are destroyed by drought or pest outbreaks, or when assets and lives are lost to hurricanes and floods. These risks are particularly burdensome to agricultural SMEs. Systemic risks, especially those that involve catastrophic losses, pose special difficulties and costs. Production insurance, such as crop insurance, can be a solution. Recently, the innovative index-based insurance products that target agricultural SMEs have reached market maturity and significant scale in several countries, for example India and Kenya. Such an index-based insurance product involves writing contracts against specific perils or events (such as drought, hurricane, or flood) or an area-yield index defined and recorded at local area levels (usually at a local weather station or by government). Thus the index insurance payouts depend not on the individual losses of each policyholder, but rather on the locally recorded weather event or index of loss, which serves as a proxy for the losses in a region.

Because all buyers in the same region pay the same premium rate per dollar of coverage and receive the same rate of payment, index insurance avoids adverse selection and moral hazard problems. Also, since there are no on-site inspections or individual loss assessments to perform, it can be relatively cheap to administer. It relies only on local area index data, which are generally reliable and available either through ground level data measurements or remote sensing.[22] A review of 37 pilot and full market cases of weather index insurance revealed that the potential is large, although scale-ups have occurred only in India (3.5 million farmers insured by private and public insurers), Mexico (government program provides a weather risk safety net to 3.2 million farmers), and Kenya (around 50,000). Certain key success factors determine scale-up in other countries: (i) focus on real value proposition of the insured; (ii) a competent local champion who effectively overcomes set-up issues and barriers; (iii) efficient and trusted delivery channels that handle cash; (iv) weather data infrastructure (primarily weather stations); (v) risk transfer into international markets (reinsurers mostly); (vi) training of all implementation partners; and, (vii) insurance premium for farmer priced at pure risk rate thanks to

22 Hess and Hazell (2011)

commercial sponsorships (input suppliers, mobile phone operators, banks) or premium finance.[23] Weather-based agricultural insurance can both expand lending opportunities for banks and agro-dealers as default risks are reduced and increase sales for agro-dealers and mobile phone operators. As shown in the cases of TSKI in the Philippines (Case 27 page 89) and Kenya's Syngenta input supplier-based weather insurance (Case 28 page 90), loan packages are often effectively bundled with weather insurance products.

WEATHER INSURANCE FOR CONTRACT FARMING

Weather insurance tends to support a value proposition for the farmers, such as a loan package or even a contract farming operation, by serving to mitigate production quantity and quality risks stemming from adverse weather. Thus, when risk insurance is bundled with these other products, it can effectively protect the farmer, the bank, and the off-taker behind the loan. Basis risk represents a challenge for index-based insurance, given the possibility of mismatches between payouts and actual losses if the correlation between the index and actual farm yields is not sufficiently high. Another challenge is the lack of solid data in many emerging markets for sound actuarial modeling and a limited physical infrastructure of weather stations. Additionally, small producers often do not understand the concept of insurance or do not trust insurance due to prior negative experiences. The PepsiCo case in India (Case 29 page 91) illustrates this type of weather insurance application.

COMMODITY PRICE RISK MANAGEMENT

Market-based price risk management has the potential to help farmers or commercial intermediaries manage the risk of adverse price movements on commodities markets through the use of physical or financial instruments. Because the financial impact of price volatility has proven to be too large for government or any other actor to simply absorb, producers or commercial actors who are negatively affected by price volatility must turn to the market and find mechanisms to transfer the risk to market actors who are better equipped or more willing to manage it. Theoretically, commodity market instruments exist so that market actors unwilling to carry price risk can transfer it to actors who are willing to carry or manage the risk based on expectations of the opportunity to make a profit by doing so. Such activity takes place either on a physical basis, through commercial trade of the actual commodity itself (e.g., physical delivery forward contracts), or on a financial basis through instruments specifically developed for the purpose of risk transfer. Financial instruments are exchange-traded futures and options, over-the-counter (OTC) options and swaps, commodity-linked bonds, and other commodity derivatives. Generally, the financial instruments are only developed in commodity markets with established exchanges. The primary functions of commodity exchanges are to serve as clearinghouses for the transfer of risk from one commercial participant to the other and to provide a transparent price discovery mechanism. Forward contracts, futures, and options allow sales prices to be locked in prior to the actual delivery of the product.

This transfer of risk can be done through futures contracts, which are similar to forward contracts in that they are agreements to buy or sell a specific quantity of a commodity, at a specific price, on a specific date in the future. Unlike forward contracts, however, futures contracts do not necessarily imply physical delivery to fulfill the contract. For commercial intermediaries in developing countries, futures contracts have an advantage in that they can lock in a sales price in advance of the actual delivery of the product. In essence, a commercial intermediary losing on the physical sale should be gaining on the financial, while a commercial intermediary losing on the financial side should be gaining on the physical. The major disadvantage for use of this system in developing countries, however, is the credit risk inherent in trade of these contracts and

23 Adapted from key success drivers in Hazell and Hess (2010).

associated margin requirements whereby the party at risk has to deposit funds as de facto collateral.

A second type of contract traded on international exchanges, an options contract, can also be used to manage risk. Option contracts are similar to physical minimum price forward contracts in that they are agreements to buy or sell a specific quantity of a commodity, at a specific price, on a specific date in the future, but they also provide an opportunity to take advantage of favorable price movements in the future. Unlike minimum price forward contracts, however, options contracts do not necessarily imply physical delivery to fulfill the contract. The instrument is valuable because it avoids absolutely locking in a price level as happens with a futures contract, and it provides the user with an opportunity to take advantage of favorable price movements that may occur between the time of purchasing the instrument and the time of its expiration. Because premiums are paid up front, there is no credit risk.[24] However, futures contracts and options are often beyond the reach of agricultural SMEs and commercial smallholders, due to the size of these contracts, procedures to access these instruments, need for margins, and the overall high level of knowledge needed to operate these instruments.

Another issue is basis risk, meaning the possibility of a weak correlation between the price of the commodity in the domestic market and the price of the commodity in the international exchange where usually futures and options are traded. There are domestic commodity futures and options exchanges that reduce or eliminate this basis risk in some large emerging markets such as in Argentina, Brazil, China, India, and South Africa, but this is not so in smaller markets.

Forward contracts with physical delivery can be written for any amount and offer more flexibility to small-scale operators. However, a major risk is that farmers may deliver elsewhere if prices are higher at the time of delivery compared to the pre-agreed forward price. This creates buyer reluctance to offer fixed price forward contracts because they may not get the goods if prices rise. In cases of very tight value chains where the buyer has a very strong control on the physical delivery of goods, such as in many cases of contract farming, then a fixed price forward contract may be feasible. Instead of fixed price forward contracts, some buyers may offer a minimum price contract, meaning that they commit to purchase at a minimum price, but if prices are higher they will be paying the higher price. In effect, they are offering a put option to the farmers.

2.5 Distribution models

The primary purpose of these models is to offer mobile payment and other mobile banking services to reach customers, in particular rural and more remote customers and farmers, and thereby build new relationships. The mobile banking relationships also help the banker to understand these new clients with adapted "know your customer" (KYC) approaches and to learn their business patterns through payment transaction histories. Finally these services can encourage savings and deposits and thereby lower the bank's funding costs. Because they must distribute some financial services, these distribution models may not be considered as standalone. These models can therefore support the financing models, in particular by helping KYC, but they do not alter the lending models per se. The innovation here lies in the use of a new channel and the fact that the models discussed in this report distribute a more complete range of products, such as payments, deposits, and credit. The following table provides an overview of all distribution models and cases.

MOBILE BANKING

Currently there are over 5.6 billion mobile phone customers worldwide, with the vast majority of the growth since 2005 taking place in the developing world.[25] The rural poor in Africa, South America, and South and Southeast Asia have greatly increased their

24 World Bank (2005)

25 World Factbook (2011)

FIGURE 7 DISTRIBUTION MODELS AND CASES

Distribution Models

Mobile banking	Branchless banking	Mobile Payments
M-Pesa, SafariCom, Kenya	United Bank Ltd. "Omni", Pakistan	Dunavant, Zambia
BPR Mobile, Rwanda	ANZ's WING, Cambodia	
	Opportunity International Bank, Ghana	

use of mobile phones as coverage has improved and costs have come down. Mobile phone service growth is substantial and continuing in many developing markets, with countries like India reaching 1.2 billion mobile phone subscribers in December 2011, with 307 million in rural areas.[26] In the Philippines, a country with more than 7,000 islands, over 95 percent of the land area is covered, and over 98 percent of families, accounting for around 98 million family members, have at least one mobile phone.[27] The potential for huge cost savings through full-service mobile phone banking was proven by successful examples in Africa as well as South and Southeast Asia. Mobile phone companies have realized that these services could potentially be very profitable and banks have realized that these technology deployments represent an opportunity for rural bankers to reach more customers. Banks in developing markets throughout the world have been launching mobile phone banking platforms in earnest since 2008 across a wide range of countries, including Zambia, Tanzania, Rwanda, South Africa, Kenya, Mozambique, Brazil, Paraguay, India, Pakistan, the Philippines, Bangladesh, Uganda, Ghana, Zimbabwe, and Nigeria. The spectrum of possibilities for banks, mobile operators, MFIs, and other financial service providers spans a number of possible services, from traditional mobile banking to remote payments and "Mobile Money" — normally remittance and payment services offered by mobile network operators, leveraging their national agent networks for prepaid airtime sales. There are benefits and drawbacks for each of the deployable technologies, mainly with regard to security and control on the part of the banks. Key hurdle for banks and mobile network operators are the lack of mobile phones in-country that can support mobile Internet or "apps," the cost of mobile data, the regulatory environment enabling the actors in these deployments to take control, and cultural issues around trust, usage patterns, and convenience.[28] For small and mid-size farmers, mobile technology has been a way to ensure access to a bank account 24/7, and receive payments and alerts. This usage has potential to form the platform from which banks, MFIs, and mobile network operators could add value-added services to a farmer's bank relationship, including co-payment for agricultural input vouchers, access to instant micro-credit capabilities, and more advanced banking products such as insurance.[29] Mobile banking services might also encourage savings and could help lenders to use cash flow and the new savings as collateral.

The easing of traditional regulatory rules has facilitated mobile service developments in developing countries. The upside has been seen in increased liquidity, increased competition, electronic money usage, and progressive leap-frogging of traditional

26 Telecom Regulatory Authority of India (2011)

27 Philippines Telecomresearch (2012)

28 Armstrong (2011)

29 For example, the mobile phone operator Tigo provides loyal customers in Ghana and Tanzania with free life insurance and offers customers the opportunity to sign up for life insurance through their post-paid bill, according to TigoGhana (2010).

technologies, making it easier to enforce know-your-customer and anti-money laundering, anti-terrorism, and access-to-information policies.

BRANCHLESS BANKING

The term "Branchless Banking" usually refers to the capability to offer a full array of banking services or a limited set of services either at bank-owned locations aside from branches, with bank-owned equipment (such as trucks or ATMs), or in partner-owned locations (by the bank employees or by partner employees or agents). While branchless banking may include mobile banking services, as the following examples demonstrate, this is not always the case. Branchless banking has great potential for increasing access to financial services in the agricultural sector, given lower costs, and for reaching customers in many locations previously unable to justify the expense of a full-scale branch. To date, there have been a number of branchless banking successes throughout the developing world, although the sustainability of these business models is still under discussion, given the start-up subsidies these programs have received, questions regarding the profitability of the customers they serve, and the high logistics and management capabilities required for branchless banking programs to run with both personal contact and trust and security levels similar to traditional branches.

MOBILE PAYMENT SYSTEMS

Information and communications technology innovations, including mobile payment services, have strong potential to enhance rural outreach by reducing transaction costs. Mobile phones operate at the intersection between rural clients and banks by providing cheap transaction services, electronic savings accounts and, in limited cases, even credit functions. The most prominent example is the service M-Pesa, provided by the mobile network operator Safaricom in Kenya, which has developed into one of the largest banks in eastern Africa. In countries lacking the technical and commercial infrastructure for ATMs and point-of-service devices, mobile phone banking in particular can be a low-cost way to expand access to financial services in rural areas.

Mobile payment systems can benefit farmers by allowing them to receive payments as electronic credit into their mobile phone-based account (or "m-wallets") instead of waiting or having to travel to obtain cash payment. Farmers then have more flexibility and choice of when and how they use their credit. From the bank perspective, an additional benefit of providing such low-cost financial services is that smallholder farmers can gain a transaction history with a bank that could enable them to access loans, insurance, and savings products. As in the case below, where mobile payments are provided by a value chain actor, contract farming operators can improve their service offering and build stronger relationships with the farmers and generate greater loyalty.

A challenge with these innovations is that mobile banking is relatively new within the financial infrastructure system, and there is no existing legislation for mobile phone banking in many countries. As successful and proportionate regulation in Kenya has demonstrated, it is possible to strike the right balance between supervisory requirements and the development of financial access.

CHAPTER 3
Observations

3.1 Observations from the Case Studies

The case studies examined, while rich in information, did not have consistent data across them that would have enabled a more quantitative type of analysis. As such, we rely on close examination of the information collected and try to observe certain patterns. These observations were classified under two main categories. First are observations about the channels that were used to deliver financial services to farmers, primarily smallholders, in a number of emerging economies across the globe, and for a variety of crops, both cash and staple crops. Second are observations about the innovative ways in which the services were applied, ranging from new ideas to systems in developed countries adapted to the local context.

CHANNELS TO REACH FARMERS

In all cases, the channels that financial institutions use to reach farmers are critical to any financing scheme. For both commercial and semi-commercial farmers, these channels tend to depend on the structure of production and trade of the specific commodities that the farmers produce, on the existence of strong and reliable producer organizations, or on any type of aggregator that can group together a number of smallholders for both credit and other services.

Farmer linkages in value chains are very important. The vast majority of cases relied on relations between farmers and other stakeholders along certain supply chains. Mostly, the reliance was on buyers, but input

FIGURE 8 CHANNELS FOR FARMERS

Channels	Banks	Buyer	Inputs	Local Coops/MFIs
Larger to Medium Farmers	●	●	●	
Commerical smallholders Tighter value chains	◦	●	●	◦
Commerical smallholders Looser Value Chains	◦	◦	●	●
Semi-commerical smallholders			◦	●

● = Large occurrence ● = Medium occurrence ◦ = Low occurrence (Blank) = Very Rare, the exception

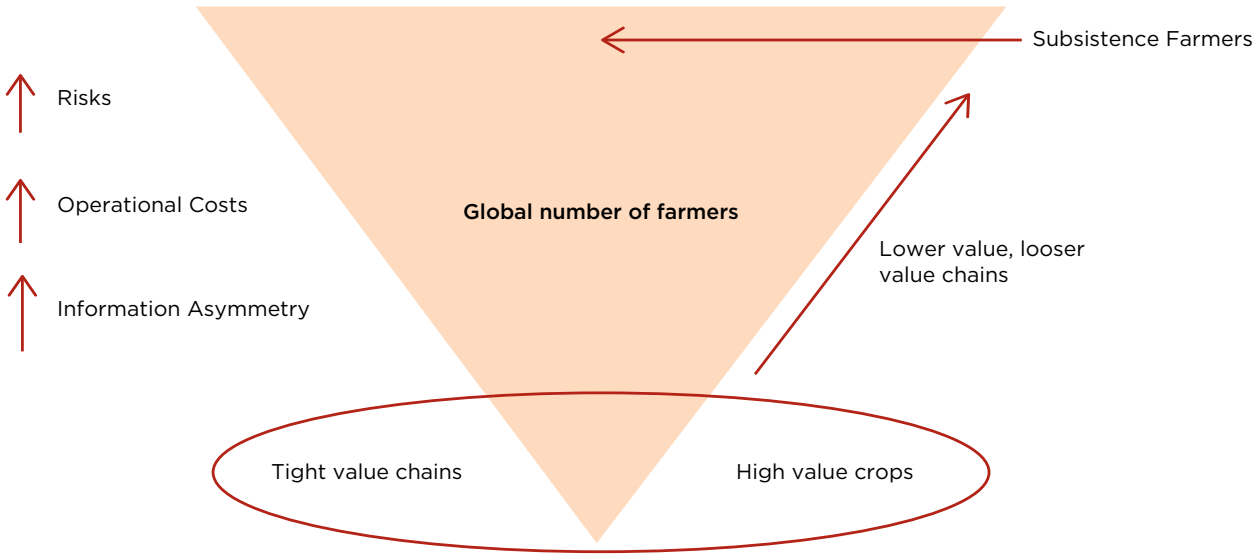
suppliers and providers of technical assistance were also involved, as value chains are important for more than just commercial smallholders producing cash or higher value crops. The case studies found a number of small farmers producing basic grains, like maize, that became part of value chains. In the majority of these cases, the linkage to value chains went through an aggregator, such as a producer organization, a cooperative, or some other form of grouping farmers (e.g., resembling group lending in microfinance).

To reach smallholders in less organized value chains, farmer organizations or a system that aggregates small farmers are very beneficial. A number of cases involved smallholders in food crops, like maize in Ghana or Zambia, for example. In these cases, financing to smallholders was made possible via reliance on joint liability groups of farmers, the use of producer organizations, various partnerships along the value chain, and close monitoring of farmer activities. In these cases, local knowledge, proximity to farmers, involvement of various stakeholders, and close monitoring were very important in ensuring the client assessment, loan use, and repayment. As such, the reach of such schemes was relatively low, well under 10,000 farmers. There seems to be some capacity constraint that these cases hit, given the needed administrative arrangements (e.g., close monitoring, proximity) and implied costs in putting these schemes together.

Overall, involving producer organizations as aggregators for smallholder farmers to channel and collect credit, gather produce, distribute inputs, provide extension, and so on, was quite important in about 20 percent of the cases and particularly in Africa. Organizing farmers for more than just credit can have big advantages, as it can lower transaction costs and increase the efficiency of reaching many small farmers for a variety of services such as savings, provision of technical assistance/extension, insurance, input, marketing, etc.

Although not examined among the case studies, another model of aggregating smallholder farmers is the nucleus farmer model. In this model, a large farmer can provide inputs, credit, and marketing of the final product to nearby smallholder farmers. Some examples include rubber in Indonesia and coffee in Vietnam, among others.

FIGURE 9 FARMERS AND VALUE CHAINS



There are still challenges in scaling up significantly and reach large number of farmers. The reach in terms of number of farmers affected in about half of the cases reviewed was low (under 10,000 reached), which to some extent indicates that reaching farmers through value chains or groups has its limitations. In general, value chains have certain physical limitations linked to infrastructure, the market size, and the physical capacity of the value chain (how much it can handle, etc.)

There were six cases involving either large global agribusinesses (e.g., global commodity trading companies) or large banks and leasing companies in large markets (e.g., India, Brazil) that managed to have reached a high number of farmers (defined in excess of 100,000 per case). Within a given country, the reach of a financial institution seems to be larger compared to a local agribusiness, as financial institutions can deal with several value chains, producer organizations, and individual farmers. However, financial institutions can achieve greater reach when they leverage the knowledge, information, and expertise of local agribusinesses and try to join forces in reaching to smallholders.

Providing technical assistance/extension to farmers along with credit is found to improve yields and incomes. In most cases, extension services and other technical assistance (e.g., financial literacy training) offered to farmers were found to be very valuable, forging stronger relationships in the value chains and linkages with farmers. In the majority of cases, the provision of finance to farmers through these schemes was associated with higher yields and incomes.

ASPECTS OF INNOVATION

As discussed earlier in this report, innovation can be the adaptation of existing and established models to the local context of lower-income emerging markets. Thus, innovation is not only about new models or those not yet used globally. The important areas of innovation focused on dealing with credit risk through first loss guarantees, enhanced credit risk assessment systems tailored for farmers, or use of movable collateral. Additionally, innovation focused on alternative channels, such as mobile banking, and on ways to insure crop losses due to adverse weather events.

Use of first loss guarantees is increasing. The guarantees were present in about 20 percent of the cases but proved quite important in launching the financing schemes to farmers. There were five cases in which credit guarantees or first loss guarantees were used. One case was in Ukraine (Bayer), with private sector and IFC participation. The other four cases were in East Africa (Equity Bank, Centenary, and NMB). Three cases involved donors covering the credit guarantee/first loss, while one involved the government providing such guarantees. In all cases, guarantees seemed to have played a role in getting credit flowing to farmers.

