Food and Agriculture Organization of the United Nations

Innovative risk management strategies in rural and agriculture finance

THE ASIAN EXPERIENCE

› China › India › Philippines › Viet Nam

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Emilio Hernández

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Preface

The present study reviews recent trends in rural finance and investment in general, and in the agricultural sector in particular, within the Asian region. The analysis of these trends aims to offer a critical perspective on some of the main constraints to achieving more inclusive rural financial systems in developing countries in the region, and to propose areas of public and private intervention that could advance this objective, based on evidence compiled from important innovations led by local rural actors in various countries within the region.

The study makes a joint analysis of recent trends in both agricultural markets and rural financial markets, in order to highlight important links between them that can assist in the design of multisectoral public policies that are more effective in promoting inclusive and stable rural financial systems. Given the historical separation between, on the one hand, professional networks devoted to analysing financial markets, and, on the other hand, those analysing agricultural markets, important linkages between the current policy literature related to the two networks have not been explored well.

The past two decades have seen a rapid growth in the global demand for agricultural products, mainly due to a growing global population and a rise in the purchasing power of people living in developing countries. Globally, the supply of agricultural products has responded effectively to this growth in demand. Evidence suggests this response is grounded on a rise in investment to increase productivity, not only through technological innovation, but also through the engineering of innovative business models seeking to enhance the efficiency and stability of agricultural value chains. We show how these global trends tend to prevail in Asia, where private actors involved in agricultural value chains increase supply to respond mainly to the growing demand from within their region, and to a lesser degree to global demand.

The average dynamism in agricultural markets in developing countries that is indicated by the statistics available needs to be interpreted in the context of market fragmentation. Trends observed are the net result of what is happening within international, regional, national and local agricultural markets. These trends may differ substantially in many cases, and the type of actors engaged in those markets vary and have quite different characteristics and constraints. In the case of many developing countries, the share of the market captured by local agribusiness actors is growing faster than the one captured by international investors in agriculture. The proportion of medium and small agribusiness actors along value chains in national and local agricultural markets tends to be high and the local agricultural markets they participate in are less understood given large degree of informality. However, the aggregate statistics in the performance of agricultural markets together with the evidence collected in the case studies presented, suggests these markets are in expansion and have been a strong motivator for innovations that enable finance and investment in the sector.

The public sector has also shown growing interest during the past decade in facilitating the development of the agricultural sector, best illustrated by the fact that agriculture is explicitly mentioned as a key area of focus in the Sustainable Development Goals. Growing evidence suggests how agricultural GDP growth has a larger poverty-reducing impact when compared with an equivalent growth in non-agricultural GDP, in the specific context of less developed countries. As the income of a population improves with time, the poverty-reducing effect of the agricultural sector tends to decrease, while that of the non-agricultural sector increases. This evidence has led to renewed interest on the part of the public sector in designing a mix of multi-sectoral policies to reduce poverty, in which the development of the agricultural sector plays a key role.

The favourable agribusiness environment described above contrasts significantly with the limited role that the formal financial sector has played in providing services to rural areas and to the agricultural sector. This study contributes to shedding light on the issue by presenting evidence of how rural financial markets in developing countries are being dominated by actors who are not part of the formal financial sector. Agricultural financial markets, in particular, tend to be dominated by actors involved in different segments of the agricultural value chains, whose main line of business is not related to finance. Nevertheless, they provide these financial services because they foster improved coordination, stability and loyalty within actors along all segments in the value chain. The capacity of these actors for providing such services stems from the significant informational advantages and lower transaction costs they face when serving a rural clientele in comparison with their formal finance counterparts.

These various financial service providers outside of the formal financial sector have played a crucial role in allowing an effective supply response to the growing demand for agricultural products. Nevertheless, there is evidence that the equilibrium reached within rural and agricultural financial markets is sub-optimal from a social perspective, given limitations in the outreach, variety, flexibility and costs of the financial products offered, resulting in inadequate coverage and the exclusion of an important part of the rural population, the segment that carries a genuine demand for different financial services.

This scenario has been the main motivation for the field analyses conducted, resulting in case studies coming from four Asian countries: Viet Nam, China, India and the Philippines. The case studies show evidence of various innovative risk management strategies that different rural agents mainly in the agricultural sector have designed in order to make available several financial products that enable agricultural investments throughout value chains. In the process, they have partnered with formal financial institutions, government agencies, and other private enterprises to deal with the several constraints and risks they face.