Credit risk assessment. There was not much found in terms of sophistication in regard to credit risk assessment techniques. There were several cases in which financial institutions came up with a combination of agronomic models and credit scorecards. However, in all cases, the financial institutions involved had invested in learning about the agriculture sector to which they were supplying credit. They also forged strong linkages with buyers, processors, and traders in value chains in order to gain from their knowledge and expertise. This helped in assessing the credit risk of farmers.

In only a few cases was there explicit mention that farmers received credit in kind (rather than cash) for inputs in order to control how credit would be used. Credit in kind would be used for productive purposes to create the needed cash flow from the sale of the crop to repay the credit.

Use of movable collateral. A key complaint of farmers dealing with formal financial institutions has been that the institutions ask for hard collateral, usually real estate (farms) and with good titles. The cases

examined indicated that financial institutions willing to lend to the agriculture sector are increasingly taking a more flexible approach to the collateral requirements. For example, in cases of value chain financing, particularly with tight value chains or contract farming, the collateral is in the "soft" form of the promise for the farmer to deliver the crop and repay the loan. There are cases that have used inventories as collateral, either through formal warehouse receipts or through collateral management agreements. Typically, the experiences from using such collateral have been quite good, resulting in very low NPLs (less than 1 percent) and with few notable exceptions of large losses due to fraud, though not in the cases examined for this paper.

Experiences in **leasing agriculture equipment** examined in Brazil and India were found to be quite positive, with very large reach in terms of number of farmers using these financial services. Another case of agriculture leasing in Uganda is relatively recent and of course has not yet achieved significant reach. However, like with the provision of financial services to agriculture, the leasing companies in our sample cases that are successful in the agriculture sector report that the key to their success is good knowledge of the agricultural sector, dedicated resources to serve agricultural producers in proximity to them, flexibility in leasing payments to match farmers' cash flow, and good credit risk assessment systems adapted to the agriculture sector.

Cash collateral in terms of **savings** was used in two cases in Africa. In the case of Zambia, farmers' savings through District Farmer Associations are used as key collateral (50 percent of the value of loan), and in the case of Tanzania, the targeted clients were farmers' primary cooperative societies. In both cases, it should be noted that the targeted smallholder farmers are members of a producer organization: an association or cooperative society.

Alternative channels. Increasingly, alternative channels such as mobile banking, payments, and branchless and correspondence banking, play an important role for mobilizing savings, processing, distributing and collecting loans, and providing insurance to farmers. In about 30 percent of the cases reviewed, some form of alternative system discussed above is used.

Dealing with crop losses due to adverse weather. Traditional crop insurance for small farmers has high administrative costs and suffers from adverse selection and moral hazard problems. Assessing individual crop losses in small plots can be very costly to administer. Alternative methods based on weather index insurance can provide an alternative under certain circumstances. Increasingly, there has been a proliferation of pilot projects, mostly in Africa and Asia and supported by donors and IFIs. Some of these have reached commercial scale, such as in the case of India. There were three such cases examined, one in Kenya, another in the Philippines, and the third in India. In Kenya, insurance was part of the input supply package, while in India it was part of the contract farming arrangement. In the Philippines, it is linked to loans to agriculture producers by a local microfinance institution.

In all of the cases examined, insurance to protect against unexpected crop losses due to weather was used in relatively few instances. In all of the cases that used insurance, it was an important ingredient in the whole package of financing farmers. However, the majority of financing for farmers did not have such insurance.

3.2 Enabling Country Environments

Innovative models need to be relevant to the type of country environment in which a given lender works. A warehouse receipt system, for example, requires a legal and regulatory environment (licensing system, security enforceability) that will not be present in all developing, rural economies. Similarly, contract farming requires an appropriate environment in order to enforce contracts. Rather than make broad generalizations about the effectiveness of models across disparate business environments, this report will establish correlations between the specific country environment in

which a model is active and the type of the model. In other words, the report examines the type of specific country environment in which we tend to encounter each of these models. The results from this exercise are by no means a proxy for a feasibility assessment for these models. Therefore, based on the number of case studies collected, we assess the likelihood of encountering specific models within three types of country environments. The models encountered within each country environment are discussed below, based on a review of all the case materials included in this report.

As explained in Section I, providing profitable financial services, and in particular lending to farmers and agricultural SMEs, is very demanding in any context. The combination of systemic risks (weather shocks, fluctuating input and output prices), legal environment risks (collateral rights that are uncertain and hard to enforce), and potential government interventions are challenging for any bank.

Given these challenges, it is imperative that financial service providers recognize not only what models may be appropriate to emphasize in general, but also specifically where they may be more appropriate based on the incidence of encountering the various models in the various country environments examined. This report recognizes that there are significant differences between types of enabling environments for the business of agricultural lending, and therefore the applicability of different models for each environment will also differ. It is important to note here that the criteria are generally applied on a country level of analysis (country environments), though within countries there can be variations between states or provinces, especially in large countries. In addition, even within a given country there could be significant variations amongst crops, more specifically between export-oriented cash crops and domestically consumed food crops. This report finds that the nature of a business-enabling environment can be hard to capture or measure. However, for an agricultural lender, there are two drivers that seem to be important: the overall level of value-add in agriculture and the business environment as measured by, for example, the World Bank's "ease of doing business" ranking.[30] The rationale for choosing these two indicators is based on the risk and return, namely that banks need to make loans in a cost-effective way and get repaid. It is easier to achieve both in a context with high agricultural productivity and a good business environment. Thus, countries fall at various levels of development in terms of either or both of these important determinants.

We have mapped countries according to these two key determinants using measures of agricultural productivity expressed in agriculture value added per worker in USD[31] and the quality of the business environment through the "ease of doing business" rank of the country. Mapping all countries with a significant agricultural sector that have a value added of at least 1 billion USD in agricultural productivity into the space opened by these two indicators generates a graphic where countries tend to cluster in three areas, as illustrated on the following figure.

On the basis of the analysis of the typology and the three types of country environments, this report provides an indication of where one is likely to encounter the various models described in Section 2. This framework is designed to provide an overview of where we see certain models, in which cases a given approach has worked as a type of financing, and the reasons behind the various outcomes.

Case information has been gathered through a combination of primary and secondary sources, and certain case examples have only limited information available. It is

30 "Ease of doing business" ranks economies from 1 to 183, with first place being the best. A high ranking (a low numerical rank) means that the regulatory environment is conducive to business operation. The index averages the country's percentile rankings on 10 topics covered in the World Bank's *Doing Business* report. The ranking on each topic is the simple average of the percentile rankings on its component indicators as taken from the Doing Business Indicators. World Bank (2010a).

31 Agricultural value added figures are based on 2009 numbers in constant 2000 USD, derived from national accounts files and FAO in the World Development Indicators. World Bank (2010b).

FIGURE 10 THREE BUSINESS ENVIRONMENTS

Environment I — low productivity in agriculture, weak business environment

This area illustrates an environment characterized by relatively low productivity in agriculture as well as a relatively weak business environment. Countries (or states in large countries such as India or China) in this type of environment have an ease of doing business rank of 100 or *more* and agricultural productivity per worker of less than US $1,600 (in constant 2000 USD). By way of illustration, we note that Ethiopia, Mozambique, Tanzania, along with the average for India, fall into this category.

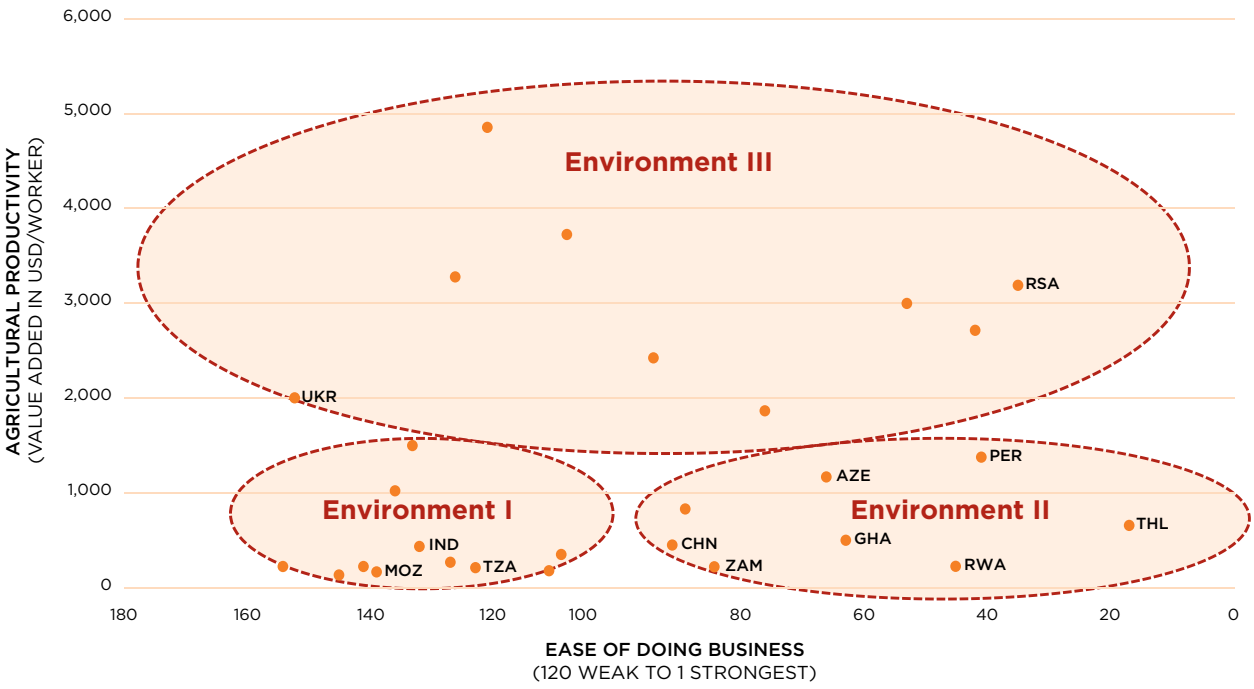
Environment II — low productivity in agriculture, strong legal rights

This environment is characterized by low productivity values in agriculture as well as relatively strong legal rights. Countries (or possibly states in large countries) in this type of environment have an ease of doing business rank of 100 or less and agricultural productivity per worker of *less* than US $1,600 (in constant 2000 USD). This category has the largest number of countries; examples include Thailand, Rwanda, Ghana, and Zambia.

Environment III — high productivity in agriculture

This type of environment is characterized by high value-add in agriculture (at least US $1,600 per agricultural worker and year) and a wide range of business environments. Typical examples are Mexico, Ukraine and the Republic of South Africa.

EASE OF DOING BUSINESS AND AGRICULTURAL PRODUCTIVITY IN CASE COUNTRIES



critical to acknowledge that this set of cases is not necessarily a representative sample. Thus, this assessment is not meant to be construed as statistically valid or scientifically based. This assessment framework does not set out to strongly judge models, but instead seeks to provide some initial conclusions that can be further studied and refined through additional research and experience.

The framework examines each model within the various country environments in order to provide some guidance to financial institutions wishing to understand the relative value and applicability of innovative models to the market conditions in which they operate. This does not mean that a financial institution operating in, say, Environment I (low productivity and weak business environment) will not be able to apply an innovation that is more likely to be encountered in Environment III (high productivity in agriculture). What it means is that the specific model will require more effort to make it work and/or will depend on the situation (e.g., finding a specific strong organization of smallholders or a good collateral manager, etc.).

Before beginning this analysis, the total reach of the 100 cases by country environment was divided into the three categories of source of repayment or collateral (farmer, movable asset, or buyer security). Descriptive statistics of the cases are in the annex.

It is important to acknowledge that the case inventory used in this report did not include many cases from countries in Environment III, as the target audience for the report is bankers in countries from the other two environments. Therefore, if the inventory were sufficiently robust to include more cases from these countries, we would expect to see significant reach numbers in all model types.

MODELS WITHIN COUNTRY ENVIRONMENTS

The following sections discuss in more detail the overall salience of single models within each of the three country environments. The discussion looks more closely at the correlation between the cases and the environments. It is important to note that the following assessment is not indicative of whether the different models are feasible or existent in the particular environments, but rather show **the probability of encountering this type of financial scheme** based on the environment in which it is identified. The color rating system illustrates the qualitative nature of the assessment. However, the reader should consider that there is more of a spectrum of shades than there are true changes between colors. As noted above, rather than providing strict parameters for each model, the colors indicate that it may take more effort and time to apply a different model. The following table offers a guide to the color coding in the Figures 11 through 13.

LESS LIKELY FOUND IN THIS ENVIRONMENT
MORE LIKELY ENCOUNTERED
SITUATION DEPENDENT

Although certain models are harder to match in certain environments, coordination is not impossible, given very specific circumstances. The assessment is therefore: 1) based on observations of occurrence, and 2) more indicative of the ease of implementation for a given model. The observations are by no means conclusive, nor do they constitute a rigid guide to applying certain models in certain environments. The classification should be understood as a continuum as opposed to a strictly binding protocol.

MODELS WITHIN ENVIRONMENT I (WEAK BUSINESS ENVIRONMENT, LOW AGRICULTURAL PRODUCTIVITY)

This type of environment presents the biggest challenges for farmers and agricultural SME finance, because in addition to the agriculture sector challenges for lenders, there are relatively low returns to agriculture as well as limited legal protections. In this type of environment, the cases show that most of the agricultural finance activities are likely to be donor driven.

FIGURE 11 ENVIRONMENT I MODELS

	Farmer	Movable Assets	Buyer
Financing	Direct Smallholder Lending	Equipment Finance	Tight Market VCF with output buyers
	Indirect Lending through FBO's	Leasing	Loose Market VCF with Output Buyers
	Emerging Farmers Finance	Warehouse Receipt Financing	Outgrower Schemes
	Savings Account linked input finance	Collateral Management	VCF with Input Suppliers
			Factoring
			Trade Finance
Risk Mitigation	Personal Insurance		Commodity Price Risk Management
	Weather Insurance for Farmers		Weather Insurance for Contract Farming
Distribution	Mobile Banking		Mobile Payments
	Branchless Banking		

This is one of the reasons why most models in this country context are rated as either yellow or orange.

The only green model is the tight value chain. This seems to be because, as a relatively self-contained model, it depends less on a strong legal and market environment; strong buyers with strong chains depend on farmers who generally honor their contracts and limit side-selling. The models categorized as a "tight VCF with output buyers" appear to be most relevant for this environment. This type of case is exemplified in cotton financing as part of a high value and tight value chain by the Gulu Agricultural Development Company (GADC) in Northern Uganda, which, in spite of Uganda's general country ranking in Environment II, is a difficult place in which to do business. GADC covers 20,000 farmers in a challenging, conflict-affected part of the country. This case highlights a general pattern: financing inputs works where the core business is a high value proposition that includes input finance as a cost of doing business. Here the real business driver for the buyer in the value chain is obtaining access to the cotton; therefore, financing the farmer is a good investment in future business and farmer loyalty. There are a few promising yellow models that are not green due to one criterion only. A case in point is satellite-index-based and cell-phone-delivered weather risk insurance to secure input loans in the Philippines. Such low-cost and effective delivery and risk mitigation appear to be sustainable. The model, however, still requires index customization and has not been tested thoroughly in this environment. Additionally, collateral management appears very replicable, as it can be applied in almost all country environments as long as there is a good and reputable collateral manager, yet it is mostly used for higher value exports in countries without appropriate enabling environments. Therefore, it receives a yellow ranking due to relatively limited applicability. Warehouse receipt financing is orange, because this model relies heavily on a specific enabling legal and regulatory system (warehouse receipt as title).

FIGURE 12 ENVIRONMENT II MODELS

	Farmer	Movable Assets	Buyer
Financing	Direct Smallholder Lending	Equipment Finance	Tight Market VCF with Output Buyers
	Indirect Lending through FBO's	Leasing	Loose Market VCF with Output Buyers
	Emerging Farmers Finance	Warehouse Receipt Financing	Outgrower Schemes
	Savings Account-Linked Input Finance	Collateral Management	VCF with Input Suppliers
			Factoring
			Trade Finance
Risk Mitigation	Personal Insurance		Commodity Price Risk Management
	Weather Insurance for Farmers		Weather Insurance for Contract Farming
Distribution	Mobile Banking		Mobile Payments
	Branchless Banking		

MODELS WITHIN ENVIRONMENT II (GOOD BUSINESS ENVIRONMENT, LOW AGRICULTURAL PRODUCTIVITY)

Given the stronger legal rights in this environment, it is easier to build a viable alternative to traditional farmer collateral, which is necessary in almost any environment and to scale up coverage and finance farmers profitably. Savings-linked loan accounts and cooperative-based input finance are emerging as alternative opportunities for individual farmers to access credit (NMB, Zanaco). Value chain financing — mostly tight VCF and outgrower schemes for exportable cash crops — again show that solid, business-driven value chains can catalyze input financing. Generally speaking, agribusinesses are more likely to set up and prosper in countries with better enabling environments, while VCF and other buyer-linked models do not depend as much on the legal and general business environment to facilitate financial or other services to farmers. Working capital for agro-dealers is another model that could be viable, but there is not yet sufficient experience and donor support is too important to fully judge the sustainability of this model. Warehouse receipt financing (WHR) can be a viable model, as highlighted by the NMB case in Tanzania that supports a series of crops for around 110,000 farmers. A 50 percent government guarantee made this scheme possible, but it has never been called; thus banks may continue to offer WHR financing even if the guarantee was rescinded. However, it is important to recognize that the inclusion component of warehouse receipt finance depends on a legal and regulatory system that provides for more than simply creditor rights. In addition, risk mitigation models — in particular personal insurance models like credit health and credit weather insurance that secure borrower and bank alike — appear to be evolving into sustainable and scalable products with mature reinsurance markets behind them. Loose value

FIGURE 13 ENVIRONMENT III MODELS

	Farmer	Movable Assets	Buyer
Financing	Direct Smallholder Lending	Equipment Finance	Tight Market VCF with Output Buyers
	Indirect Lending through FBO's	Leasing	Loose Market VCF with Output Buyers
	Emerging Farmers Finance	Warehouse Receipt Financing	Outgrower Schemes
	Savings Account Linked Input Finance	Collateral Management	VCF with Input Suppliers
			Factoring
			Trade Finance
Risk Mitigation	Personal Insurance		Commodity Price Risk Management
	Weather Insurance for Farmers		Weather Insurance for Contract Farming
Distribution	Mobile Banking		Mobile Payments
	Branchless Banking		

chain models are rated at an improved yellow ranking, because the challenges with side-selling persist even as contracts and agreements provide additional security. One loose VCF case with output buyers for maize growers (Ghana Grains Partnership, led by the fertilizer company Yara and distributor Wienco) combines a series of very innovative features: ownership by farmers in profits generated up the chain, block farming through joint liability groups with no-tillage techniques, and the involvement of input suppliers and off-takers throughout the chain to establish trust. Other yellow models include emerging farm business, leasing, and equipment finance. While the legal system protects assets and property rights, there may not be the high values and types of value added activities in agriculture that generate sufficient economies of scale for asset financing companies. Likewise, emerging farm business finance requires a minimum of market infrastructure and high value business opportunities. Farm sizes remain small; there is not often consolidation of farmland into larger units to increase economies of scale. As such, tight value chain finance and lending models through FBOs/cooperatives work best and thus are rated green in this environment.

MODELS WITHIN ENVIRONMENT III (HIGH AGRICULTURAL PRODUCTIVITY)

As expected with this type of high agricultural value-add and highly conducive legal environment, we tend to encounter most models. However, even within this environment, direct lending to individual smallholders, particularly in lower value crops, may still be challenging and thus keep the color yellow. Certain innovations, such as electronic warehouse receipts in South Africa, can be scalable in the originating country, but may prove more challenging to replicate in

other countries. The highly effective Brazilian "cedula de produto rural" or CPR is especially unique to Brazil's country conditions, and thus it can be quite difficult to replicate elsewhere.

The high value added of these agricultural sectors in this environment is associated with higher levels of mechanization and specialization, more processing performed in the country, and deeper and better functioning markets. These factors generate high value businesses that are very profitable to bank with and are associated with better access to finance in a positive cycle. Thus, those models requiring high value agriculture with corporations, such as factoring (from agribusinesses to smaller farmers and SMEs), trade finance, and leasing, are green in the chart for this environment.

3.3 Patterns, Challenges, and Solutions

KEY PATTERNS ACROSS CASES

Under this category of observations, we tried to include the cross-cutting elements that repeat themselves almost consistently from one case to another. These elements tend to appear in cases that showcase something else; for example, the case of savings as collateral involves the use of producer associations. Another example is the case of leasing to finance agriculture equipment, which relied on credit assessment systems adapted for agriculture. A third example can be the case of providing weather insurance to farmers with training and improved inputs.

Looking at these cases and picking up on these common themes or patterns is where we find that most financial institutions need to be flexible in identifying distributions channels to reach farmers, assessing risks, and bundling products and services to add value to finance.

Farmer segmentation is important to enable bankers to start differentiating various classes of farmers. Different financing, risk mitigation, and distribution products will facilitate financially sustainable growth for various farmer segments. Segmentation helps banks and other financial institutions to locate specific growth opportunities for those distinct farmer groups often viewed as a single block with similar characteristics and limitations. Important elements for targeting credit to farmers could be presented as follows:

- Financial institutions need to organize appropriately in order to provide financial services to agriculture.
- Financial institutions should segment and target appropriately selected types of farmers. Farmer segmentation should go deeper than simply small, medium, and large, also focusing on the type of crop, the environment, assessment of the commercial orientation and prospects of these farmers, and the markets for which they produce and sell, among other relevant factors.
- Financial institutions need to invest in understanding agriculture, as well as specific agriculture sub-sectors, and adapt their products to meet farmer needs.

Farmer organization and aggregation models can be critical to reducing risks and costs- to-serve.

- Value chain financing, particularly for higher value crops and tighter supply chains, and specifically when it is part of a broader package of financial and non-financial services, can be a key factor in selecting farmers and where to lend.
- For looser value chains, particularly in staple/food crops or in lower value crops and for semi-commercial farmers, producer organizations can play an important role in effectively reaching smallholders.

From the cases examined, producer organizations play a more significant role in linking farmers to markets (input and output) and credit in looser value chains compared to tighter ones. In looser value chains, particularly for lower value staple crops, it would have been considerably harder, if not impossible, for individual farmers to link to value chains and buyers had it not been for the option of going through their producer organizations. For financial institutions reaching these farmers, producer organizations present, perhaps, the most important and viable means of linkage. The challenge here is to identify well-run producer organizations that can provide effective

intermediation of credit and other services, both financial and non-financial, to farmers.

A core value proposition matters. The next observation that emerges from the assessment of cases is an old one: farmers have a variety of needs, both financial and non-financial. The provision of financial service should support the core business of farmers in terms of helping them move up the ladder and improve their incomes and general welfare. Financing should be part of a larger package of services to farmers for the following reasons:

- Provision of extension and technical assistance to farmers in addition to credit is found to be very important. In addition to extension services, farmers also benefit from basic financial literacy training.
- In most cases, financing targeting the purchase of better inputs led to improved yields and farmer incomes.
- Access to non-financial services, in addition to extension and financial literacy, can include farm certification for sustainability, market/price information, etc.
- The provision of such non-financial services need not be done by the financial institution that provides the credit, but can be implemented by other participants and stakeholders along a specific value chain.

Risk management matters, both at the portfolio and individual borrower levels. Experience with some of the innovative risk mitigation models shows that risk mitigation and overall risk management can be the most important interventions for a profitable and sustainable agricultural lending portfolio. Risk sharing can make a difference at the portfolio level, as it effectively moves the critical threshold downward, which makes some models viable. For example, indirect lending through farmer-based associations and savings-account-linked input loans become viable for the financial institution. Risk mitigation through insurance can contribute to making a lending proposition sustainable over time — new types of personal and production insurance are the important innovations in this regard. Risk sharing and insurance schemes can play important roles, but not in every case:

- Financial institutions need to adjust and adopt appropriate systems to assess farmer credit risks and understand the overall risks of the specific category of farmers they are targeting. Overall risks beyond credit should include price, weather/yield, and health, among the most important ones.
- Approaches to credit risk assessment can include information about farmers from value chains or producer organizations, building specific score cards for farmers (in some cases for specific crops and types of farmers), and incorporating agronomic information and derived cash flows.
- Financial institutions need to be flexible in terms of collateral requirements, relying less on real estate and more on movable forms of collateral or, in certain cases, on future cash flows (value chain financing). A more flexible approach to collateral can increase reach so that financial institutions can lend to more farmers. However, this should be done prudently, with the financial institution relying on robust and appropriate credit assessment systems to ensure that farmers have the ability and willingness to repay.
- Although risk sharing arrangements (guarantees or first loss sharing) and insurance did not cut across the case studies, they nonetheless seem to have played important roles when used in mobilizing credit to smallholders in the specific cases.
- Based on the cases examined, first loss guarantees appear to have had some initial success in getting credit schemes started, as they helped to establish a level of trust in a new system. However, it may still be too early to judge success and financial sustainability over time.
- Agriculture insurance, particularly that which is based on weather events, seemed to play an important role in several cases in dealing with severe weather occurrences that can cause crop losses and hamper the ability of the farmers to repay their loans.

It can be concluded that financial institutions would need to have existing risk management capabilities or skills pertaining to the agriculture sector and have identified opportunities in the first place, before insurance and risk sharing facilities can play their

role in moving credit to smallholder farmers. Insurance and risk sharing arrangements can be very useful in increasing the reach of financial institutions to lend to more farmers that otherwise would be on the very margin of a decision to lend. Many such farmers, particularly smallholders, can fold on this margin of a decision to lend because they lack appropriate collateral, do not have proven cash flows and track records of financial information, and are exposed to systemic risks.

Good product mix, including savings and sequencing to build a high-quality portfolio, are critical. Based on robust target group segmentation, the right mix of products (lending and savings) and sequencing are important in order to develop a good understanding of the value chains into which farmers are linked. On the lending product side, short-term finance usually comes first. Overall, the main objective is to build a high-quality portfolio (low NPLs, new deposits from farmers). Volume and reach can follow on the heels of lead farmers promoting the bank that serves them well, combined with an increasing base of knowledge of the agriculture sector within the bank. Building a high-quality portfolio entails intense monitoring of borrowers throughout the production cycle, especially at harvest season. It also involves managing concentration risk in terms of crops and space.

A good analysis of the key drivers of profitability for both the banker and the value chain in which farmers act is critical. Distribution matters for costs and reach, but does not alter the nature of the lending business. The mobile banking and branchless banking models can leapfrog traditional development patterns because information and financial services travel fast and directly to farmers. In fact, they might allow banks to generate more economies of scale as well as a better deposit base.

- Savings, payment systems, insurance (personal and crop), and loans for children's education are all very important in improving farmer livelihoods in addition to crop-specific credit. Taking a more holistic approach to serving the overall household financial needs, rather than just farming needs, can be very important for smallholder farmers, particularly the less commercially oriented ones.
- Financial institutions need to explore appropriate channels for reaching farmers, including value chains, producer organizations, mobile banking, correspondence banking, etc.
- Receiving frequent information and being able to monitor farmers through proximity (e.g., rural branches or correspondence banking) or through other participants along a given value chain with aligned interest with the financial institution is important.

ROLES FOR DONORS AND DFIS WITHIN THE CASE STUDIES

In examining the 37 case studies listed at the end of this report, we identified the roles played by donors and DFIs within them. This is not a comprehensive list, nor is it a representative sample of donor and DFI involvement in agricultural finance, which is quite extensive. Nevertheless, a brief survey of these 37 cases sheds some light on the roles and inputs that have been present.

There was active donor and DFI involvement in about one third of the 37 case studies. These activities were varied, but a few key areas in which donor and DFI involvement was evident include:

- First loss guarantees supported by donor funding (eg, AGRA and IFAD). In some cases, providing funding for first loss guarantees allowed donors to participate without distorting the market.
- Technology support, either by sharing, enhancing, or providing scale-up and access to existing technology. This route is fairly straightforward, and constitutes a basic yet effective way to support financing institutions. An example is a case in which one financial institution providing loans could capitalize on its larger subsidiary and the government facilitated all documentation and verification procedures, thereby reducing associated costs to the bank and allowing for more favorable loans.

- Capital for risk-sharing schemes and insurance. Some NGOs and governments provided initial funds to support insurance schemes, as well as knowledge sharing and the provision of information.
- Seed capital, which enables innovative financing business models to begin. Contributions from donors and DFIs pave the way for start-ups.

Particularly in Africa, there is much room for innovative donor financing to enable the private sector. Innovative models of donor support can be through PPPs, such as the case of the Africa Agriculture and Trade Investment Fund (AATIF)[32], with contributions to first loss layers, as well as investments in agricultural inputs, and value chains. It also provides a wholesale refinancing line to regional development banks (Case 37 Page 99).

CHALLENGES AND EMERGING SOLUTIONS

Systemic risks abound in rain-fed agriculture, but there are innovative insurance models that can effectively mitigate those risks. Reducing exposure to or mitigating the systemic production risk in the creditor — borrower relationship can make that relationship a viable one. Weather-based insurance solutions could become a viable mitigation technique that can increase access to financing — but under certain preconditions and if the necessarily public goods (data, weather stations) are provided. Dealing with price risks for smallholder farmers is still a challenging area. The more appropriate solution seems to be through contract farming or forward contracts (fixed prices), but this requires an applicable legal and regulatory environment or strict control in delivering the goods to enforce contracts. Futures and options contracts are viable for internationally traded commodities in commodity exchanges and are more suitable for large farmers and more sophisticated agribusinesses.

Smallholder farmers often lack the traditional collateral required by lending institutions, but there are emerging finance models that offer security through other sources. While pledging land as collateral has its challenge, lenders are increasingly able to underwrite anticipated cash flows from the farmer and the buyer, and use other forms of collateral, such as movable collateral. Inventory financing using warehouse receipts and collateral management agreements provides a secure form of lending for financial institutions. However, inventory financing is mostly useful for the post-harvest period, and more suitable for the needs of traders, processors, and producer organizations.

Value chain finance models hold much promise, but require a great deal of engagement and cannot apply everywhere. Robust and competitive value chains represent good financing opportunities for financial institutions. The weakest link of all value chains is side-selling by farmers — a risk that can be mitigated in some ways. Hard mechanisms of buffering these weak parts are those "constriction points" in the chain that simply drive up the real cost of side-selling for the farmer: sustainable price premiums, perishable crops, enforceable legal sanctions, and joint liability groups. Softer measures to deal with this aspect are those incentives that show the farmer that there are strong associated benefits together with finance: technical assistance, advance cash payments during the offseason, women's clubs, personal insurance packages, mobile payment systems.

Serving farmers with small transactions can be costly. However, producer organizations, value chains, and mobile banking channels can provide lower cost distribution channels for financial products.

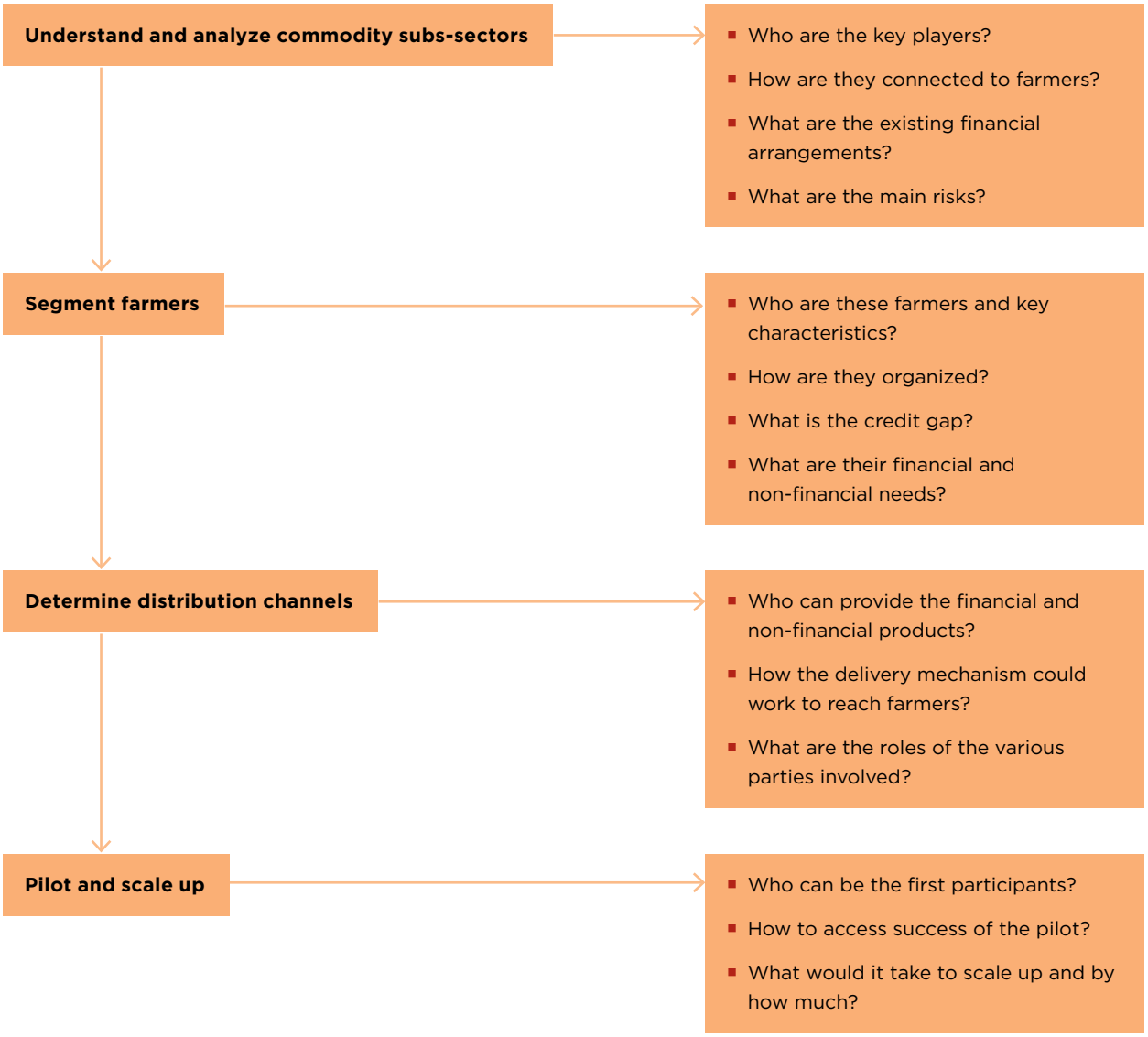
Agriculture is quite heterogeneous and agricultural expertise is needed by financial institutions to assess opportunities and develop relevant financial products. Financial institutions should develop agricultural lending expertise over time. Expertise cannot be acquired instantly, especially for multiple crops and/or value chains. It is important to start with the easier cases,

32 This donor supported investment fund is but one example of specifically donor-funded investments to the agricultural private sector.

so that the learning phase does not jeopardize the development of a profitable portfolio. Character-based lending techniques are combined with technical criteria in selecting borrowers, setting loan terms, and enforcing repayment.[33] In agricultural extension work, the strategy often is to work with the best farmers, then obtain a multiplier effect. In order to develop agricultural lending expertise, it is also important to help financial institutions identify bankable opportunities.

For innovative models, the key issue is implementation, which depends on local conditions. A generic framework for implementing innovative models is reflected the following figure:

FIGURE 14 FRAMEWORK TO IMPLEMENT INNOVATIVE MODELS. THE WHO, THE HOW, AND THE WHAT



33 Christen and Pearce (2005)

POTENTIAL AREAS FOR POLICY INTERVENTIONS

The findings from the case studies support the policy recommendations made in IFC's previous report ("*Scaling Up Access to Finance for Agricultural SMEs: Policy Review and Recommendations*," October 2011). They highlight further certain areas where policy interventions and the G-20 convening power could indeed further strengthen the effectiveness and scaling up of financing for agricultural SMEs. These include:

1. Support for first loss/guarantee funds for agriculture, particularly focusing on smallholder farmers and agricultural SMEs. This should leverage GAFSP as well as the Global SME Finance Initiative, both of which have been supported by the G-20 already, rather than a new initiative. However, this may require some additional resources if the scale of the activities is to expand significantly.

2. Provide support for catastrophic insurance approaches to protect farmers and financial institutions from severe losses. Since this industry is still evolving, donor and partner interventions can play a critical role in accelerating its development and deployment in emerging markets.

3. Promote the creation of a forum of large agribusinesses that could be encouraged to leverage their networks in emerging markets and develop opportunities for attracting financial institutions that could fund parts of their value chain, like local small traders, processors, farmers, etc. Financing could be linked and become the catalyst for technology improvements and promotion of environmental and social standards along specific value chains.

4. Create mechanisms to promote the adoption of technologies for agriculture (agriculture pull mechanisms) that could increase yields and improve the quality of crops, particularly food crops. There is a huge scope to increase yields and improve quality, particularly in Africa. Mechanisms could be modeled after that in the health sector in 2005 to promote vaccinations in Africa.

5. Strengthen producer organizations as important aggregators for delivering financial and non-financial services to smallholder farmers. This can involve capacity building for financial and managerial skills as well as improved corporate governance. A number of NGOs and initiatives already seek to strengthen producer organizations, but a more conscientious effort and a bigger scale may be needed.

6. Promote PPPs by which governments could leverage private sector funding and management to improve longer term investments in agriculture infrastructure and provision of technical services. Agriculture-related infrastructure could include warehouse facilities for improved storage of commodities, cold storage, irrigation infrastructure, basic processing of certain food commodities for local consumption, etc. A recent example is the Africa Agriculture and Trade Investment Fund (AATIF), which provides funding to the private sector as well as wholesale financing lines to regional development banks.

7. Support capacity building for financial institutions in emerging markets, and facilitate its further support by donors, DFIs/IFIs, and foundations. Capacity building is essential to provide the necessary skill transfer to financial institutions in order to better understand the agriculture sector, analyze risks, develop appropriate lending and other financial products, and find cost-effective distribution channels to reach smallholder farmers, including the skills to forge value chain partnerships. Experiences thus far have shown that it is also important to help financial institutions identify bankable opportunities in the agriculture space to quickly develop a pipeline of projects to provide financial services.

CHAPTER 4
Conclusion

Lending to farmers, particularly those with potential to become more productive, can contribute to higher incomes and push farmers up the pyramid from subsistence or semi-commercial farmers to commercial farmers. It can drive rural economic and social growth. Although lending to farmers has its unique challenges, it can be profitable, help to diversify the risk profile of a bank's overall lending portfolio, and lower funding costs through new deposits from farmers. There are some indications that NPLs are largely independent of the size of the agricultural portfolio. Countries with a high share of agriculture in their GDP show NPL ratios in their banking system that are no higher than those of countries with much lower shares of agriculture in their GDP (see Annex B). Moreover, the global economic crisis of 2008 showed the benefits of bank diversification across various sectors, including agriculture. NPLs of countries with higher shares of agriculture in their GDP appear to have been less affected by the crisis, partly because of the growth in agricultural prices and the fact that overall profitability of agriculture during that same period was not linked to the financial crisis. Agricultural lending can be a desirable business for banks that have the systems and experience to understand farmers and supply chain risks. Rabobank, as one of the contributors to this study, has noted that agricultural SME NPLs generally outperform those in other sectors. In particular, the more commercially oriented farmers in the middle of the pyramid have the potential to become the "Mittelstand" that played such a pivotal role in growing the German economy in rural areas. As the case studies of this report demonstrate, banks and other financial institutions are beginning to recognize the growing potential and profitability of these enterprises that are often generally feared but little understood. They are seeing that a unique challenge is something to be understood, not feared — that once appropriate financing, risk mitigation, and distribution products are offered to these highly productive and increasingly important producers and processors, lending portfolios may become more resilient and profitable.

The case studies also indicate that there is no such a thing as a magic bullet in financing the agriculture sector. There are no single key innovations that alone can unlock the great potential for lending to farmers. Rather, banks and financial institutions should better invest in understanding agricultural activities and should segment farmers in order to understand what they need. Financial institutions should explore linkages that farmers may have with supply chains, evaluate farmer-based organizations and cooperatives to act as aggregators for financial and other services to farmers, and look into distribution channels that can lower the cost to serve farmers. Better understanding of the local context and the environment in which farmers operate can provide unique solutions on how to provide financial services with lower risks and lower administration costs. Thus, solutions tend to be more localized based on crops, types of farmers, types of value chains, etc. Insurance also plays an important role, particularly in dealing with severe weather events that cause crop losses. In most cases examined,

however, insurance was not a pre-condition for credit: that is, the absence of insurance did not prevent the flow of credit.