Recognizing a growing demand for agricultural products in their local, regional or international markers, these rural actors have had strong incentives to reach – albeit in a limited manner – rural households dependent on agriculture that are more vulnerable and were previously underserved or excluded by formal financial institutions. The types of innovations analysed are quite different, although they mainly focus on effectively mitigating a wide range of risks intrinsic to agricultural investments, as well as designing and delivering financial products adapted to the specific needs of the clients involved in relevant value chain segments.

These reflections highlight the importance of analysing those strategies, investment processes and financial products that these rural actors have designed, in order to identify how the public sector can reduce knowledge gaps that the formal financial sector has about rural clients and their economic activities, and thus create an enabling environment for greater rural financial inclusion. The analysis presented in this study contributes to the existing literature by developing a notion on how these products, processes and strategies are developed and implemented, and defines important conditions that need to be met in order to promote scaling-up of such innovations with greater intervention from the formal financial sector, with the intention of replicating innovations in other country contexts. A unique analytical framework is presented showing the challenges to rural financial intermediation and investments, and the complementary roles of general versus specialized financial services, from both the rural client and the service provider perspectives.

Case studies presented cover various contexts with different levels of socio-economic development, diversification of their national economies, structure of their agricultural sector, and coverage and depth of their formal financial systems. As a result, the countries analysed represent a wide range of human and economic development levels. Included are countries in which the agricultural sector plays a major role within the national economy, as well as others in which the sector holds far less weight. Moreover, in some of the countries analysed the agricultural sector tends to focus on national or local markets, while in others it mainly focuses on international markets.

Finally, the choice of the selection was also determined by the ability of the authors to access first-hand information from the mostly private actors involved. The information was compiled through focused interviews involving the various groups identified.

The case studies focus on the following aspects:

a. The public policies that determine the institutional context in which agricultural and financial markets develop, with a view to better understand how the prevailing policy framework has influenced the financial and investment mechanisms under analysis.
b. The reasons why specific risk management mechanisms have been effective, and the constraints that persist. In particular, it is of interest to understand if the risk management mechanisms have been successful but with limited outreach, or circumscribed to specific situations that limit their replication or adaptation.
c. Possible public sector actions that could facilitate wider dissemination risk management strategies that enable access to financial services (credit, deposits, insurance, transfers, currency hedging, among others), which could increase private, public or mixed investments in agribusinesses.
d. Discuss to which degree investments analysed could potentially be capable of fostering greater socio-economic development through enhancing the well-being of vulnerable segments of the rural population through their integration to expanding markets, higher and more stable income, employment generation in farm and non-farm activities, and other indicators of welfare gains and enhanced resilience.

e. Make recommendations on how public interventions can make use of findings in this study to enable the rural poor to access to financial services and other tools helping them to manage risk better and allow them to participate and benefit from growing agricultural markets.

This study was elaborated by FAO in collaboration with and funding from the Capacity building for rural finance (CABFIN) partnership, composed of IFAD, GIZ, UNCDF, World Bank and FAO. The present document is structured in the following manner: Chapter 1 presents trends in global and regional agricultural markets, as well as trends in rural and agricultural financial markets. In Chapter 2 an analytical framework is presented that describes the different constraints to investment in the agricultural sector, which severely curtail rural and agricultural financing and investment. Chapters 3 to 6 offer detailed analyses of the innovative rural and agricultural finance and investment models from the four countries that are part of the study. Finally, in chapter 7 a series of conclusions and lessons drawn from the documented experiences are presented, aimed at making recommendations for the design of public policies that are more effective in promoting the provision of rural and agricultural financial products that enable more inclusive investments in the agricultural sector.

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Executive summary

The well-documented expansion of local, regional and global agricultural markets in Asia has been accompanied by innovative business models used by rural economic actors trying to take advantage of new agribusiness opportunities. These models have tended to increasingly include smallholder families and small and medium agricultural enterprises, given the pressure to respond to a growing demand for agricultural products. Motivated by this context, this study provides an analytical framework that describes how these macro trends in agricultural markets have been shaping rural financial markets, enabling institutional and product innovations that overcome the barriers to providing a wide set of financial services that facilitate agricultural investment and enhance the efficiency of rural livelihoods. These innovations imply enhanced management of financial, production, marketing, climate and institutional risks inherent in rural ventures, in addition to the reduction of transaction costs for the delivery of financial products that are better suited to the needs of a variety of rural clients.