On the risk mitigation side, there has been some innovation in terms of solutions to deal with yield risks, mostly focusing on weather or area-based index insurance. Price risk management has proven more challenging, mostly focusing on widely traded commodity prices in liquid exchanges and in large markets (e.g., North America, Europe, South Africa, Brazil, Argentina, China, and India). On the credit risk side, there have been some innovations on credit risk assessment using credit scoring systems based on statistical and behavioral observations in agriculture portfolios. These credit scoring systems usually supplement other sources of information that financial institutions have about farmers, either from supply chains or producer organizations.

Finally, agricultural finance should be part of the bigger picture to provide farmers with solutions to improve their incomes and livelihoods. As such, access to financial services is often linked to access to improved inputs, extension services, financial literacy training, certification for sustainable practices, and market/price information, which are among the factors that can contribute to improved conditions for these farmers and ultimately lead to higher incomes. In many cases, we observed that provision of credit, combined with access to better inputs and extension services, led to improved yields and incomes. Thus, bundling credit into a broader array of financial and non-financial services for farmers has a greater impact. Access to finance combined with other services can facilitate the growth of farmers from semi-commercial to commercial. Financial innovation can therefore be a critical catalyst for change.

In addition to lending, financial institutions should take a more holistic approach in serving the various needs of farmers. Savings, insurance, payment systems, and loans for non-farming activities can be very important in serving the farmers' overall household financial needs beyond credit for the farming activities. Compared to larger commercial farmers, smallholder farmers in particular value approaches that address their overall household financial needs.

Because of the heterogeneity of farmers across countries as well as across crops within the same country, we have encountered many models and approaches. Although we have tried to draw lessons from our observations of innovative models and approaches, the local context plays a key role, and in implementing these models, a certain degree of customization can be crucial. At the same time, we observe an evolution of approaches and models within countries. A number of the models and approaches examined are relatively new. This means that there is a need to continue monitoring and evaluating these experiences and keep disseminating information related to how the implementation is proceeding. Lessons and experiences from these innovative models and approaches are evolving, and this paper is a first attempt to synthesize the observations so far.

In examining the case studies, we observed certain patterns and distilled some key elements that seem to cut across them. Nevertheless, a limitation of this paper is that it cannot present the quantitative evidence that might back stronger conclusions. Many of these cases are relatively new in terms of their implementation period, so that their impact, financial sustainability, scalability, and replication are yet to be proven. However, these innovative cases show some promising signs and early lessons, which is why they are included in this report. A follow-up study would involve gathering quantitative data in order to formulate and test hypotheses, thus providing quantitative evidence to back the lessons learned and conclusions drawn so far.

In addition to the above, there are some additional areas that might warrant further exploration:

A first key area would be the issue of formal versus informal credit. Some surveys indicate that farmers do indeed prefer formal financial services to informal, although they find that dealing with formal financial institutions is too complex and requires too much collateral, and the lack of proximity is often an issue. Informal credit has the advantage of simplicity, close proximity, and almost instant availability. However, the same surveys indicate that those farmers who do prefer formality may not necessarily be borrowing as a substitute to informal credit but to meet their additional financial needs, as most farmers indicate that their needs are only partially fulfilled. Research is needed to explore the roles of formal and informal financial services to farmers, as well as to quantify, if possible, the potential benefits from increasing reliance on formal channels.

A second area to be explored is related to the role, and appropriate structures and strengthening, of producer organizations. The cases examined so far indicate that the targeting of semi-commercial smallholders in mainly staple/food lower value crops benefits from producer organizations. Research is needed to investigate what role the producer organizations can play and how they can become effective in providing or facilitating credit to their member farmers.

A third aspect worth noting is the role of governments, donors, and IFIs. In a number of cases, donors or IFIs provided first loss risk-sharing arrangements to encourage lending by financial institutions. It will be important to analyse these cases to determine the key ingredients for the success of such schemes. At the same time, there are governments that direct credit to the agriculture sector, either through state agricultural banks, or through mandatory lending quotas, and it would be important to assess the effectiveness and performance of such directed lending on smallholder farmers.

Finally, while innovation has been mostly focused on commercial farmers and, to a certain extent, semi-commercial farmers, it is essential to understand the needs of all farmers and how to improve access to finance to the subsistence and semi-commercial farmers of staple crops. Recent work on behalf of CGAP aims to address this issue. An early observation from this work is that these farmers, and rural households at the very bottom of the pyramid, would benefit from general financial products, while there may be few cases in which specific products need to be developed to cover particular risks and cash-flow needs from agricultural activities.

CHAPTER 5
Case Studies Summaries[34]

CASE 1 EQUITY BANK, KENYA — "KILIMO BIASHARA"
Direct Smallholder Lending

Equity Bank is the largest bank in the region, with 5.7 million accounts, over 57 percent of all bank accounts in Kenya, and operations in Uganda and Southern Sudan. Equity Bank commenced business in 1984 and evolved from a building society and microfinance institution to an all-inclusive commercial bank listed on the Nairobi Stock Exchange and Uganda Securities Exchange.

Equity Bank's approach to agricultural financing is based on direct smallholder lending integrated into a larger supply chain partnership and supported by a first loss guarantee provided by donors. Equity Bank signed a partnership with AGRA, IFAD, and the Government of Kenya in May 2008. The deal includes a loan project of USD 50 million in agricultural SME loans for farmers with little or no collateral. AGRA and IFAD provide a 10 percent first loss guarantee. Under this partnership, Equity Bank developed the smallholder financing product "Kilimo Biashara," which is designed to make financing available for 2.5 million farmers and 15,000 agricultural input retail businesses in rural areas. Equity Bank enhances security by (i) capping loan exposure at USD 17,000 per farmer, (ii) applying group lending terms, whereby six farmers act as co-guarantors, and (iii) reducing the cash amounts in farmers hands (farmers can pay agro-dealers out of their Kilimo Biashara credit).[35]

By June 2008, USD 18.75 million in loans has been disbursed, reaching 37,000 beneficiaries.[36] The loans carry a 12 percent interest rate applied when the loans fall due — a rate well below Equity Bank's standard lending rate of 18 percent.[37] According to Equity Bank, the project is a success because it has changed the position of smallholders from food insecure to semi-commercial producers. One of the success factors is the technical assistance on financial literacy and farm management provided by the government extension service bureau to the farmers. The repayment risk of the individual farmers is mitigated by their integration into supply chains, including WFP's P4P program.

34 Unless otherwise referenced, all data included in case study summaries were taken from personal correspondence or interviews with the subject institutions by the authors of this study, generally either RIAS consultants or IFC & World Bank staff members.

35 AGRA (2009)

36 IFAD (2010)

37 AGRA (2009)

CASE 2 OPPORTUNITY INTERNATIONAL, AFRICA — INFORMED LENDING
Direct Smallholder Lending in Ghana, Rwanda, Mozambique, Malawi, Uganda

Opportunity International is one of the largest microfinance institutions in the world.

Opportunity has started agricultural lending under the "Informed Lending" Production Finance Model. "Informed lending" is a parametric lending model anchored on: (i) the exact mapping of the borrower farm's plots (plot sizes, altitude, access to water); (ii) a diagnostic of the borrower's household profile (demographics of the family, breakdown of all farm enterprises such as crops/land used, other sources of income/activity, access to water/roads/bank, mobile phone use); and, (iii) the crop profile, including costs of inputs and labor, and returns based on yield and price data. Combined with targeted extension services, the financed farmer often improves food crop yields, allowing the reallocation of a portion of the land to cash crops. In addition to these assessment techniques, where appropriate Opportunity seeks to secure loan recovery by concentrating on cash crops with regulated output buyers (such as cocoa in Ghana and tobacco or chilies in Malawi). For these contract farming financing operations, Opportunity helps to reduce the risk of side-selling through advance cash provision to farmers during the lean season when farmers are most likely to succumb to the temptation of side-selling.

The total number of target agricultural clients in 2011 was 41,000 farmers in Ghana, Malawi, Mozambique, Rwanda, and Uganda. The best estimate of the number of disbursed loans by the end of 2011 was only USD 29,000, however, with most of the shortfall occurring in the Malawi loan program.

CASE 3 HDFC BANK, INDIA — CORRESPONDENT BANKING
Direct Smallholder Lending

HDFC was established in 1994 with a mission to be a world-class Indian bank. It currently has 2,201 branches and more than 5,000 ATMs in 1,174 Indian towns and cities, with a balance sheet size of USD 55 billion in December of 2011, of which approximately 14 percent is financed in agriculture.

HDFC's farming lending model features small value loans of less than USD 10,000 against the mortgage of agricultural land (75 percent of the farmers are landowners) and based on a credit feasibility study. This study — a form of parametric financing — takes into account land holding, crop selection, input cost, and the strength of the underlying commodities to generate cash flow estimates. Previous client data and past experience, combined with extension service use, is also considered. Monitoring occurs after every harvest to ensure that accounts are serviced and kept regular. Most of HDFC's lending is limited to staple crops like rice, wheat, cotton, and sugarcane.

In order to reduce transaction costs, increase exposure, and provide a "one stop shop" for farmers, HDFC promotes correspondent banking in partnership with actors across the agricultural value chain. Through their Correspondent Operation Centers, which are attached to fertilizer dealers and other input distributers, dairy cooperatives, and sugar mills, HDFC offers an "end-to-end" payment system, reducing the number of transactions and increasing revenue.[38] Besides offering credit and collecting payment, business correspondents often deliver inputs and offer extension services. HDFC's holistic approach to farmer financing considers farmers' anticipated cash flows and their overall participation in the value chain. HDFC's model therefore assumes that the sector's hesitation in financing the "missing middle" can be traced to a dearth of cash flow documents and high transaction costs, contributing to low profit margins for banks.[39]

Direct loans handled at the HDFC headquarters account for 90 percent of present business. Gross profits currently range between 15–20 percent, though this is lower than other segments. Even though losses are low, the transaction costs of working in remote areas, competition from state banks with subsidized loans, and costly standard accounting practices persist as key challenges.

38 Andrade (2011)

39 Ibid.

CASE 4 ZANACO, ZAMBIA — MUNDA SMALLHOLDER SCHEME
Indirect Smallholder Lending

Zanaco (Zambia National Commercial Bank Plc) is one of the leading banks in Zambia in terms of customer deposits, total assets, and points of representation. It was partially privatized in April 2007 when Rabobank acquired 49 percent of the Government's interest in the Bank. Zanaco was listed on the Lusaka Stock Exchange in 2008 and is considered "Citizen Owned" with over 50 percent of the shares owned by Zambians and the Zambia National Farmers' Union (ZNFU).

The Munda credit facility provides smallholder farmers better access to finance in order to help them to grow their business and to offer a practical alternative to the discontinued national Input Support Program, in which the Government had provided inputs to farmers. Zanaco lends to District Farmer Associations (DFAs) that are affiliates of ZNFU. Before each growing season, DFAs assess the total needs for inputs of their predominately maize-growing smallholder members, then submit their requirements to ZNFU to tender for the accumulated need for fertilizer and seeds. Zanaco finances these inputs backed by 50 percent cash collateral, deposited by the DFAs. Farmers organized in co-operatives or associations and members of ZNFU through the DFAs are able to purchase seeds and/or fertilizer from input suppliers such as Omnia Fertilizer Zambia Limited and Seed Company/Zamseed. At the end of the maize season, the harvest is sold to the processor, who channels proceeds to Zanaco, which then deducts the outstanding loan balance from that amount, along with accrued loan interest and other associated costs, such as crop insurance premiums. The remaining surplus then flows back to the individual smallholders through their DFA. Via a DFA, the collective smallholders are responsible for the loan repayment of each individual, according to the principle "all for one". If repayment is not made on time, participation in Munda for the DFA in the next season is prohibited.

In the 2011/12 farming season, the scheme disbursed a total loan amount of USD 4 million to 25 DFAs representing 4,026 participant farmers working on 10,088 ha, up from 600 farmers and 600 ha in the 2008/09 farming season. These farmers' yields have also increased from an original 1.5 metric tons per hectare (MT/ha) in 2008/09 to 3 MT/ha during the 2010/11 season on account of improved use of hybrid seeds and fertilizers, and adoption of conservation farming practices spearheaded by ZNFU. Zanaco forecasts the number of financed farmers to increase to 10,000 in 2012/13. The current interest rate is ZMK Base Rate (16 percent per annum (p.a.)) minus 5 percent (11 percent p.a.), which is a competitive rate in Zambia.[40] The arrangement fee is USD 100 per DFA, and the borrower does not have to provide additional collateral beyond the cash. From a bank point of view, the portfolio performs well, and no defaults have been registered thus far. The reason for such a performance is twofold: first, a cross default is at stake since Zanaco finances DFAs, who collect the 50 percent cash collateral and use the "all for one" principle. Second, the Food Reserve Agency of the government sets the price early in the season at a particularly high level to cover the amount they buy for food security purposes. This price will hold for a minor part of the crop bought by the Government, and drives the general market price for maize above competitive levels. Currently, maize is the predominantly financed crop. The model heavily relies on the Zambia National Farmers' Union organization in its operational and risk management activities; therefore, it might not be replicable in contexts with weaker smallholder organizations. The model's sustainability also relies on crop diversification at the farmer level and enhanced corporate governance skills at the DFA level. Lastly, the 50 percent cash collateral — instead of a legal claim on the harvest as collateral — reduces the leverage of the farmers involved. Nevertheless, there is ample demand among farmers for the scheme.

40 Zanaco (2012)

CASE 5 FINTERRA, MEXICO — EMERGING FARM BUSINESS FINANCING

FinTerra is a leading non-bank financial institution in Mexico focused on lending to SMEs in the agribusiness sector, primarily producers of fruits, vegetables, grain crops, dairy, livestock, and specialty crops, along with various agricultural-related businesses. FinTerra was founded in 2004 with an initial capital of MXP$ 48.0 million. As of August 30th, 2010, FinTerra´s equity was MXP$ 295 million. Since 2007, Standard and Poors (S&P) has rated FinTerra as BB+ / Stable outlook. FinTerra has outstanding loans of MXP $1,075 million (approved credit facilities > MXP $1,400 million), and currently has 11 branches located in 10 Mexican states.

FinTerra's main lending product is the Individual Loan (87 percent of the portfolio). As of 2010, FinTerra had around 405 clients under this category. Individual Loans are both short- and medium-term, averaging the equivalent of around USD 1.9 million equivalent on average; the loans finance working capital and/or fixed assets investments of the clients. The individual loan borrowers are mostly SMEs, enterprises with annual sales in the MXN 1–50 million (USD 0.90–USD 4.5 million) range. Other loan products include Grower Financing Loan Programs (MXP$ 300 million outstanding), through which FinTerra finances the suppliers of large food and beverage companies. Each loan program has a limit of total exposure, ranging from USD 1.0 to US$ 4.0 million equivalent, and 10,761 borrowers with "sub-loans" in the program, ranging from USD 10,000 to USD 100,000 equivalent.

CASE 6 ZANACO, ZAMBIA — EMERGENT FARMER FINANCE AND SUPPORT PROGRAM "ZEFP"

Zanaco (Zambia National Commercial Bank Plc) is one of the leading banks in Zambia in terms of customer deposits, total assets, and points of representation. It was partially privatized in April 2007 when Rabobank acquired 49 percent of GRZ's interest in the Bank. Zanaco was listed on the Lusaka Stock Exchange in 2008 and is considered "Citizen Owned" with over 50 percent of the shares owned by Zambians and the Zambia National Farmers' Union (ZNFU).

The ZEFP seeks to combine access to finance with support services for emerging farm business. A pilot project was completed in August 2009, in which Zanaco provided the financing (both working capital and investment finance), IFC and Rabo Foundation financed the technical assistance program (via a grant that was channeled through ZNFU), and Rabo Development provided bank capacity building to Zanaco. This included agricultural credit skills and farm performance monitoring training to Zanaco. The farmers were also trained in farm management and financial skills. In addition, external specialists provided support for individual farmer loan applications and business plans. An important aspect of the program is the involvement of key agricultural input suppliers and off-takers: the South African fertilizer company Omnia has a crucial role in soil sampling and determining the fertilizer program together with the farmers. Cropserve does the same for the agri-chemicals. Other partners such as Parmalat, Afgri, and Zamace (the local Agri Commodity Exchange) are committed to covering the marketing link to the program. The involvement of the project partners is commercially driven: all parties acknowledge the immense growth potential of this group.

As of December 31, 2011, the program had provided loans to 123 farmers, with a total loan portfolio of USD 4.5 million. Some delays in achieving results have been related to the limited number of standalone farmers under the emergent segment. Zanaco has diversified by incorporating value chain financing in sectors with strong market linkages to develop its own segment of emergent farmers. Although most commercial farmers and small-scale farmers are members of ZNFU, the majority of farmers under this segment are not members. Therefore, the bank has diversified its marketing strategy by running advertisements on the program as a way of reaching out to them. The technical assistance program implemented by ZNFU/Rabobank and IFC has led to enhanced practices by the Bank and improved the productivity of the participating farmers. Zanaco hired and trained a group of new agri-loan officers to strengthen the agri-finance capacity of its branches. Without agri-finance capacity building of its rural branches, the ambitious growth targets for emerging farmers would not be feasible. The program plans to expand into sugar, pork, rice, and dairy production, as these sectors have relatively strong market linkages that mitigate the risk of cash diversion by farmers and reduce reliance upon land collateral.

CASE 7 NMB, TANZANIA — KILIMO ACCOUNT PRODUCT "KAP"
Savings Account Linked Input Finance

NMB (National Microfinance Bank) has become Tanzania's largest financial services provider, with a growing customer base of more than 1.4 million people.

In the KAP, farmers open a personal account, a NMB Kilimo (saving account), and apply for a loan account. After harvest, the farmer deposits part of the harvest proceeds in the Kilimo Account, which is then used as cash collateral for input financing in the following season. The NMB Kilimo Account is designed to encourage farmers to save the earnings from their harvest sales. The incentive to save comes in two ways: i) a high interest rate (3 percent) plus bonus (3 percent) when less than two withdrawals occur; and, ii) the ability of the farmer to take out a loan equal to three times his or her savings balance for the purchase of agricultural inputs. NMB targets those farmers that participate in the warehouse receipt financing schemes through their Primary Cooperative Societies. Given that maize, sunflower seed, cashew, and coffee are less integrated with buyers, these farmers are typically not eligible for outgrower or value chain financing and therefore find it particularly difficult to access input finance. In order to qualify for the KAP, the farmer must have his or her own farm-produced non-perishable crops, harvest records of at least 3 recent years, be a member of MCOS/primary Cooperative Societies banking, and operate solely with NMB. In addition, the farmer needs a guarantee and reference letter from the AMCOS/Primary Cooperative Society.

The scheme was launched with 1,080 farmers (total loans of around USD 200,000).

CASE 8 BANCO DE LAGE LANDEN, BRAZIL — EQUIPMENT FINANCE

De Lage Landen International (DLL) is an international provider of leasing and asset finance, a fully owned subsidiary of the Rabobank Group.

The equipment financing portfolio has almost entirely been generated in partnership with agricultural equipment vendors. Through Brazil's national development bank (BNDES), general banks and financial institutions can provide finance to the agricultural sector at subsidized rates. Nonetheless, DLL has distributed more funds via equipment finance to the agricultural sector than these general banks have done. Key for De Lage Landen's approach are (i) a deep understanding of farming and of the agricultural value chain in Brazil; (ii) a thorough knowledge of agricultural equipment, control over its distribution chain; and, (iii) knowledge of the collateral value of the equipment and how to remarket it if needed. Most leases have a down payment or another form of client equity in the transaction and a cash collateralized partial guarantee from the dealer. Virtually all of DLL's portfolio consists of loans. Brazilian farmers want to own their equipment and prefer loans over leasing. The legal options to repossess an asset under a loan and pledge structure are not fundamentally different from those for a similar asset under a leasing structure.

De Lage Landen has built up an agricultural finance portfolio of around USD 3 billion in Brazil over the past 13 years.

CASE 9 MAHINDRA & MAHINDRA FINANCIAL SERVICES, INDIA — EQUIPMENT FINANCE

Mahindra & Mahindra Financial Services Limited (MMFSL) is a subsidiary of Mahindra & Mahindra Ltd. and part of the diversified industrial conglomerate Mahindra & Mahindra Group. The M&M agricultural division is one of the leading tractor brands in the world by volume. MMFSL has specialized in rural and agricultural finance with virtually no urban presence.

MMFSL provides asset finance, because leasing has tax disadvantages in India. The financing is based on loans, with a pledge over the equipment. The standard down payment is 25 percent with no requirement for further collateral or credit or buy-back guarantees from dealers. The dealers refer their clients to MMFSL to finance used equipment as well, regardless of the brand. Most MMFSL clients have just a few acres of land. They make the business case for their tractor and other equipment by working the land of other farmers and hiring out equipment as well as via non-agricultural uses of it. Eighty percent of MMFSL's clients are first-time borrowers with no relation with any other financial institution and with no financial statements that can be used for a credit analysis. Understanding farmer's earnings capacity had to become a core capability of MMFSL.

Starting in 1993, MMFSL has built up a USD 3 billion portfolio, with about 50 percent in equipment for farmers since 1996. MMFSL is very successful in terms of reputation, financial strength, and outreach. This success seems to be rooted in a distinctive rural strategy that extends beyond equipment finance. MMFSL is a non-bank financial institution, offering a broad range of financial services: Asset finance, including finance for used assets; and personal loans, housing finance, insurance (brokerage), fixed deposits, and mutual fund schemes (distribution). MMFSL operates via its own branch network of 556 branches with 10,300 employees throughout the country and has a presence in 80 percent of all the districts in India.

CASE 10 JAIN IRRIGATION, INDIA — EQUIPMENT FINANCE

Jain Irrigation Systems LTD (JISL) is the largest manufacturer of micro-irrigation systems (MIS) in India, and the second largest globally. In 120 districts with a total workforce of 7,000, JISL focuses on small farmers with holdings of less than 10 acres. JISL is listed on the Bombay stock exchange with a market capitalization of USD 2 billion.

JISL pre-finances farmer micro-irrigation system purchases against the "collateral" of a government subsidy payment. Farmers who buy irrigation equipment from Indian MIS producers such as JISL obtain a subsidy of 50–70 percent of the equipment purchase price, with the national Government supplying 40 percent and the state Government providing the remaining 10–30 percent. The JISL dealer prepares the cost estimate, and the applicant farmer submits a subsidy application to the local subsidy Implementing Agency (IA). After approval, subsequent MIS installation, and IA inspection, the subsidy release requires a 180–360 day processing period.

In 4 years, JISL expects to cover an additional 1 million hectares with drip irrigation systems. The delay in the Government processing of the subsidy limits working capital and creates uncertainty for JISL, therefore IFC invested in JISL to improve cash flows and ensure the working capital necessary to expand operations and grow sales.

CASE 11 DEVELOPMENT FINANCE COMPANY UGANDA LEASING, UGANDA — LEASING

Development Finance Company Uganda (DFCU) is a leading commercial bank in Uganda. DFCU is listed on the Uganda Stock Exchange, and operates 29 branches throughout the country. Five percent of the bank's credit portfolio is in the agricultural sector.

The first three rural branches (in Mbarara, Mbale, and Hoima) were opened in 2000 as part of a project funded by the U.S. Agency for International Development (USAID). DFCU has since started leasing operations in other towns like Lira and Arua, using its own funds. DFCU specializes in providing finance leases to SMEs for agricultural machinery — particularly tractors, milk equipment, harvesters, and agro-processing equipment. Typically, DFCU finances 60 percent of the asset purchase, while the client finances the additional 40 percent.[41] The client share, however, may range between 10–50 percent. DFCU retains full ownership during the life of the lease, though the asset is transferred to the client or sold to a third party after the lease terminates. Although DFCU's interest rates are similar to those of banks, their leases are more attractive to SMEs because they typically offer longer payment periods (3–5 years as compared with around 2 years), provide flexible lease payment schedules that match enterprise cash flows, and recognize the leased asset as primary collateral. Additional security is only requested in specific circumstances. Cash flows are evaluated through documentation of income sources, 3–5 years of audited financial statements, and company history and business plan. It is the borrower's obligation to select the equipment and submit an inspection report with an invoice. The asset must be insured during the entire life of the lease; the DFCU Insurance Premium Financing facility is available and may be tied to lease payments. DFCU staff engineers regularly monitor assets, and lease officers supervise clients in delinquency.

Out of the 231 leases that DFCU facilitated in 2011 (valued at 18.3 million), 19 of these were agricultural (2.2 million). Roughly 20 percent of the bank's agricultural credit occurs through their leasing operations. DFCU reports 32 percent portfolio growth for leasing in the previous year, with non-performing assets (NPAs) limited to 1 percent and write-off at 0.4 percent. Key success factors include technical and agricultural expertise to offer leasing products that meet consumer needs and quick turnaround time to permit equipment use during the current season.

41 Agrifood Consulting International (2005)

CASE 12 NMB, TANZANIA — WAREHOUSE RECEIPT FINANCE
Cashew and Coffee Warehouse Receipt Finance

NMB (National Microfinance Bank) has become Tanzania's largest financial services provider, with a growing customer base of more than 1.4 million people. Rabobank acquired a 35 percent stake in the NMB in 2005, when the bank was partially privatized by the Tanzanian government.

The warehouse receipt secured loans are given to registered farmer groups, individual farmers, commodity traders, and businesspersons dealing with non-perishable commodities such as coffee, maize, cashews, and nuts. A warehouse receipt financing system was developed together with technical assistance from Rabobank in early 2007. Its funding is extended against a commodity stocked in the Bank's controlled and authorized warehouse after submission of a warehouse receipt. The Bank holds the crops in the warehouse until buyers purchase and pay for the crops. Thus NMB can provide funds to farmers to enable them to continue preparing for the next crop while their goods are being stored.

The bank provided a total of some USD 16 million in facilities to Primary Cooperative Societies (PCS) in the coffee, cashew, maize, sunflower, and sesame sectors; around 110,000 farmers benefited in 2010. Raw cashew nut prices for the farmers at the farm gate could be as low as TZS300 per kg. Thanks to the warehouse receipt system, farmers can sell their cashew nuts through their primary co-operative societies, who in turn will auction the products in bulk. Cashew nut farmers can achieve an average price of up to TZS710 per kg. This scheme benefits from a 50 percent guarantee provided by the Government. To date, NMB has incurred no losses under the warehouse receipt financing and therefore has not had to call the Government guarantee.

CASE 13 HDFC BANK, INDIA — WAREHOUSE RECEIPT LOANS FACILITY
Warehouse Receipt Finance

HDFC was established in 1994 with a mission to be a world-class Indian bank. It has 2,201 branches and more than 5,000 ATMs in 1,174 Indian towns and cities. As of December 2011, the Bank had a balance sheet of USD 55 billion, of which approximately 14 percent finances agriculture.

The warehouse receipt loans facility offers loans from Rs. 1 Lakh (USD 2,250) to farmers and small traders against around 50 commodities to be stored in more than 3,500 approved private, central, and state warehouses. HDFC generally finances between 65–75 percent of the receipt value, and offers competitive interest rates of 8 to 10 percent. Farmers benefit from prompt loan disbursement upon delivery of the warehouse receipt. A top-up loan facility is available to existing asset relationship customers. Warehouse limitations include few inland operations and minimum lot requirements for stocking. Thus, the facility does not generally cater to small or rural farmers; it is larger farmers, traders, agro-processors, and government departments that primarily occupy warehouse space. Groups of smaller farmers do participate when resources are pooled through a single representative farmer. A non-standardized grading system is identified as a key risk for banks.

Operating profits range between 35–40 percent; risks and losses are low, around 1–2 percent. Losses have been managed by an efficient warehouse surveillance system set up by the Bank, consisting of well-trained warehouse inspectors and collateral managers, weekly mark to market valuations, and timely liquidation of stocks in case of defaults. In 2011, around 800 farmers participated, with market trends indicating increased participation. HDFC seems to have lower default risk and less distribution costs than with direct loans in this scheme. Eventually, with a more reliable warehouse system developing in India, banks will spend less on collateral management and supervision, thus increasing profit margins in this type of scheme.

CASE 14 GHANAIAN FINANCIAL SERVICES, GHANA — COLLATERAL MANAGEMENT

Ghanaian Financial Services

Ghanaian banks have a high level of confidence in local collateral management (CM) service providers, thus it is fairly easy for clients to access financing from the banks. The cost of collateral management services in and around the ports varies from USD 1,500–$2,300 per site per month; this includes security, but charges for insurance, tallying of goods, and fumigation of the warehouse are additional. The interest rates and charges may not be below commercial rates charged by banks for other kinds of working capital lending. In an environment where banks otherwise insist on land and buildings as collateral, many clients' only access to financing lies in using the services of collateral managers. Contractual disputes do not normally arise with collateral management agreements CMA in Ghana. Lending banks carry out regular monitoring involving periodic unannounced visits, and in some few cases (especially for high value goods) provide additional padlocks and require the collateral manager to send daily, rather than weekly, stock reports to the banks electronically.

There has been no high profile fraud in CM in Ghana, which seems to reflect the professionalism of the service providers. Keys to the program include: strict inspection of the warehouse before leasing it and signing the CMA; proper stacking inside the warehouse; supervised tallying in and out of the warehouse; appropriate and fair wage/salary structure for warehouse staff, and; sound knowledge of the commodities to be stored. The cost of the insurance is sometimes higher than for the CM service. For example, a shipload of imported commodities worth $6–8 million might need to be warehoused for 2 months; an all-risks policy meeting the requirements of an international bank might cost around $3,000 per month. Clients seeking the service of CMs for smaller shipments often object to the high cost of the insurance cover demanded by banks, and this often leads to a process of negotiation mediated by the collateral manager.

CASE 15 DUNAVANT ZAMBIA LTD. AND CARGILL ZAMBIA LTD. — FARMER INPUT CREDIT
Tight Value Chain Finance

Dunavant Zambia Ltd. is the largest cotton company in Zambia, with 100,000 contract farmers and a 60 percent market share. **Cargill,** which purchased Clark Cotton in 2006, has around 1,000 employees in Zambia. Together, both companies process around 90 percent of the country's cotton.

Dunavant and Cargill finance contract farmers through a structured loan package that provides inputs on credit. The growers participating in the scheme have no assets for collateral because land is communal and held in a trust by a chief. To participate in the scheme, a grower must have at least 0.5 hectare of land. The input loan package includes: planting seed, which is disbursed at the beginning of the season; insecticide, which is disbursed after verification by field staff that the seed has been planted; fertilizer, which is provided at the same time as the insecticide; plastic knapsack sprayer for application of the pesticide for farmers or groups of farmers with 1 hectare of land; and wool bags for storage. The total value of the package without a sprayer is approximately 250,000 Zk (USD 47) per hectare and with a sprayer 520,000 Zk (USD 98) per hectare. The inputs are high quality, standardized products that would not be available to the farmer without the program. As such, more than 99 percent of Dunavant's contracted farmers participate.[42] After harvest, farmers move the cotton by hired oxcart to one of the 1,440 buying points where they receive cash on delivery. The final payment received by the farmers at time of delivery is the net of the costs of the input package received. Although contracts are entered between the company and the growers, the system relies on trust and strong mutual commercial incentives, as contracts are generally not enforceable. Participating growers receive an identity card that establishes an account number, and the transaction is carefully tracked through a complex, paper-based monitoring system at the company's main office in Chipata. In order to ensure the expected quality of production and promote grower loyalty, Dunavant and Cargill make training an essential component of the program. Training covers issues from proper pesticide application to care and maintenance of sprayers, and is supported by an expansive network of permanent field staff.

42 Agrifood Consulting International (2005)

Dunavant Zambia worked with more than 100,000 farmers in 2011, up from 70,000 contract farmers in 2009/2010. In 2007, Dunavant lent more than USD 10 million to farmers. Similarly, Cargill Zambia worked with 65,000 farmers in 2011.[43] Since divestment of the parastatal Lint Company of Zambia in 1994, Dunavant's annual sales volumes have increased by approximately 30,000 metric tons. Yields have increased from 600 kilograms per hectare to an average of 1,200 kilograms per hectare, sometimes reaching 2,400 kilograms per hectare. The target for repayment of loans is 87.5 percent, but actual rates have been 94 percent in 2000, 95.35 percent in 2001, 95.5 percent in 2002, and 97.02 percent in 2003. In 2012, a database of all contract farmers was organized to prevent double contract farming and further reduce risk. The key to the successful growth and sustainability of the program is the enduring relationship between growers and the company — led by mutually beneficial commercial incentives, consistent input credit and extension/education services, careful farmer selection, strict controls on the quality and variety of seed, prompt payment systems with account monitoring for all contract farmers, and even HIV/AIDS workplace and family outreach programs. Primary challenges to sustainability include sharp drops in global cotton prices and opportunistic traders that source from and undermine the established supply chain. The business model used by Dunavant and Cargill is replicable for those physical traders and processers who see value in downward integration of a wide range of commercial intermediary functions. Financing, when it can be done with minimal risk, is therefore an important enhancement to more traditional trading and manufacturing roles.[44]

43 Peltzer (2011)

44 World Bank (2005)

CASE 16 PALABANA DAIRY COOPERATIVE SOCIETY & PARMALAT, ZAMBIA — VALUE CHAIN FINANCE

Zanaco (Zambia National Commercial Bank Plc) is one of the leading banks in Zambia in terms of customer deposits, total assets, and points of representation. It was partially privatized in April 2007 when Rabobank acquired 49 percent of GRZ's interest in the Bank. Zanaco was listed on the Lusaka Stock Exchange in 2008 and is considered "Citizen Owned" with over 50 percent of the shares owned by Zambians and the Zambia National Farmers' Union (ZNFU). **Palabana Dairy Cooperative Society** was established in 1996.

The cooperative has its own milk storage depot with a storage capacity of up to 3,000 liters of milk per day. The milk is collected directly by Parmalat, the off-taker and milk processor, from the Milk Collection Centre. Land O' Lakes (the donor/consultancy arm of the largest U.S. dairy cooperative) provided initial capital by financing 22 cows. The quality-based payment system by Parmalat incentivizes the farmers to optimize quality; 100 percent of the milk is grade A. The members pay ZMK 100/liter commission to the cooperative (4 percent of the liter price) to pay for the cooperative's workers and overhead. In 2006, Zanaco provided a USD 12,000 loan to the cooperative to finance 20 cows (Jersey and Friesian); a year later the loan was increased to USD 36,000 to finance another 30 cows. Both loans were repaid on time. In 2011, the Cooperative obtained a third loan of USD 120,000 to purchase 65 cows, repayable in 2015. Parmalat has signed a 5-year off-take guarantee with the cooperative and pays directly into the cooperative's account with Zanaco on a monthly basis. Through this tri-partite agreement, Zanaco is able to underwrite predictable cash flow and collect repayment through deductions at the income source.

Due to high repayment levels, the program has seen consistent expansion and participation: 50 farmers participated in 2009/10, 120 in 2010/11, 200 in 2011/12, and 300 are anticipated in 2012/13.[45] After repayment of the current loan, the cooperative would like to again double the loan to over USD 200,000 to finance new cows. In addition, the current milk tank capacity of 3,000 liters has to be increased, as daily production currently amounts to 2,000 liters. It is important to note that these loans benefited from a larger Land O'Lakes development project financed by USAID.[46] An IFPRI survey shows that the Land O'Lakes project achieved significant improvements in household income, food security, and dietary and livelihood diversity for approximately 22,000 beneficiaries.[47] Key risks of the project are price volatility and dependence on one large buyer: the cooperative sells milk to Parmalat, and Parmalat dictates prices. This risk is mitigated by the emergence of small milk processing companies like Nice Products and Kaposhi that may create competition for Parmalat. Another risk is weather: in the dry season, most small-scale farmers who depend on natural grazing are affected by a lack of grazing grass. This risk can be mitigated by supplementing with hay and molasses, and by acquiring multi-peril insurance covering drought, floods, and fire.

45 de Vries (2012)

46 Swanson (2009)

47 Hawkes and Ruel (2011); Christen and Pearce (2005)

CASE 17 ECOM, AFRICA & ASIA — CAPITAL IMPROVEMENT LOAN FACILITY
Value Chain Finance with Input Suppliers

ECOM Agro-industrial Corporation Limited ("ECOM" or "the Company") is a leading supply chain manager and integrated supplier of both raw and semi-processed agricultural commodities. ECOM, incorporated in Switzerland, and its subsidiaries are commodity operators covering 30 countries in the United States, Central and South America, Europe, Asia, and Africa. ECOM's principal activities consist of trading coffee, cotton, cocoa and, to a lesser extent, grain and other agricultural products, along with raising pork.

The proposed IFC Asia-Africa Facility is aimed at enabling ECOM to initiate a program of medium-term funding to its coffee growers so that these farmers can undertake capital improvement projects that require longer-term funding than the short-term crop advances currently provided by ECOM and/or other traders. ECOM is willing to take the risk of financing the farmers with medium-term funding on its balance sheet. The project will consist of i) medium-term funding to be provided by ECOM subsidiaries in South and Central America to coffee farmers to fund capital improvements for ECOM producers in Kenya, Uganda, Tanzania, PNG, and Vietnam; and, ii) short-term crop advances.

One reason for the additional working capital needs is the expansion of ECOM's certification efforts and technical assistance from its original countries in Central and South America to producers in Africa and Asia. As a first step toward certification, ECOM's field technicians do a baseline assessment of the farms, using the methodology of the relevant certification program, which includes assessment of product quality and economic, social, and environmental sustainability of farm practices. This baseline assessment identifies the aspects of the farm operation that need improvement in order for the farm to be eligible for certification. This initial assessment is audited by the verifier of the relevant certification program on a sample basis. Under ECOM's guidance, those farmers that meet minimum sustainability and quality criteria implement mandatory improvements that mostly require short-term actions (up to 6 months) such as more documentation of the process, labeling, management of fertilizers and chemicals, minimum wage, no child labor, labor conditions, and worker housing improvement. More fundamental problems (soil conservation, watercourse and biodiversity protection) require medium-term (6 to 9 months) implementation periods. Once certified, the farmer must demonstrate continuous improvement in farm practices in order to remain in the program. This value-added coffee is then marketed under brand names created and owned by ECOM. While farmers are free to sell their coffee to any trader, ECOM is willing to underwrite the capital improvement loan facility for the following reasons: i) ECOM's technical assistance and certification efforts creates loyalty with farmers; and, ii) the certification process facilitates a tight value chain in which farmers are financially motivated to accept certified coffee premiums from ECOM.

ECOM's on-going South American model works with 125,000 farmers, and provides USD 17.4 million in seasonal financing to over 14,000 farmers. ECOM's technical assistance has enabled more than 10,000 farmers to become certified.[48]

48 Wegner (2012)

CASE 18 GHANA GRAINS PARTNERSHIP, GHANA — VALUE CHAIN FINANCE

The Ghana Grains Partnership involves a number of partners and sponsors. First is an international and national consortium of private sector sponsors: Yara International ASA, the world's largest fertilizer company, and Wienco (Ghana) Limited, a specialist in the importation and distribution of high quality agro-inputs. Wienco has developed some of the leading Ghanaian commodity associations, including the Cocoa Abrabopa Association (CAA), Wienco Fibres Ltd., and the Integrated Tamale Fruit Company. The Africa Enterprise Challenge Fund (AECF), farmers and farmer associations initially in Wienco's out-grower scheme in the Northern Region, the Ministry of Food and Agriculture, the sector policy maker and regulator, Standard Bank and other commercial banks, and Technoserve, an NGO, also participate, along with output buyers (including processors) and traders. Prorustica, together with its local partner MCM Associates, provides advisory services to the Partnership.