The analysis of these macro-level trends is complemented by micro-level studies from Viet Nam, India, China and the Philippines, where these innovations are explored in greater detail. The country cases recognize how these innovative business models enable the provision of credit, savings, insurance and payments services to the rural population and facilitate investments in the agricultural sector. It presents some evidence that these business models have been more inclusive of poorer rural households dependent on agriculture, which constitute a significant share of those financially excluded around the world. The cases documented provide some important policy lessons that aim to effectively promote more inclusive rural financial markets.

The case of Viet Nam shows how small and medium agribusiness firms can provide financial services to poor rural households that are underserved by the formal financial sector, including development banks that specifically target this clientele segment but fail to achieve the necessary scale. These agribusinesses make efforts to provide these services because they allow to secure the agricultural production they need for their trading or processing activities. The analysis presented shows how public programs – once they recognize and value the significant informational advantages that these small and medium agribusiness have on smallholder families' needs and local agricultural market dynamics – can promote successful partnerships between formal financial institutions and these agribusinesses to enable the provision of financial services to poorer rural households. This win-win arrangements enables the rural portfolio of formal financial institutions to reach greater scale, diversifying the types of financial products offered and the clientele segments reached composed of smallholder families and various rural businesses along agricultural value chain segments, thereby exploiting economies of scope and scale.

The case of India illustrates how some commercial banks have invested in acquiring knowledge about domestic agricultural markets to identify those unmet financial needs they can serve. In this case the identified needs relate to agricultural payments and savings required by rural actors such as small-scale milk producers and dairy processors. The strategy used to cater this clientele segment leverages on digital technology in order to ensure these services are more convenient to clients, in addition to having low operation costs. The experiences illustrated show how digital technology can be tailored to fit very unique transactions that take place in agricultural value chain segments, and these payment systems can have significant scale. In addition, they enable the recording of a transaction history, which can be used for the development of additional rural financial services.

In the case of China, the study highlights how some private technology companies that do not form part of the formal financial sector, have recognized the enormous business potential that providing financial services to poorer rural households represents, especially considering how this clientele segment seems to be underserved by formal financial institutions. Taking advantage of the massive data these firms have accumulated on individuals' transactions, they have been able to develop a lending methodology based on scoring systems that does not require any collateral and is able to assess creditworthiness based on the client characteristics. Given the uniqueness of rural livelihoods and their relative low presence in big data sets, this methodology does not only rely on scoring algorithms, but also on partnerships with local government agencies and other rural actors that can provide additional client information, which was recognized as critical for an adequate loan underwriting process. The result has been the formation of a massive rural credit portfolio during a very short amount of time.

Finally, the case of the Philippines shows how pioneer microfinance institutions have been able to transform traditional microfinance methodologies, which have typically fitted mainly the urban poor with small loans requiring monthly repayments, with agricultural finance methodology that require bulkier loans with repayments schedules fitting the longer-term agricultural calendar. The new methodology has enabled these financial institutions to cater the largely unmet agricultural financing needs among poor rural households. In addition, in order to reduce costs and manage risks better, these financial institutions have partnered with agribusiness firms and government agencies that can provide clients with services that mitigate production, market, and climatic risks. These organizations benefit from the partnership as they secure agricultural products for their industries and they achieve more effectively their rural development goals.

The country experiences analysed show how policies that aim to promote rural financial inclusion can be more effective when they focus on promoting a merger of capacities and knowledge between formal financial institutions and rural economic actors. An ideal policy goal would be to promote a mix of public interventions that, by promoting this merger of capacities and knowledge, facilitate a process of innovation within the financial sector in order to define new products and internal processes that lower costs and improve the ability to assess client needs, manage risks, and develop a rural portfolio that is fully financially self-sustaining.

This merger of knowledge and capacities is achieved when there is coordination between public programs implemented by government bodies and international

agencies supporting the agriculture and finance sectors to leverage resources that reduce supply and demand constraints faced by rural financial markets. This means, for example, demand-promoting public programs that aim to enhance producer organization, productivity and more inclusive market linkages should coordinate with supply-promoting programs that aim to develop capacities, products and processes within the financial sector to service rural areas.

Coordination between key regulators influencing the agriculture and finance sectors is also required to further facilitate those innovations in rural and agricultural finance. For example, those government agencies defining regulatory frameworks for agriculture trade and subsidies need to be able to identify the implications that unpredictable and distorting changes in these policies have on financial institutions' ability to serve agriculture given their negative impact in the feasibility of rural livelihoods and agricultural ventures. Similarly, those government agencies defining regulatory frameworks for the financial sector, especially in terms of acceptable forms of collateral, portfolio risk assessment criteria and the formation of credit bureaus, are enabled to identify the implications they have on the ability of financial institutions to properly assess rural client needs and risks based on a proper understanding of agribusiness dynamics.

The achievement of the above policy objectives would enforce three key principles in the process of innovation encouraged by public programs within the financial sector – as evidenced from the country cases presented.

Enable financial institutions (FIs) to define their best entry point to servicing the rural clientele. There are several entry points to begin servicing new rural clients, given their many unmet financial needs. Depending on the FI's comparative advantages, it can provide some type of general (e.g. savings, consumption credit, life insurance) or agricultural financial services. This implies shaping a market strategy to identify the niche clientele, tailor services to client needs and set partnership strategies with rural actors.

Diversify the menu of financial services offered. Once the service or services are being delivered to a new rural clientele, it marks the start of a learning process by the FI in order to identify additional client needs and capacities to then offer additional services. This requires a well-defined knowledge management strategy within the FI. The learning process also implies identifying other local actors in proximity with whom to partner, and better and cheaper ways to deliver a growing number of services. This is something that informal financial service providers have experience in doing, as this has been the main channel through which these providers have diversified their rural services portfolio over time. Each additional financial service provided to the rural client enhances the value proposition of the other services offered.

This vision of increasing the diversity of financial services provided to rural clients has important implications for satisfying the demand, but also for ensuring profitability and sustainability of the rural financial portfolio. From the supply side, the very low population density, remoteness and limited communication channels in rural areas implies the rural portfolio should exploit as much as possible economies of scope. Each additional financial service offered in rural areas can bring increasing returns, facilitating the profitability of the rural portfolio.

Diversify the rural client base served. FIs also need to diversify the types of rural clients reached to achieve economies of scale and manage risks by broadening the clientele base in the context of a scattered rural population. This means serving clients within as many value chain segments as possible in the rural agricultural and non-agricultural economy. This client diversification not only increases the scale of the portfolio but also allows FIs to have a finger on the pulse of the overall rural economy, where economic opportunities and business cycles are known to be highly covariant. Client diversification would therefore help foresee upturns and downturns, thereby managing better the associated risks.

The growing international experience shows how those formal financial institutions that have been following these principles, each one exploiting their unique comparative advantages, are achieving large and profitable rural portfolios.

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Acronyms

3PAD	Pro-Poor Partnership for Agroforestry Development (IFAD project)
ADB	Asian Development Bank
AGFP	Agricultural Guarantee Fund Pool
AMP	Alalay sa Magsasaka Programme (an agri-lending programme)
APIF	Agribusiness Promotion Investment Fund
APMC	ASKI Multi-Purpose Cooperative
APMC	Agricultural Produce Market Committee
ARB	agrarian reform beneficiary
ASKI	Alalay sa Kaunlaran Inc.
ASKI MBA	ASKI Mutual Benefit Association
BARC	Barangay Agrarian Reform Certificate
BC	Business Correspondent
BIDV	Bank for Investment and Development
BSBD	Basic Savings Bank Deposit
BSBDA	Basic Savings Bank Deposit Account
BSP	Bangko Sentral ng Pilipinas (Philippines Central Bank)
CABFIN	Capacity Building for Rural Finance
CIG	common interest group
CLIMBS	an Insurance Cooperative
CNB	File extension associated with Pegasus Mail
DAR	Department of Agrarian Reform (The Philippines)
DoA	Department of Agriculture (The Philippines)
EAP	East Asia and Pacific [region] (World Bank delineation)
ECA	Essential Commodities Act
FLGC	farmer-level grain centre
FPO	Farmer Producer Organization
GIZ	Gesellschaft für Internationale Zusammenarbeit GmbH
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural Development
IMPS	Immediate Payment Service
JFC	Jollibee Food Corporation
JFC-FEP	Farmer Entrepreneurship Programme
KCC	Kisan Credit Card
KFI	Kennemer Foods International
LBP	Land Bank of the Philippines
LGU	local government unit
MAO	Municipal Agriculture Office
MBA	Mutual Benefit Association
MFI	Microfinance institution
MNAIS	Modified National Agricultural Insurance Scheme