Yara initiated the Ghana Grains Partnership (GGP) in 2008, inviting a bottom-up dialogue with local farmers and developing a large-scale rollout model. Under this scheme, farmers form joint liability groups of 5 and 10 members for block farming, with each farmer cultivating an estimated 5 acres. Individual farmers with capacity, credibility, and commitment are also accepted with individual plot requirements of 5–10 acres. The pilot project rollout started in 2009 with the establishment of the growers' association, Masara N'Arziki. Off-take contracts between the Association and maize farmers are entered, and hybrid seeds, chemicals, and fertilizers are provided on credit. In the absence of initial external financing for the Association, Yara and Wienco, the project's input dealers, financed the first requirements of USD 1 million. The Association purchases the farmers' total maize crop and compensates them for their product minus the cost of borrowed inputs. The Association is able to offer guaranteed prices as Wienco, the Association's buyer, can guarantee a minimum price to the Association. Every participating farmer receives not only inputs on credit, but also benefits from the Good Agricultural Practices training and extension. Technoserve also provides governance and business management services. The program promotes conservation farming and no tilling to reduce moisture loss. Furthermore, crop rotation is introduced, particularly with crops such as soy beans that help improve soil fertility. This financing scheme manages side selling through a well-planned, integrative partnership that: (i) promotes accountability through joint liability groups that have co-ownership in processing and profits down the value chain; (ii) develops farmer ownership in the planning stages; (iii) builds farmer-partner relationships and establishes trust through extensions services; and, (iv) selects farmers with exemplary commitment and capability.

Currently, some 5,000 maize farmers have been reached through the program, which will be extended to 5,000 rice farmers. Production of the maize farmers participating in this program has jumped by as much as five times through fertilizer application optimization, the extension services, and the block farming. Due to the program's success, Standard Bank financed USD 8 million in 2010, through its Agra Guarantee Scheme, to Masara N'Arziki for program expansion. For the growing season in 2011, the Agro Development Bank refinanced Standard Bank. In the next 5–6 years, the target number of farmers under this program is 25,000 producing 250,000 metric tons of maize — exactly the volume that was imported by Ghana in 2011.

CASE 19 CRDB, NMB, KILOMBERO SUGAR & MTIBWA SUGAR, TANZANIA — OUTGROWER FINANCE

Outgrower Scheme with Sugar Associations

CRDB Bank Plc, is a leading, wholly-owned private commercial bank in Tanzania. **NMB** (National Microfinance Bank) has become Tanzania's largest financial services provider, with a growing customer base of more than 1.4 million people. They, along with **Kilombero Sugar Company Limited** (KSCL) (owned by Illovo 55 percent, ED&F Man 20 percent, Government of Tanzania 25 percent) and **Mtibwa Sugar Estates Limited** (MSE), which are sugar cane outgrowers, and their trusts organized under four Outgrower Associations.

CRDB's and NMB's outgrower loan scheme provides new opportunities to a Tanzanian outgrower model that dates back to the 1960s. The Kilombero/Mtibwa sugar estates are now vertically integrated and process outgrowers' sugar supplies. Smallholder sugarcane farmers around Kilombero and Mtibwa estates currently supply about 50 percent of the total sugar cane used by the mills; 23,300 hectares are under cultivation by over 20,000 outgrower farmers. The loan scheme extends credit to sugar outgrowers for purchase of inputs for crop maintenance and other costs related to the development of sugar cane. Eligible growers are covered by a tri-partite agreement between the sugar estates (the buyer), the outgrower (borrower), and NMB/CRDB. The agreement ensures that all crops will be purchased by KSCL/MSE, growers have experience in growing the crop, crops were harvested in the previous season with sufficient proceeds, the growers trust provides collateral to secure the loan, and there is a farming contract between the sugar companies and the farmers.[49] NMB and CRDB started financing outgrowers on the basis of guarantees or at least "comfort letters" from Mtibwa. Subsequently, the sugar company obtained a bulk loan from CRDB, which it retailed to farmers through savings and credit cooperatives (SACCOs). Mtibwa transfers all payments for sugar deliveries to SACCOs first, which then deducts the loan repayment from that amount and remits the net proceeds to the farmer.

Strong working relationships persist between the sugar outgrowers and the estates. As revenues are shared between the estates and outgrowers — 55 percent to the Kilombero area farmers and 53 percent to the Mtibwa area farmers — outgrowers take ownership in the value chain and typically refrain from side selling. Recognizing that productive outgrowers are essential to their own profitability, KSCL has invested heavily in outgrower infrastructure, technical and business skills, local organization, input access, and community development projects. In their outgrower loan scheme, NMB and CRDB are able to underwrite anticipated cash flows from strong, local relationships with established, secure, and long-term buyers.

NMB has provided financing to thousands of outgrowers in Tanzania with loan amounts of around USD 4 million. Illovo's outgrower rain-fed cane production produced an improved crop of 493,000 tons harvested in 2010/11.[50] The Kilombero Cane Growers Association (KCGA) has 4,200 members with 5,836 hectares of sugarcane — allowing them to produce about 320,000 tons of sugar cane per season.

49 NMB (2010)

50 Illovo (2011)

CASE 20 NMB, TANZANIA — AGRO-DEALER SCHEME
Value Chain Finance with Input Suppliers

NMB (National Microfinance Bank) has become Tanzania's largest financial services provider, with a growing customer base of more than 1.4 million people. Rabobank acquired a 35 percent stake in the NMB in 2005, when the bank was partially privatized by the Tanzanian government.

NMB's agro-dealer product is a credit facility for traders of agricultural inputs, which allows them to borrow working capital up to Tsh. 30 million (USD 19,000) in their NMB business account via a pre-defined overdraft line.[51] The product is delivered through facilities at NMB branches. These facilities benefit from a Risk Sharing facility from AGRA and the Financial Sector Deepening Trust that results in a 10 percent loss guarantee to NMB.

NMB has agreed to provide some USD 6 million worth of financing to these Agro Dealers, and started in May 2008 in 11 districts. This product makes it easier for agro-dealers (and input suppliers such as Yara for which they retail) to increase sales of fertilizer and other inputs in Tanzania. The Ministry of Agriculture is now planning to roll it out to more districts, which will bring the financial need up to some USD 15.4million. NMB is in discussion with AGRA/FSDT to top-up the guarantee in order to continue supporting this Government initiative. The program helps farmers by making more inputs available during the start of the season and resulted in more stable prices of fertilizer among competing agro dealers. NMB approved facilities to over 148 agro dealers in all 11 eligible districts.

51 NMB (2012)

CASE 21 BAYER, RAIFFEISEN AVAL BANK, UKRAINE — SME FARMER INPUT CREDIT
Value Chain Finance with Input Suppliers

Raiffeisen Bank Aval (RBA), established in 1992, is a wholly owned subsidiary of Raiffeisen Bank International, Austria. RBA is the fourth largest bank in the Ukraine and has a 30 percent share of the agri-lending sector. RBA has 930 outlets in the country, of which 280 are dedicated to agricultural clients. **Bayer Ltd.** is a Ukrainian entity and the main supplier of plant protection products in Ukraine, with revenues of USD138 million (2010). Bayer Ltd. is wholly owned by Bayer AG, a Germany-based pharmaceuticals, polymers, and agrochemicals conglomerate. Bayer CropScience manufactures herbicides, insecticides, fungicides, seed treatment, and seeds.

Raiffeisen Aval provides a guarantee to farmers, allowing them to buy inputs on credit from Bayer. Raiffeisen Aval is comfortable taking on small farmer risk thanks to a risk sharing facility ("RSF") with IFC on a portfolio of receivables generated by Bayer in connection with sales of crop-protection products to private sector farmers in Ukraine. The RSF will cover a portfolio of seasonal receivables (with maturities less than 1 year) in which IFC will share 50 percent of credit losses in the portfolio in the local currency. In addition, IFC enters into a first-loss compensation agreement whereby Bayer guarantees the first 10 percent of IFC's losses. Bayer is willing to take the first loss risk, as it has both a business incentive to increase sales of inputs and purchase history information on the farmers to gauge their creditworthiness. The combination of the RSF, the first loss, and the Know Your Customer (KYC) link via Bayer together support RBA's entry into financing smaller farmers than they would otherwise accept.

In 2011 Bayer Ltd. reached about 750 farms, most of which are medium-sized farms by Ukrainian standards, with an average of 4,000 hectares under operation. A task force of 24 company agronomists visits the farmers on a regular basis, advising on the use of Bayer products. IFC expects the facility to finance Bayer crop protection products for 27,750 farmers by the end of 2014.

CASE 22 ITC & STATE BANK OF INDIA — SMALLHOLDER INPUT FINANCE
Value Chain Finance with Input Suppliers

ITC Limited is a leading private sector company in India, with a market capitalization of more than USD 33 billion and a turnover of USD 7 billion. ITC is a market leader in cigarettes, hotels, packaging, paperboard, and agricultural exports. State Bank of India (SBI) is the country's largest and oldest bank, with 13,500 branches. The Reserve Bank of India (Central Bank) owns 60 percent of SBI.

SBI partnered with ITC to make affordable loans available to farmers for input purchases. Under the arrangement, ITC facilitates all documentation and verification procedures, thereby reducing associated costs to the bank and allowing the bank to offer more favorable loan terms to more farmers. ITC also allows SBI to effectively manage and monitor credit risk through the local knowledge and support of platform operators and ITC data on farmer transactions.[52] ITC Limited was one of the first Indian companies to enter into large-scale, direct procurement arrangements with smallholder farmers. Today, the company has the established capacity to source produce from more than 4 million farmers across India via an extensive network of 6,500 rural community platforms known as e-Choupals. Led by a host farmer, each e-Choupal is equipped with a computer and Internet connection that facilitates dissemination of local and global price trends and provides direct connection to ITC services. Farmers may sell produce to ITC, order agricultural inputs, or receive valuable weather forecasting and market information, all while eliminating the inefficiencies of middle traders. ITC benefits from reduced procurement costs as farmers realize higher farm gate prices. ITC has the capacity to engage more than 50,000 villages through their e-Choupal platform. For providing this service, the company receives a nominal commission at loan disbursement to help defray the administrative costs that it incurs.

Since the program was launched in 2008, ITC has helped to facilitate nearly USD 65 million in credit to more than 70,000 of its suppliers.[53]

52 Annamalai and Rao (2003)

53 Technoserve-IFAD (2011)

CASE 23 CENTENARY BANK & TECHNOSERVE, UGANDA — FACTORING

Centenary Bank is the fourth largest commercial bank in Uganda, with approximately UGX 807 billion (USD 340 million) in assets, representing 7 percent of the country's banking sector. As the largest indigenous bank in Uganda, Centenary Bank services a largely rural clientele through its 40 bank branches in central, western, northern, and eastern Uganda. **Technoserve** is an internationally recognized leader in the field of economic development. With 900 employees, the NGO has affected millions of lives through its activity in 40 countries.[54]

Centenary Bank offers financing at two levels: 1) factoring for brokers against their sales to universities and hospitals; and 2) microloans to individual farmers. TechnoServe began working with matoke (green banana) farmers in Uganda in 2005 to establish value chains linking them to urban institutions such as universities and hospitals. At the time, overproduction had driven prices so low that desperate farmers were on the verge of destroying their matoke plants and starting over with new crops. Several interrelated issues compounded the problem. Disaggregated farmers sold their matoke to brokers on a volatile open market. Unable to rely on a steady source of matoke, brokers had to rent trucks for three to four days to scope the countryside for sufficient product to fulfill orders. There were typically five or six intermediaries between the farmers and the end buyers, resulting in slim margins for farmers and brokers alike. Brokers that sold to urban institutions received good prices, but often had to wait several months for payment until students paid their semester bills or hospitals received their government allocations. As a result, many brokers were forced out of business as they lacked working capital to maintain high turnover. To address these issues and align incentives along the value chain, TechnoServe began setting up village-based groups of 30–50 farmers. They also identified brokers that were entrepreneurial and honest, and personally introduced them to staff who made purchasing decisions at urban universities and hospitals. Brokers could then buy at scale and minimize price impacts of middle traders, all while securing higher farm gate prices for matoke farmers. Most brokers, however, could still not afford to meet urban demand of three deliveries per week (each valued at USD 3,000–4000) due to the prohibitive payment schedules. Centenary Bank recognized both the creditworthiness of the large buyers and the impact factoring would have on the efficiency of the value chain.

54 Technoserve-IFAD (2011)

Farmers responded to the profitability of matoke cultivation by demanding finance to increase production. Though initially hesitant to lend to smallholder farmers, Centenary Bank agreed to a 3-year risk-sharing program backed by a $500,000 credit guarantee from the Rockefeller Foundation to cover up to 50 percent of losses from loans within the matoke value chain. Although Centenary Bank applied traditional requirements for fixed asset collateral in its microloans to farmers, the Bank would not have entered into the facility without an established and efficient value chain where purchase commitments from brokers and end buyers mitigate the risks of lending to smallholder farmers. Centenary Bank's experience in purchasing brokers' accounts receivable highlighted the profitability in the matoke value chain and provided confidence in lending against farmer cash flows.

Within a year, farmer incomes had increased 70–100 percent, and by 2008, 12,000 matoke farmers were participating in the system via 300 village-based farmers' groups. By the time the facility closed in 2008, Centenary Bank had lent out a total of $1.6 million and claimed losses of less than $21,000, far lower than the loss rate on its lending book overall. This example illustrates that lenders should be willing to shift their approach to risk assessment and away from collateral. Centenary Bank's experience in factoring provided a degree of familiarity and comfort with buyers and borrowers. Understanding the value chain organization, timing of cash flows, and financing needs was critical to establishing both the factoring lines of credit and the individual smallholder farmer financing.

CASE 24 KENYA GATSBY TRUST — FACTORING

Kenya Gatsby Trust (KGT)[55] is a Nairobi-based nonprofit organization that aims to eradicate poverty and spur economic development by supporting micro and small enterprises (MSEs) in Kenya.

The facility pays participating MSEs cash against delivery of product to customers in good standing whose payment terms would otherwise overextend the seller's working capital. In 2002, KGT's Financial Services Department established a factoring program to bridge the gap between commercial banks and microfinance. This facility enables MSEs that were previously selling their products to brokers for cash, to cut out these intermediaries and sell product directly into formal markets that pay higher prices but on 30, 60, or 90-day terms. MSEs register with KGT and pay a fee in order to utilize the factoring service. When an MSE delivers its product to its buyers, KGT immediately pays the seller 70–95 percent of the invoice value. After collecting payment from the buyer on the pre-agreed terms, KGT remits the remaining 5–30 percent to the seller. This system smoothes cash flow for small and growing businesses and removes the uncertainty of having to collect accounts receivable from larger private companies or institutions. In doing so, it enables MSEs to source from smallholder farmers, who typically require cash payment on delivery, without overextending their working capital. The arrangement also has benefits to buyers such as hospital and universities, many of which would like to support local MSEs and the smallholder farmers that supply them, but are unable to tie up their own working capital with advance payments or cash upon delivery.

The program currently serves 25 MSEs sourcing from over 4,000 small-scale farmers and artisans. One challenge to growing the program has been the reluctance of bureaucratic government institutions to change their established practices and make payment to an entity other than the seller. As an NGO, it is important to note that KGT is not taking any interest or profit on the transactions, and is not protected in the event that the receivable is not paid in full. A similar model could be established to charge commercial rates on the financed amount that is eventually recovered as well as to apply appropriate factoring discount rates to cover any loss of face value of the A/R.

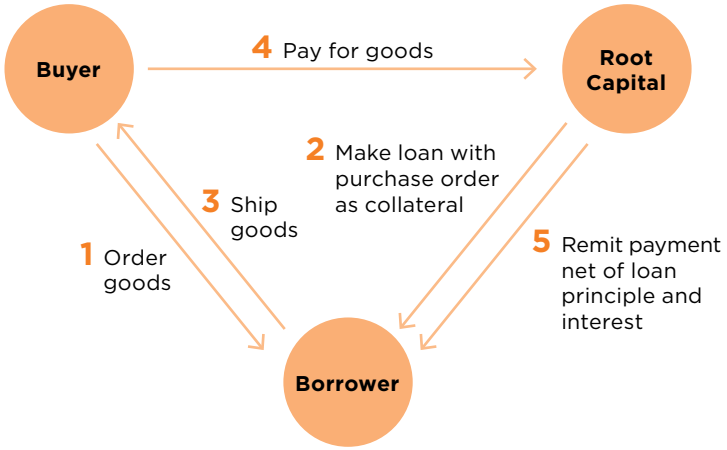
55 Milder (2008)

CASE 25 ROOT CAPITAL, LATIN AMERICA & AFRICA — EXPORT TRADE FINANCE

Root Capital is a nonprofit social investment fund that is pioneering finance for grassroots businesses in rural areas of developing countries.

Root Capital makes loans in the range of $25,000–$1,000,000, targeting enterprises with environmentally sustainable practices that are exporting high-value products in the following sectors: agriculture, timber and non-timber forest products, fisheries, and handcrafts. The vast majority of these businesses had never received a loan prior to working with Root Capital. The most common type of loan is trade credit, which is available for up to 1 year and oriented around a production cycle such as a harvest. Trade credit loans are typically used by borrowers to purchase product from their farmer and artisan members or suppliers and to cover costs during the months between purchasing raw product and receiving payment from buyers. Root Capital also offers long-term loans that extend up to 5 years and are used for investment in equipment and infrastructure and for general operations. Interest rates range from 9–10 percent per annum for loans up to one year and 10–12 percent per annum for long-term loans. All loans have a closing fee of up to 1 percent. To mitigate risk, Root Capital has developed a model that assesses collateral based on producers' future sales rather than their existing assets. Under this three-way arrangement, Root Capital lends against signed purchase agreements between grassroots businesses and their buyers. Typically, the borrower is eligible for a loan of up to 60 percent of the value of the export contracts. The purchase agreement, in effect, becomes the collateral — a discrete, future revenue stream pledged by the borrower to repay Root Capital's loan. When the borrower ships product to the buyer, the buyer makes payment directly to Root Capital, which, in turn, deducts the loan principal and interest and remits the difference to the borrower. Root Capital's due diligence and monitoring processes are designed to identify any challenges that might derail this transaction, such as weather issues, a strike at port that prevents product from shipping, or the buyer going out of business.

TYPICAL ROOT CAPITAL FINANCING STRUCTURE



From 2000 to July 2008, Root Capital disbursed 506 loans totaling $100 million to 210 grassroots businesses representing more than 340,000 small-scale producers in 30 countries across Latin America, Africa, and Asia. The repayment rate on Root Capital's loans is over 99 percent, yet most of its clients continue to have few, if any, alternatives for affordable credit. Root Capital has applied this value chain finance model with 125 U.S. buyers, ranging from specialty importers, such as Equal Exchange and Sustainable Harvest, to large global buyers, including General Mills, Green Mountain Coffee Roasters, Pier 1 Imports, Starbucks Coffee Company, The Body Shop, The Home Depot, and Whole Foods Market. Ninety percent of Root Capital's portfolio is made up of short-term (typically 5 to 9 months) trade credit loans to address the cash flow gap between the time an SME purchases raw goods from its farmer suppliers and when the business receives payment from its buyers several months later. Pre-harvest loans to SMEs to lend to individual farmers to purchase seeds and other inputs represent a growing portion of Root Capital's portfolio.[56]

56 Milder (2008)

CASE 26 MICROENSURE & KILIMANJARO NATIVE COFFEE UNION, TANZANIA — HEALTH INSURANCE

Personal Insurance

The Kilimanjaro Native Coffee Union (KNCU) is Africa's oldest coffee cooperative union, comprising around 70,000 members in 92 cooperatives ("primary societies") in the Kilimanjaro area of North Tanzania. PharmAccess Foundation, along with MicroEnsure, organized the health plan. Active in 31 African countries, **PharmAccess Foundation** is a Dutch not-for-profit organization that strengthens health systems in sub-Saharan Africa by facilitating participation of the economically disadvantaged in health insurance schemes. **MicroEnsure,** an Opportunity International affiliate, is a specialized micro-insurance broker that covers more than 3 million lives with micro-insurance products.

The health plan serves those primary societies of KNCU where a majority of the members have voted for participation in the health plan. Access to primary healthcare is one of the major challenges faced by communities in rural areas of Tanzania. Most facilities lack the staff, equipment, or services required to provide an adequate standard of treatment. In order to provide an appropriate and sustainable level of healthcare, PharmAccess has pioneered comprehensive infrastructure improvement, which includes the redevelopment of facilities, the training of medical staff, and sufficient access to medication. PharmAccess funds a number of specialists to attend clinics and provide training to local medical staff. This allows an increasing number of conditions to be treated at a primary care facility — reducing health care delivery costs and increasing the level of care provided by the health plan. The KNCU Health Plan is a "per capita" scheme in which each healthcare provider is paid in advance for a projected number of patients. MicroEnsure's role is to broker the insurance and reinsurance components, manage the capitation program, empanel the providers and ensure high quality care from them, and support sensitization and marketing efforts by leading member enrollment at the village/family level, utilizing iPod handheld programs. Payments to healthcare providers are monitored by analyzing claims data on an internal system to ensure providers have sufficient funds to meet patient needs and are following treatment protocols. Even in the pilot stage, treatment protocol improvements have occurred for the main conditions of malaria and acute respiratory infections, among others.

Since its launch in April 2011, the KNCU plan has been rolled out to 5,000 people in three cooperatives. Eighteen more societies and 20,000 members are targeted for enrollment by the end of 2012. In 2011, members paid an annual premium of Tsh. 12,000 (USD 9) per person, per year, while a further payment of Tsh. 18,000 (USD 14) was funded by PharmAccess. It is expected that the KNCU Health Plan will cover over 250,000 lives by the end of 2013, moving the program to long-term sustainability. Farmer-level income impacts are not yet fully understood, but there is strong potential as the KNCU Health Plan ensures farmers and their family's access to services earlier and at better quality. While the health plan should be distinguished from credit health insurance, and is thus not bundled with a loan, health insurance contributes to the lender's ability to underwrite anticipated cash flow through a farmer-focused approach. Banks may lend with confidence, knowing that healthy farmers are improved investments, and that unexpected health expenses will not overburden farmers and their families, resulting in repayments that become more timely.

CASE 27 TAYTAY SA KAUSWAGAN, INC (TSKI) , PHILIPPINES — INDEX INSURANCE
Production Risk Insurance for MFI Input Loans

Taytay Sa Kauswagan, Inc (TSKI), a leading microfinance institution in the Philippines, has nearly 200,000 active borrowers. **MicroEnsure,** an Opportunity International subsidiary, is a specialized micro-insurance broker that covers more than 4 million lives with micro-insurance products (Malayan Insurance Co., Paris Re (reinsurer)).

TSKI uses a typhoon index insurance product to protect smallholder rice farmers and their lenders from the financial risk of crop damage by typhoons. Farmers are to receive an automatic payout, triggered by satellite tracking of a typhoon's path and wind speed. GPS coordinates of policyholders' farms are recorded, and actual payouts are based on covered farms being within 140 km of the typhoon track with wind speeds in excess of 59 mph. Policyholders do not need to file a claim, the insurer does not need to perform a loss assessment, and payouts can be made within 10 days. The model was designed to reduce transaction costs and facilitate efficient payouts during a sensitive time for farmers and their families. Data are provided by the Japanese Meteorological Authority in real time and are freely available on the Internet. This product secures TSKI crop loans, thus supporting bank lending under the Philippines Agri Agra law. An education process targeting farmers included comic books in English and Tagalog. During the pilot project, the Philippines Insurance Commission approved weather index insurance products for the first time.

Starting in May 2009, the insurance pilot covered 446 farmers on Panay Island, the Philippines, for one cropping period. While one typhoon entered the coverage diameter during this period, its wind speeds were below the payout level. After a countrywide assessment of the index, it was concluded that rainfall level, in addition to wind speed, is an integral factor in accurately capturing storm damage. In 2010, a new product based upon cumulative rainfall in specific intervals and consecutive wet and dry days was developed. Using local weather stations that were recently installed by the Philippine Government, TSKI/MicroEnsure Philippines launched the product in 2012 and anticipated covering 8,000 farmers by the end of year.

CASE 28 SYNGENTA FOUNDATION & UAP INSURANCE, KENYA — "KILIMO SALAMA" INDEX INSURANCE

Input-linked Weather Index Insurance

UAP Insurance is a leading insurance and financial services company in East Africa, with operations in Kenya, Uganda, and Southern Sudan. **Syngenta Foundation for Sustainable Agriculture** is a non-profit organization founded by Syngenta to focus on "pre-commercial" growers.

The weather insurance product is branded Kilimo Salama, "safe farming" in Kiswahili, and is meant to be simple, affordable, and relevant to small farmers. Farmers purchase the product through local agro-dealers, who use a camera phone to scan a special bar code that sends the policy to UAP over Safaricom's mobile data network. This mobile phone application then sends a text (SMS) message to the farmer's mobile phone confirming the insurance policy. Kilimo Salama allows smallholders to insure selected farm inputs at their local retailer and pay only half the premium. Payouts are determined by data collected through 30 weather stations in the targeted regions that have been renovated with automated, solar-powered systems capable of broadcasting regular updates on weather conditions and rainfall quantities occurring near individual farms. When data from a particular station, which is transmitted over Safaricom's 3G data network, indicates that drought or other extreme conditions (including excessive rains) have reduced yields, all farmers registered with that station automatically receive payouts through Safaricom's popular M-Pesa mobile money transfer service. Index-based payouts administered through M-Pesa substantially reduce transactions costs and ensure immediate payment. To make the insurance affordable, Kilimo Salama's agribusiness partners pay the other half of the premium. In the 2009 pilot phase, partners included Syngenta East Africa Limited and the fertilizer company MEA. Their involvement enabled the scheme to get off the ground quickly, in time for the next growing season.

In November 2010, the IFC-led Global Index Insurance Facility (GIIF) entered into an agreement to support the Syngenta Foundation to further develop the technology of the SMS-based mobile platform and assist scaling up the product in the country.[57]

During the 2012 season, the enhanced product was to cover around 47,000 farmers. In 2009, the product pilot was tested by one of the worst droughts in recent history. Covering 200 maize farmers through two weather stations, the product offered payouts to all farmers totaling either 30 or 80 percent of their insured maize seeds. Syngenta had paid the entire premium. In the following season, 12,000 farmers were covered through 25 additional weather stations in five regions. Two-thirds of these clients adopted Kilimo Salama as part of a bundled microfinance package, and half of the 10 percent premium was paid by Syngenta. About 1,200 farmers received payouts ranging from 10–50 percent of their insured inputs. In February 2011, Syngenta launched Kilimo Salama Plus, expanding the insurable sum per farmer to the expected harvest value of a wider array of crops including maize, wheat, beans, potatoes, and sorghum. The product was also expanded to insure farmers growing under contract farm arrangements for agribusinesses — reaching farmers with as little as 1/4 an acre up to 1,000 acres. Kilimo Salama and Kilimo Salama Plus are available to farmers in the productive breadbasket regions of Southern Nyanza, covering Oyugis and Homa Bay, Busia, and Northern Rift, including Kitale and Eldoret, as well as the semi-arid areas of Embu and Nanyuki.[58]

57 The GIIF program is a World Bank Group initiative that seeks to address the scarcity of affordable insurance protection against weather and natural disaster risks in developing countries.

58 Syngenta Foundation for Sustainable Agriculture (2011)

CASE 29 PEPSICO, ICICI LOMBARD & WRL, INDIA — INDEX INSURANCE
Weather Insurance for Contract Farming

PepsiCo is a global leader in convenient snacks, foods, and beverages, with over 285,000 employees and revenue exceeding USD 60 billion. **ICICI Lombard General Insurance Company** is the largest private sector general insurance company in India with a gross written premium of Rs. 4,734.89 crore in 2011. It has over 4,000 employees at 315 branches across the country. **Weather Risk Management Services Limited (WRL)** is a private broker and weather station operator.

To protect the farmers in its supply chain from weather events, PepsiCo offers index insurance as part of its contract farming program. The insurance is sold through the ICICI Lombard General Insurance Company, an international insurer, and managed by Weather Risk Management Services (WRMS). PepsiCo added index insurance to its contract farming package not only to limit farmers' weather risk, but also to establish long-term relationships with farmers and limit the risk in its supply chain. In its contract farming arrangement, PepsiCo offers an extensive package of services: high quality potato seed; access to fertilizers, pesticides, and other chemicals; technical advice on production practices; fixed purchase price and incentives from the beginning of the season; weather information and advisories via mobile phone Short Message Service (SMS); and the weather index insurance. PepsiCo sets a base buy-back price for its contract farmers at the beginning of the season and offers incremental price incentives according to: (i) quality of the potatoes (+Rs 0.30/kg); (ii) use of fertilizers and pesticides (+Rs 0.25/kg); and (iii) purchase of index insurance (+Rs 0.15/kg). In PepsiCo's experience, the main drivers that influence a farmer to purchase index insurance include: assured buy-back price from PepsiCo, ability to finance the premium and other production costs through a loan, trust in the various actors involved (e.g., corporation, processor, insurer, local representatives), demonstration of timely payouts in previous seasons, and perceived need to mitigate the risk of losing the significant upfront costs of production, in part to cover the production costs for the following season. PepsiCo also encourages the purchase of index insurance through client education, as it finds index insurance simpler, more transparent, and faster to settle than conventional insurance. Overall, in the PepsiCo collaborative farming program, index insurance plays an important role in a wider package of services and information that links smallholders to markets.

The index insurance option was initially offered in the Indian province of Punjab in 2008. Gradually, it was expanded to the provinces of Maharashtra and West Bengal. Among the 24,000 PepsiCo contract farmers across the nine state locations, around 50–60 percent elected to purchase index insurance — a high proportion that is driven in part by price incentives and conditions on state bank loans that require insurance. By 2013, the contract farming program is expected to reach 30,000 farmers. The program has provided claim payouts in almost all state locations over the last 5 years, with farmer retention rates in excess of 90 percent.

CASE 30 BAGSA AGRICULTURAL COMMODITY EXCHANGE, NICARAGUA — COMMODITY PRICE RISK MANAGEMENT

Bagsa has 180 shareholders and 36 brokers, and its net worth exceeds USD 1.25 million, with operational volumes of around USD 600 million. In 2008, it had 30 active business and individual members, including stockbrokers and financial institutions, farmers (21 percent), independent investors related or unrelated to agricultural activities, agro industry (19 percent), commerce, and agribusiness services.

Bagsa facilitates bilateral cash and forward contracts, and holds a small number of auctions. It thereby provides SMEs access to contracts for their production and thus helps them deal with persistent market volatility while limiting depletive coping strategies. Bagsa works in a context of soaring domestic food inflation rates that have only slightly recovered from the 34 percent measure of 2008. The coffee crisis of 1998–2001 serves as a stark reminder that these global price shocks can have enormous effects on the well-being and productivity of small farmers and their families. Given Nicaragua's strong export market and the increased trade liberalization of the region, SME farmers in the country are increasingly integrated with global markets and are poised to benefit from expanding risk management opportunities.

From 80 shareholders and USD 80,000 in capital (1993) to 180 shareholders and a net worth of USD 1.25 million (2008), Bagsa has seen consistent growth in its member profile, net worth, and operational volume. Exchange commissions are low at 0.125 percent. It is estimated that Bagsa represents 40 percent of the total market participation. In recent years, the number of estimated transactions in Bagsa was around 50,000 per year, involving about 50,000 producers and 50 industry members and representing contract values of more than USD 500 million (2007–2008).

CASE 31 M-PESA AND M-KESHO, KENYA — MOBILE BANKING

Commercial Bank of Africa is one of East Africa's largest privately owned banks, operating in Kenya and Tanzania. **Equity Bank** is the largest bank in the region, with 5.7 million accounts, over 57 percent of all bank accounts in Kenya, and operations in Uganda and Southern Sudan. **Safaricom** is Kenya's largest mobile service provider, employing over 1,500 people with over 14 million customers.

M-Pesa is a mobile phone-based service for sending and storing money offered by Safaricom. Safaricom customers can register for M-Pesa by visiting one of more than 27,000 merchants who act as "agents" for account opening, handling of deposits and withdrawals into the customer's virtual "wallet," and customer support. Customers can then use an application on their mobile phones to check their balance, send money to other people, pay bills, and purchase mobile phone airtime. Customer funds are held in a special trust account at the Commercial Bank of Africa. While a primary function of M-Pesa is low-cost money transfer, especially in the form of remittances to rural areas, the service is increasingly used to store value. Those with M-Pesa accounts are 32 percent more likely to report having some savings than those without accounts. Thus, M-Pesa encourages savings by providing a secure and widespread mechanism to facilitate formal savings across socioeconomic boundaries. M-Pesa accounts may be used by lenders in tandem with other innovative financing tools to establish secondary collateral sources through an integrated and farmer focused approach.

M-Kesho is a bank-integrated mobile savings product that was released in 2010 through a partnership with Safaricom and Equity Bank. M-Kesho combines the advantages of M-Pesa with those of banking services beyond simple money storage and transfer, including the ability to earn interest and secure small loans remotely through the extensive agent network. While M-Kesho is a promising opportunity to extend high-value banking services to the rural poor, it has met with limited popularity to date.

Over 14 million customers have registered with the M-Pesa service. Since its commercial launch in March 2007, M-Pesa has achieved substantial scale along several key metrics. After 2 years of operation, 40 percent of the adult population had registered. To date, over 70 percent are registered. An average of 150 million Ksh (USD 1.96 million) is transferred through M-Pesa each day, mostly in small amounts averaging just over 1,500 Ksh (USD 20) per transaction. So far, the system has handled over 130 billion Ksh (USD 1.7 billion).

CASE 32 BANQUE POPULAIRE DU RWANDA — MOBILE BANKING

Banque Populaire du Rwanda (BPR) S.A. has 1.3 million customers (out of a total population of 12 million), 1,400 employees and 189 locations in Rwanda. Rabobank has a share of 35 percent in BPR.

BPR Mobile banking offers balance inquiry, mini-statements, money transfers between BPR accounts, pre-paid airtime, bill payments, electricity, newspaper subscriptions, and a help function. The service was launched in September 2010 and is based on USSD II mobile banking and SMS alerts. The service uses MTN and Tigo as carriers. Customers can sign up at any connected branch and receive a SMS with set-up instructions. A survey of 170 customers revealed that users would trust the mobile phone for transactions. Thus in the next phase, BPR plans to add a "modern savings account," which will be a transactional savings account that people can sign up for in their village or on their farm.[59]

59 Armstrong (2011)

CASE 33 REFRESH MOBILE WING, CAMBODIA — MOBILE BANKING

Refresh Mobile provides electronic payment and cell phone top-up services. With its recent purchase of WING from ANZ, it is Cambodia's leading mobile banking service provider.

WING is a mobile-phone-enabled payment service that allows customers to transfer, deposit, and withdraw money via any mobile phone in Cambodia, at low cost. With a WING account, customers can cash in and cash out their accounts at any of the 850 WING CashXpress outlets, and cash out from all ANZ-Royal ATMs using the accompanying WING ATM card. Transactions such as sending and receiving money to WING and non-WING users, phone top-up, and bill payments are done from any mobile phone, and are secured by a 4-digit pin code. All active mobile phone operators in the Cambodian market are now connected to WIING, providing full geographical coverage. There is no monthly fee charged for holding an m-wallet with WING, and funds are stored in a regulated bank.[60] In line with the company's commitment to provide banking services to the rural poor, 64 percent of WING subscribers have household incomes below USD 5,000, and 48 percent live outside the capital.

With outlets in all 24 provinces, WING provides mobile banking services to approximately 250,000 subscribers. Since its commercial launch in 2009, the WING platform has grown consistently with around 600,000 processed transactions to date. WING maintains the largest mobile money infrastructure to support MFIs in Cambodia, offering a transactions platform for secure and safe deposit management, loan disbursement, and loan collection.

60 WING (2012)

CASE 34 UNITED BANK LTD., PAKISTAN — "OMNI" BRANCHLESS BANKING

United Bank Ltd. (UBL) is Pakistan's second largest private bank, with approximately 3 million clients, 1,121 branches, and over 500 ATMs with 9 percent market share.

Recognizing the small percentage of banked adults in Pakistan (10 percent have an account at a formal financial institution[61]) and the limited reach of banks in rural areas, UBL launched the "Omni" mobile account and agent network in April 2010. Full-service kiosks are located at retail partner locations, known as Omni Durkaans, in over 500 cities and towns across Pakistan. In this "bank based" model, UBL accounts are created at Durkaan locations, and linked to Omni customers' mobile number. Clients may transfer money to any Omni customer over any carrier, as well as send money to any bank account in Pakistan through the bank ATM switch One-Link. Optional debit cards are also available, and may be used at any of the 500 ATM network locations. Customers without mobile phones may also elect to send money or pay bills through the popular over-the-counter transfer service. Durkaan agents are furnished with a Blue Tooth printer for customer receipts. Account holders must maintain a minimum balance of Rs 100 (USD 1.15), and may choose from pay-as-you-go, weekly, monthly, or annul payment options.

In the next 3–5 years, UBL anticipates gaining between 15–20 million Omni customers. UBL has also partnered with several governmental and non-governmental organizations to facilitate payment for relief and support programs. Two million Pakistanis have received payment from the Pakistani Government's flood relief program, the Benazir Income Support Program, and the World Food Programme through 5,000 Durkaan agents.[62] UBL has also partnered with microfinance institutions to accept loan repayments. As Omni's over-the-counter services are favored by many, a key challenge for UBL is marketing full customer accounts.

61 According to the Global Financial Inclusion (Global Findex) Database. World Bank (2012)

62 Bold (2011)

CASE 35 OPPORTUNITY INTERNATIONAL BANK, MALAWI — MOBILE BANKING

Opportunity International Bank of Malawi (OIBM) is a commercial bank that focuses on serving economically disadvantaged Malawians. From 2006–2010, it increased its depositing clientele by well over 300 percent and its gross loan portfolio by approximately 25 million.

The Mobile Bank reaches clients and individuals in deprived communities without adequate access to formal banking services. The Mobile Bank is a custom-equipped vehicle that travels to six trading centers in central Malawi along two scheduled routes. Each route is serviced one to two times per week. While two of the trading centers had formal banking services before its operation, the other four were previously unbanked. The facility operates like any fixed branch and offers the full range of banking services, including depositing, withdrawals, balance confirmation, and customer services. Transactions occur in real time through the Mobile Bank's built-in ATM machine. Although loan services are offered, loan approvals must occur at the head office in Lilongwe. The Mobile Bank was designed to meet the unique needs of its rural clientele — offering relaxed identification requirements, reduced minimum balances and, most importantly, reduced transactions costs and increased access and convenience. It is also fully networked to serve the entire client base of the company. The Mobile Bank is manned by well-trained tellers and has a customer service desk on board to advise and assist clients in their transactions. The Mobile Bank is secured by a security guard on board and has the highest level of security monitoring and control.

After 2 years of operation (2008–2010), the number of savings accounts increased along the route by 80 percent, largely due to the Mobile Bank. OI's market share of savings accounts increased by 10 percent at baseline, and 23 percent at the end line. Opportunity Malawi expects to increase its 305,000 savings accounts to 1 million within 3 years, banking with approximately 7 percent of the Malawian population.

CASE 36 DUNAVANT ZAMBIA LTD. — MOBILE PAYMENT SYSTEMS

Dunavant Zambia Ltd. is the largest cotton company in Zambia, with 100,000 contract farmers and a 60 percent market share. **Mobile Transactions** Zambia Limited (MTZL) is a Zambian mobile money company that specializes in electronic transactions for unbanked and rural end users.

In 2009, Mobile Transactions and Dunavant began to develop a system that interfaces with the outgrower management system to pay farmers electronically into accounts on their mobile phone "m-wallets." Mobile Transactions first developed Dunavant's online outgrower management system, which serves as the core of the information system to support the outgrower agricultural operations. Within one season, this system moved from a decentralized database at each of the nine agricultural offices to a centralized web-based platform hosted within Dunavant's head office. Agricultural offices and rural sheds, equipped with laptops powered by solar-charged car batteries that can connect to the Internet via mobile GPRS modems, were able to capture real-time data into a centralized system and, most importantly, facilitate payment within 3 days. Recognizing that this delay still encourages a degree of side selling, MTZL built an online interface that facilitates payment through farmer's MaKwacha Account m-wallets as soon as the Crop Voucher Receipt is processed, usually within 1 day. Farmers need only to visit their local MaKwacha agent to withdraw their cash. In order to serve the large number of farmers without a mobile device, MTZL offers same day payment at local agent locations through agent mobile phones. This system has been approved by the Bank of Zambia and is currently being piloted in Dunavant's Eastern and Southern regions. Farmers can also use their mobile phones as an interface to store and transfer money, purchase airtime, and make retail purchases, such as for agricultural inputs. Several MaKwacha Agents also act as agricultural retailers and accept electronic payment for seeds, fertilizer, chemicals, and farming implements. Farmers can even contract local, small-scale tillage and spray service providers by making person-to-person money transfers between their mobile phones. Another option is that farmers can pay school fees directly to local schools that accept MTZL transactions. By partnering with schools, cooperatives, and input dealers to add value to their services, MTZL is able to build relationships with farmers and rapidly expand its operations.