NABARD	National Bank for Agriculture and Rural Development
NAIS	National Agricultural Insurance Scheme
NCIP	National Crop Insurance Programme
NFA	National Food Authority
NGO	non-governmental organization
NIA	National Irrigation Authority
NIA	National Irrigation Authority (The Philippines)
ODA	official development assistance
PACS	Producer cooperatives
PAR	portfolio-at-risk
PCIC	Philippine Crop Insurance Corporation
PHILRICE	Philippine Rice Research Institute
PHP	Philippine Peso (currency)
PMES	pre-membership education seminar (training module)
PMPC	Paglaum Multi Purpose Cooperative
PSL	Priority Sector Lending
PULP	Pang Uma Loan Product
RBI	Reserve Bank of India
RCC	rural credit cooperative
RFI	Rural Financial Institution
RIDF	Rural Infrastructure Development Fund
RRB	Regional rural banks
RUA	Reference Unit Area
RWS	Reference Weather Station
SA	South Asia [region] (World Bank delineation)
SCF	Women's Union Savings and Credit Fund
SMC	San Miguel Corporation
SME	small and medium enterprise
SMS	Short Message Service
UCB	Universal and Commercial Bank
UNCDF	United Nations Capital Development Fund
USDA	United States Department of Agriculture
US$	United States dollar (currency)
VBARD	Viet Nam Bank for Agricultural and Rural Development
VBSP	Viet Nam Bank for Social Policy
VND	Viet Nam Dong (currency)
VSPB	Viet Nam Social Policy Bank
WASDE	World Agricultural Supply and Demand Estimates Report
WBCIS	Weather-Based Crop Insurance Scheme

Chapter 1

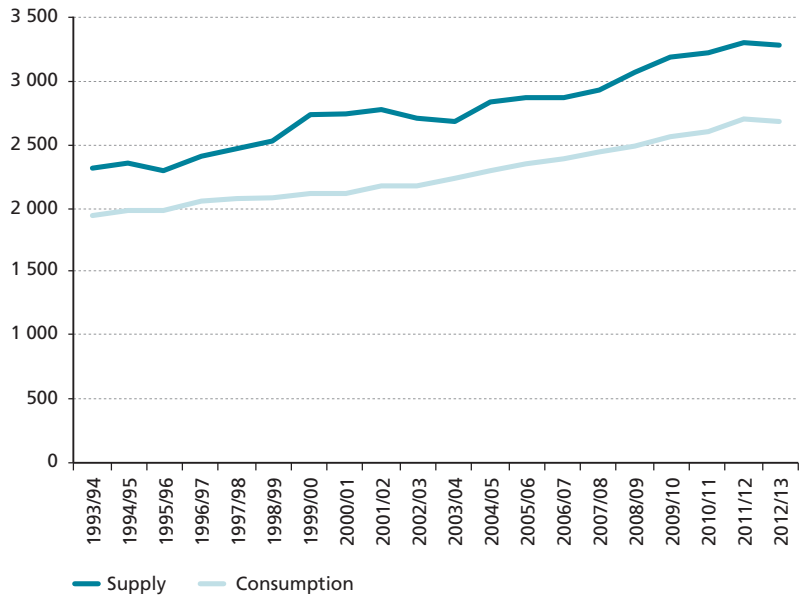
Growth patterns in the agricultural sector: relevance for formal financial institutions

Emilio Hernández

1.1 THE PERFORMANCE OF AGRICULTURAL MARKETS AND PATTERNS OF INVESTMENT

Evidence at the global level shows that the agriculture supply sector has been able to meet the growing demand for agricultural products while managing to maintain reserve stocks, which can allow the industry to cope with unexpected fluctuations in the production process. This global tendency is especially evident in the behaviour of the grain and oilseed market, which constitutes one of the world's largest in terms of volume (see Figure 1).

FIGURE 1
Growth in total world demand and supply of grains and oils (in millions of MT)



Source: compiled by the author with data from World Agricultural Supply and Demand Estimates Report (WASDE), USDA.

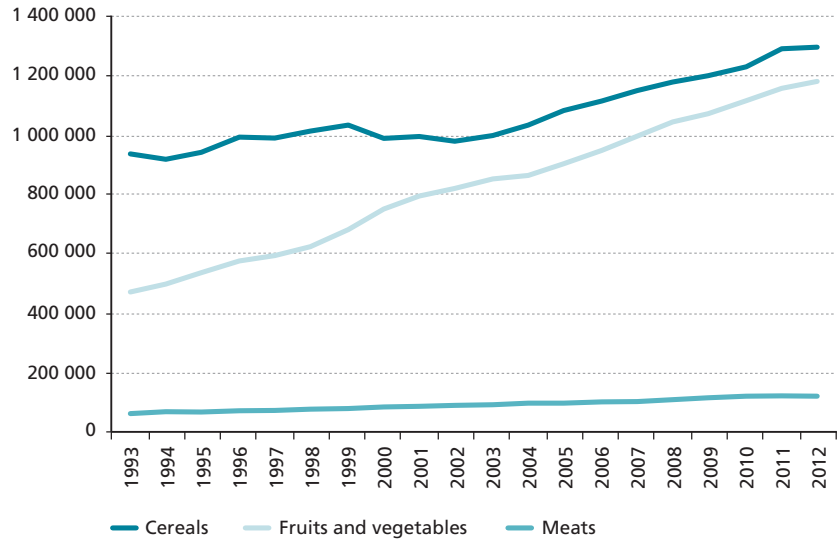
In a similar manner, agricultural production in Asia has shown rapid growth in the past two decades, driven by the increasing demand within regional and global markets (see Figure 2). In addition, the value of this production has been increasing at a faster rate as indicated by the value of agricultural exports coming from the region, where there are marked differences between products (see Figure 3). New patterns in consumers' diets, reflecting an increase in purchasing power, have resulted in greater demand for all agricultural products, but in particular for some high-value products, such as fruits, vegetables and livestock products.

The growth in production has been accompanied by a sustained increase in the average yield of different commodities (see Figure 4). This yield growth derives mainly from an increase in total factor productivity, that is coming more from investments in research and development of new technologies, agribusiness models, improved infrastructure and more effective extension systems rather than in increased use of inputs and irrigation (Fuglie, 2012).

The rise in productivity has been more pronounced within those commodities markets that have undergone a notable increase in their value, such as fruits and vegetables. This could be explained by the higher gains generated by these commodities, given their value on regional and international markets, which motivates greater investment in more efficient production and business models.

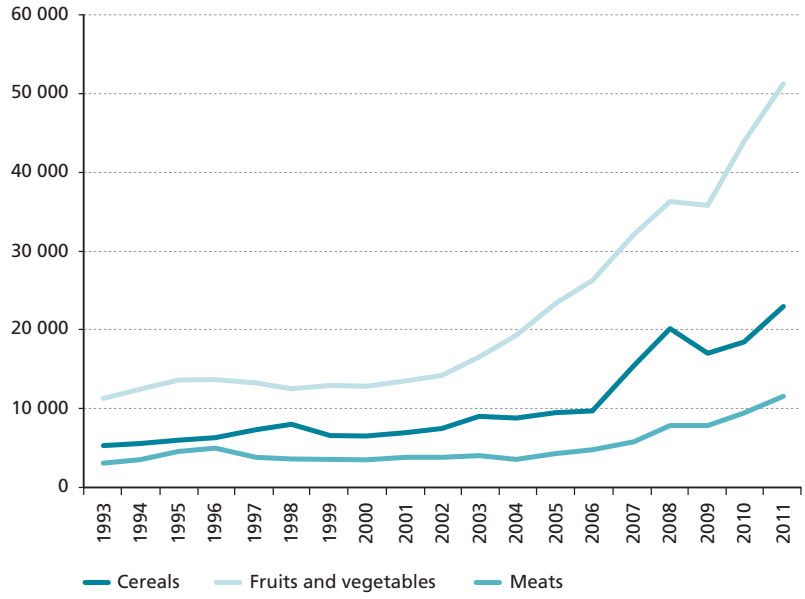
The rise in productivity is the result of increased investment in agriculture as reflected in the total capital stock in agriculture (i.e. long-term investment in land, machinery and infrastructure) as shown in Figure 5. Longer term agricultural investments have focused on seeking more efficient production and business models that allow to satisfy the rising demand level thereby seizing business opportunities