During the 2009/10 season, Dunavant farmers in four districts had the option of being paid into accounts on their mobile phones. MTZL and Dunavant are planning to offer this service to all 100,000 contract farmers.[63] By April 2011, Dunavant employee payments valued 1.7 million were made through the platform. There are formidable challenges, however. Though Zambia has followed the African trend of rapid mobile phone growth (there are now three million mobile phone users on the two largest networks, Zain and MTN), coverage is still limited to mainly urban areas. Only a small percentage of farmers have mobile phones, and many do not have an incentive to buy one because of low network coverage.

63 M'Grath, (2009)

CASE 37 AFRICA AGRICULTURE AND TRADE INVESTMENT FUND (AATIF)

The Africa Agriculture and Trade Investment Fund (AATIF) is a debt investment fund that focuses on investments into the agricultural sector. It targets small, medium, and large-scale agricultural farms as well as agricultural businesses along the entire agricultural value chain, which will be financed indirectly or directly. Indirect Investments relate to investments into local financial institutions or other intermediaries (such as large agribusinesses) tant on-lend to the agricultural sector, to fund smallholders or SMEs, for example. Direct Investments comprise cooperatives, commercial farms, and processing companies, among others. The Fund is able to provide tailored financing solutions for agricultural investments, offering refined and structured financing packages on market-oriented terms.

Established as a closed-ended investment company, AATIF is an innovative public-private partnership dedicated to uplifting Africa's agricultural potential for the benefit of the poor. AATIF was initiated by KfW on behalf of the German Federal Ministry for Economic Corporation and Development (BMZ) and was initially capitalized by BMZ, KfW, and Deutsche Bank, with the BMZ contribution being used as a first-loss layer. The current Fund volume amounts to USD 120 million. Since its establishment in August 2011, three investments have been financed by the Fund, with more in the last phase of closing. AATIF's approach is based on close cooperation with partners who have investment experience in Africa and a profound knowledge of the respective value chains. These partners could be financial institutions, agribusinesses, off-takers, processing enterprises, traders, or others. They help to assure the quality of investments while supporting the fund in sourcing investments. In addition, the Fund's partners will share the risks involved in investments in an adequate manner.

As the first investments show, AATIF is able to provide early stage funding, thereby giving a positive signal for further capital raising (private investors, local financial institutions) from the market. The first investment finances the expansion and intensification of wheat, soy, and maize production through state-of-the-art irrigation systems in Zambia. The expected impact of the investment includes:

- Long-term employment generation ensuring adequate wages and social benefits;
- Productivity increase and innovation through modern irrigation system with efficient water use;
- Knowledge transfer by special training programs for neighboring or contracted smallholders; and
- Food security by enhancing production for the Zambian market and for DR Congo and Zimbabwe.

The second investment comprises the financing of a rice mill in Ghana, allowing the investee and its smallholders to create an integrated value chain in rice production. The investment facilitates local impact through:

- Roll-out of a smallholder scheme targeting to impact up to 15,000 smallholders;
- Job creation, including higher skilled labor; and
- An employment scheme promoting the development of workers, from lower to higher skilled labor.

The third investment is a wholesale refinancing line to a regional development bank. It provides funding for project finance to the agricultural sector along the entire agricultural value chain, covering the full agricultural spectrum.

ANNEX A
Case Overview

	# OF CASES	# OF FARMERS COVERED (MILLION)
TOTAL	**98**	37.02
Geographic Distribution		
Africa	61	2.90
Asia	21	14.20
Europe	1	0.01
Latin America	14	19.90
Middle East	1	0.01
Distribution by type of Environment		
I Weak Business Environment, low Ag Productivity	20	6.61
II Strong Business Environment, low Ag Productivity	65	27.94
III High Ag Productivity	13	2.50
Distribution by secondary repayment source		
Farmer	37	31.36
Movable Asset	16	0.9
Buyer	45	4.78
Distribution by type of case		
Financing model	86	21.8
Risk Model	9	1.00
Distribution models	3	14.24

	# OF CASES	# OF FARMERS COVERED (MILLION)
Distribution by ownership		
Private	84	18.38
Public	14	18.64
Distribution of ALL cases by type of environment and risk		
I Weak Business Environment*, low Ag Productivity**		
Farmer	8	6.10
Movable Asset	2	0.00
Buyer	10	0.51
II Strong Business Environment*, low Ag Productivity****		
Farmer	22	22.82
Movable Asset	10	0.84
Buyer	33	4.27
III High Ag Productivity****		
Farmer	9	2.44
Movable Asset	2	0.06
Buyer	2	0.00

General Note: information depth and quality varies significantly among cases, and large gaps exist, in particular with regard to # of farmers covered. Cases cover mostly Africa, to a lesser extent Asia, only very little of the Latin American reality, so they are by no means representative.

* Rank in Doing Business table of less than 91

** Productivity per aagricultural worker of less than 2000

*** Rank in Doing business table equal or higher than 91

**** Productivity per agricultural worker higher than 2000 USD (constant 2000 USD)

	# OF CASES	# OF FARMERS COVERED (MILLION)	IN % OF ALL CASES
Distribution of PRIVATE cases by type of environment and risk			
I Weak Business Environment*, low Ag Productivity**			
Farmer	6	0.42	7%
Movable Asset	2	0.00	10%
Buyer	10	0.50	99%
II Strong Business Environment*, low Ag Productivity****			
Farmer	17	15.82	69%
Movable Asset	10	0.84	100%
Buyer	29	0.45	10%
III High Ag Productivity***			
Farmer	6	0.28	11%
Movable Asset	1	0.06	100%
Buyer	2	0.00	100%

General Note: information depth and quality varies significantly among cases, and large gaps exist, in particular with regard to # of farmers covered. Cases cover mostly Africa, to a lesser extent Asia, only very little of the Latin American reality, so they are by no means representative.

* Rank in Doing Business table of less than 91

** Productivity per aagricultural worker of less than 2000

*** Rank in Doing business table equal or higher than 91

**** Productivity per agricultural worker higher than 2000 USD (constant 2000 USD)

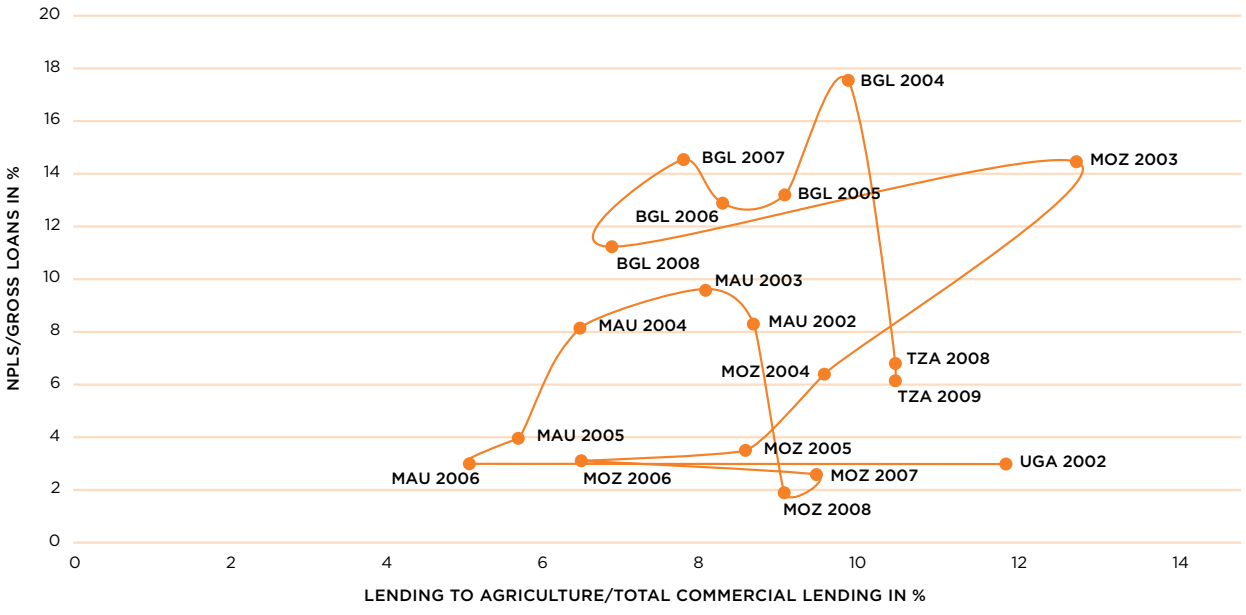
ANNEX B
NPLs and GDP Dependency on Agriculture

Agricultural portfolio NPLs tend to be independent from financial markets. They are affected more by prices for inputs and outputs and, most importantly, by weather and other production risks, all of which are uncorrelated with financial markets. This is an opportunity to diversify and deploy capital more efficiently for a larger portfolio.

As identified in this document, there is a vast array of innovative financing, risk mitigation, and distribution models around the world that demonstrate that risks and costs can be reduced significantly, resulting in relatively high profits in the under-banked sector.

With regard to the performance of agricultural lending, we conducted a two-step analysis of country-level data. Given that data on agricultural lending portfolios are hard to come by, the team first tested whether a high agricultural contribution to the economy is somehow associated with the level of stability (NPLs) and efficiency (lending spreads) of bank lending in general. Given that data on agricultural lending as a share of total bank lending are not uniformly reported, we have conducted an analysis using agriculture as a share of GDP as a proxy for lending to agriculture as a share of total lending.

FIGURE 15 AGRICULTURAL LENDING SHARE AND NPLs IN 5 COUNTRIES

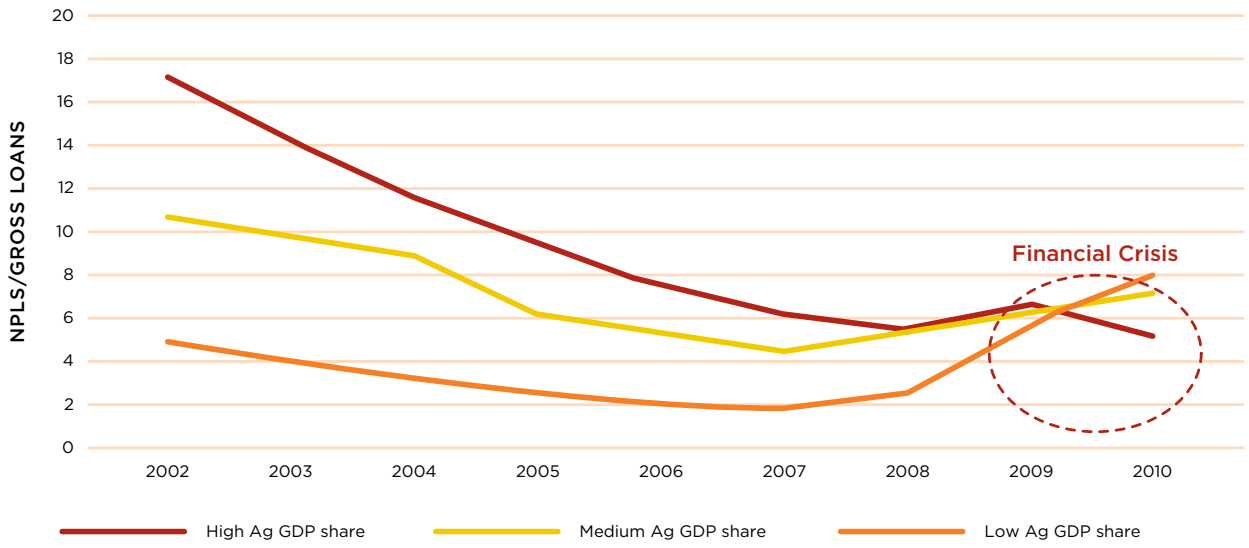


Of course, a high proportion of agriculture in a country's GDP does not necessarily correspond to a similar proportion of lending to the agriculture sector. Therefore, the following analysis is limited by the assumption that there is some degree of correlation between agricultural GDP and agricultural lending.

We analyzed data from 93 countries and found that higher agricultural shares of GDP are positively correlated with lending spreads (non-weighted correlation 47 percent), but there is no correlation between agricultural GDP and NPLs (see Annex A for details). Given the significant association between agricultural GDP and lending spreads, we assume that higher agricultural shares are associated with relatively larger agricultural lending portfolios. This is, of course, a strong assumption to make, but some anecdotal data seems to confirm that lending to agriculture and associated activities seems to increase with the size of the sector in the economy.[64] In the chart below, we plot agricultural lending shares and NPLs of five countries (Mozambique, Uganda, Mauritius, Bangladesh, and Tanzania) for those with available data. The chart illustrates a trend towards lower NPLs regardless of agricultural shares in commercial lending generally, and quite significant agricultural lending shares that tend to be higher in higher agricultural GDP countries (Mozambique, Tanzania).[65]

We therefore grouped 63 developing and developed countries into three categories (high, medium, and low agricultural GDP shares), and found that NPL levels of high agricultural GDP countries tended to be significantly higher as recently as 2002, but converged with NPL levels of medium and low agricultural GDP countries over the course of the decade. Furthermore, the financial crisis at the end of 2008 seems to have had a smaller effect on the high agricultural GDP countries, as the chart below demonstrates.

FIGURE 16 NPLs OF HIGH, MEDIUM AND LOW AGRICULTURAL GDP SHARE COUNTRIES



64 For the *high agricultural GDP share category,* an example is Uganda's commercial banks, which have almost 7 percent of their portfolios in agriculture and 6 percent in food, beverages, and tobacco manufacturing [Bank of Uganda (2012)], whereas agriculture represents 24 percent of GDP. Tanzania's commercial banks had more than 10 percent of their portfolios in agriculture which generated around 28 percent of GDP in 2010 [IMF (2010)]. In the *medium agricultural share of GDP category,* China's rural credit cooperatives hold 6 percent of all financial assets whereas the agricultural GDP has been 10 percent of the total in 2010 [IMF (2011)].

65 The exception seems to be Mauritius, where higher NPLs in the sugar sector led to banks diversifying into tourism and other new sectors, resulting in lower agricultural lending shares.

Three phenomena may partially explain this trend: changes in the way governments intervene in agricultural finance markets, the degree of correlation of agricultural lending with financial markets, and the commodity booms since 2007. There is significant evidence for less direct government intervention in agricultural finance in the last decade, which lowers the high NPLs of direct state lending institutions or programs such as "revolving" funds.[66] Currently, governments and donors tend to work more through second-tier lending schemes (i.e., Mexico's FIRA or Brazil's BNDES), guarantees, and risk sharing mechanisms. The second phenomenon is the substantial disconnect between agricultural lending portfolio performance and international financial markets. Agricultural markets tend to be more stable — they are essentially "decoupled" from financial markets and therefore less affected by the financial crisis fallout. The third phenomenon is the commodity price boom since around 2007[67] that might tend to improve agricultural business performance and lower NPLs. Again, these country cross-comparisons do not directly compare agricultural lending portfolio quality and performance; they only infer those agricultural lending portfolio qualities from national data on aggregate lending portfolios. Nonetheless, the results at least indicate that agricultural lending does not appear to be necessarily riskier than lending to other sectors as there is a clear trend towards lower NPLs in high agricultural GDP countries. Additionally, data on lending spreads from the same countries suggest that transaction costs in high agricultural share and high agricultural lending countries are higher, and therefore lending spreads are higher. These high lending spreads and profits in high agricultural GDP countries might also be explained by less banking competition in these countries.

66 GTZ-BMZ (2005)

67 For example, oilseed prices at N.W. European ports hovered around 350 USD/ton in early 2007, reached 950 USD in the case of sunflower seeds in early 2008, returned to a higher level of 450 USD in 2009, and again climbed to 650 USD in early 2011 well into a second commodity boom period. LMC-International (2011)

ANNEX C
Cases with Color Coded Ratings

NAME OF MODEL	FINANCE APPROACH	MODEL	RISK FOCUS	CONTINENT	COUNTRY	ENVIRONMENT
Ghana Grains Partnership	Value Chain finance	External VCF for open market crops	Buyer	Africa	Ghana	1
Ecom Trading	Input finance for coffee farmers	Internal Value chain finance	Buyer	Africa	Ghana	1
PepsiCo	Contract farming sweet potato	External VCF for closed market crops	Buyer	Asia	India	2
Kenya Gatsby Trust	Factoring	Factoring	Buyer	Africa	Kenya	2
Equity Bank Agri SME financing	Value Chain finance	External VCF for open market crops	Buyer	Africa	Kenya	2
Agro Dealer financing NMB	Agro Dealer financing	Internal Value chain finance	Buyer	Africa	Tanzania	2
NMB Outgrower Scheme Sugar Cane	Value Chain finance	External VCF for closed market crops	Buyer	Africa	Tanzania	2
Gulu Agricultural Development Company (GADC)	Supply chain financing -inputs for cotton farmers	Internal Value chain finance	Buyer	Africa	Uganda	2
Centenary Bank/ Technoserve	Factoring	Factoring	Buyer	Africa	Uganda	2
Bayer	Input finance	Internal Value chain finance	Buyer	Europe	Ukraine	2

NAME OF MODEL	FINANCE APPROACH	MODEL	RISK FOCUS	CONTINENT	COUNTRY	ENVIRONMENT
Dunavant Cotton/Mobile Transactions Zambia Ltd.	Mobile payments	External VCF for closed market crops	Buyer	Africa	Zambia	1
Dunavant Cotton contract farming	Contract farming	External VCF for closed market crops	Buyer	Africa	Zambia	1
Zanaco Dairy Cooperative Financing	Value Chain finance	External VCF for closed market crops	Buyer	Africa	Zambia	1
M-PESA	mobile banking	Mobile banking	Farmer	Africa	Kenya	2
M-KESHO	microsavings, micro insurance, microcredit	Direct Smallholder lending	Farmer	Africa	Kenya	2
Kilimo Salama	Weather insurance	Crop/Weather Insurance	Farmer	Africa	Kenya	2
Finterra (Private Agri bank)	Emerging Farm business Finance	Emerging Farm business Finance	Farmer	South America	Mexico	3
TSKI MFI Typhoon index insurance	Weather insurance	Weather / Crop Insurance	Farmer	Asia	Philippines	2
Wizzit Bank	Branchless banking	branchless banking	Farmer	Africa	South Africa	3
Kilimanjaro Native Cooperative Union	Health Insurance supports coopera-tive coffee lending	Health Insurance	Farmer	Africa	Tanzania	2
Mtibwa Sugar cane outgrower scheme	Nucleus/outgrower	Nucleus/ outgrower	Farmer	Africa	Tanzania	2
NMB Kilimo sav-ings account & input financing	Cash Collateral	Savings account linked Finance	Farmer	Africa	Tanzania	2

NAME OF MODEL	FINANCE APPROACH	MODEL	RISK FOCUS	CONTINENT	COUNTRY	ENVIRONMENT
Munda (or LIMA) Scheme	Cash Collateral	Direct Smallholder lending	Farmer	Africa	Zambia	1
Zanaco Emerging Farmer Project	Emerging Farm business Finance	Emerging Farm business Finance	Farmer	Africa	Zambia	1
De Lage Landen Brazil	Asset and Leasing finance	Term Loans/ Equipment Finance	movable collateral	South America	Brazil	3
EcoSafe Ghana Ltd.	Collateral management	Collateral management agreement	movable collateral	Africa	Ghana	1
Jain Irrigation	Value chain financing	Term Loans/ Equipment Finance	movable collateral	Asia	India	2
NMB Warehouse Receipt Financing Cashew	Ware House Receipt	Warehouse Receipt Financing	movable collateral	Africa	Tanzania	2

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INTERNATIONAL FINANCE CORPORATION
2121 PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20433 USA
WWW.IFC.ORG