FIGURE 2
Total production of cereals, fruits and vegetables in Asia (in thousands of tons)



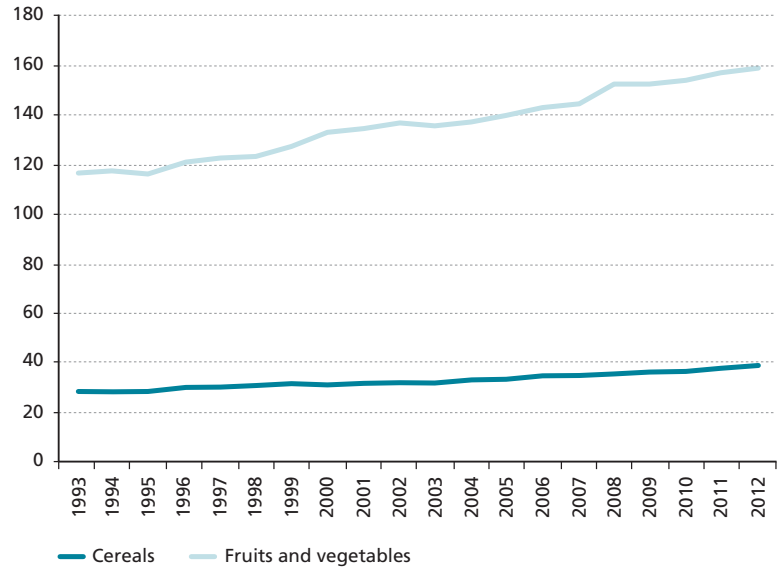
Source: FAOSTAT.

FIGURE 3
Total export value for cereals, fruits and vegetables, and meat, originating from countries in the Asian region (in US$ millions)



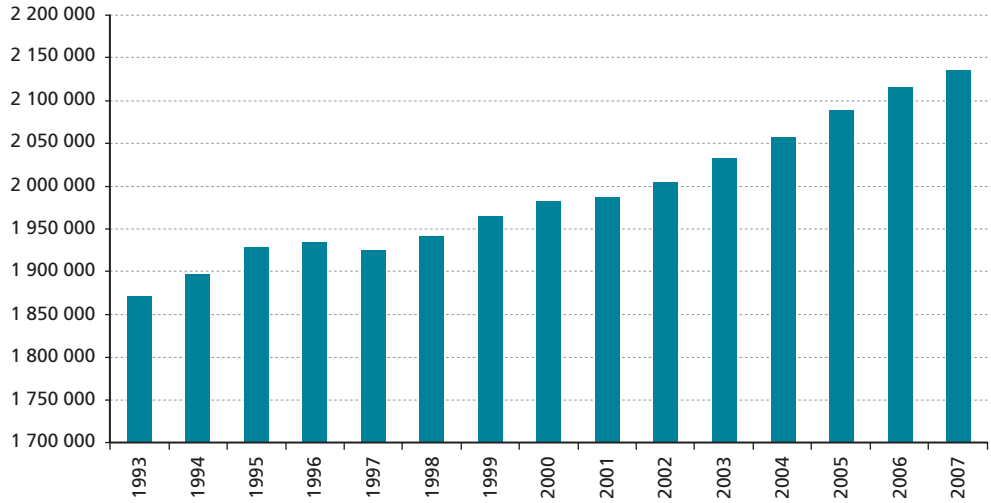
Source: FAOSTAT.

FIGURE 4
Average yield for cereals, fruits and vegetables in Asia (in thousands of hg/ha)



Source: FAOSTAT.

FIGURE 5
Capital stock value in agriculture for Asian countries (US$ million as of 2005)



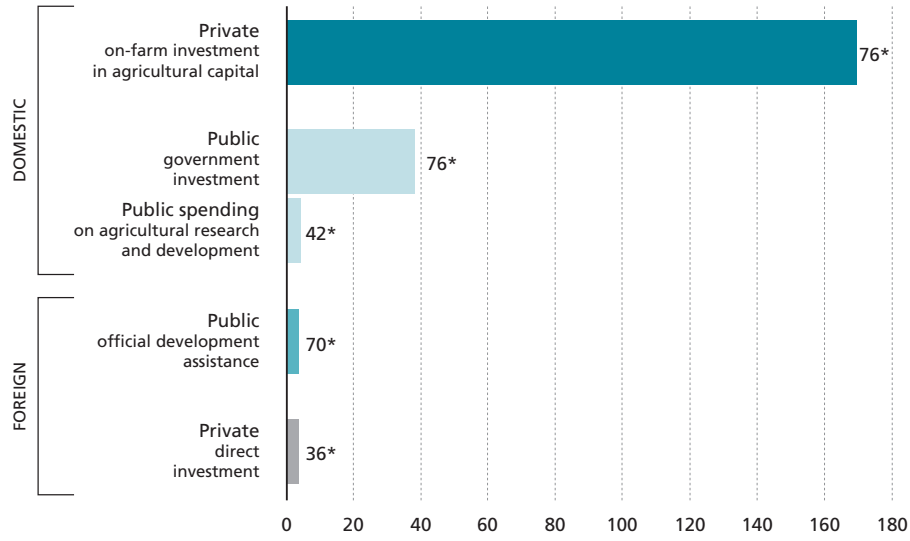
Source: FAOSTAT.

throughout all segments of agricultural value chains including production, processing, storing and commercialization.

In the East Asia and the Pacific (EAP) region the level of capital stock per worker in agriculture has grown in real terms by 1.8 percent between 1980 and 2007. In the same time span, the level of capital stock per worker has grown by 1.4 percent in the South Asia region (FAO, 2012). To make a comparison, the growth rate of the EAP region has been similar to that of the Middle East and North Africa, but higher than that of Latin America or Sub-Saharan Africa. The data suggest that the increase in investment in more efficient production and management models has resulted in sustained increments in the average production levels in the region.

In recent years, the interest in studying in more detail the determinants for investment in the agricultural sector has increased. A growing amount of literature emphasizes that agribusiness opportunities generated by the expansion in demand have implied a growing dynamism in local and regional agricultural markets, but that are less documented and understood, relative to international markets. In general, these local and regional markets have shown a supply sector with closely integrated productive systems, where investments in each of the value chain segments are highly dependent on each other, providing strong incentives for the well-off actors in the chain to facilitate the development of those weaker players that can help stabilize transactions. This results in the need to develop particularly complex risk management strategies for investments in the sector (Miller, 2013; Reardon *et al*., 2012; FAO, 2012; World Bank, 2008).

FIGURE 6
Estimated breakdown of capital stock in agriculture between 2005 and 2007, or in the most recent year, in a selection of low- and middle-income countries (billion constant 2005 US$)



* number of countries.
Source: FAO, 2012.

This evidence motivates greater in-depth analysis as to which are the main investors involved in the agricultural sector. Figure 6 highlights how, in developing countries, the greatest part of investment in the agricultural sector derives from *private domestic* investors, which include large-, medium- and small-scale producers. Investments made by Governments have an important – albeit minor – weight, while official development assistance (ODA) ranks third in the list. Foreign direct investment plays the smallest role relative to overall total investment, despite being associated with the largest *individual* investments (which are usually the most visible). Nevertheless, private domestic investors represent the largest investor category in the sector despite being very fragmented, and they are composed of producers with operations that have a wide range in scale, who have different constraints and comparative advantages in different market fragments, and who make large to micro investments (FAO, 2012).

These global trends are consistent on a regional level in the case of Asia, especially concerning the Southern Asia region. By using the same categories for private and public investment shown in Figure 6, Table 1 shows how private investors in agriculture represent 87 percent of total investments in Southern Asia and 60 percent in Southeast Asia.

The rise in investment, and the consequent increase of average productivity in the region, leads one to examine which are the main financing sources for such investments, and how the different risk factors associated with the agricultural sector have been managed in order to facilitate financial services.

TABLE 1
Percentage of agricultural capital stock per region and by source between 2005 and 2007, or the most recent year

Region	Source of agricultural capital stock	Average percentage between 2005 and 2007 or the most recent year
South-East Asia and the Pacific (12)	Public	40
	Private	60
Europe and Central Asia (12)	Public	19
	Private	81
Latin America and the Caribbean (13)	Public	11
	Private	89
Middle East and North Africa (9)	Public	28
	Private	72
Southern Asia (7)	Public	13
	Private	87
Sub-Saharan Africa (23)	Public	10
	Private	90

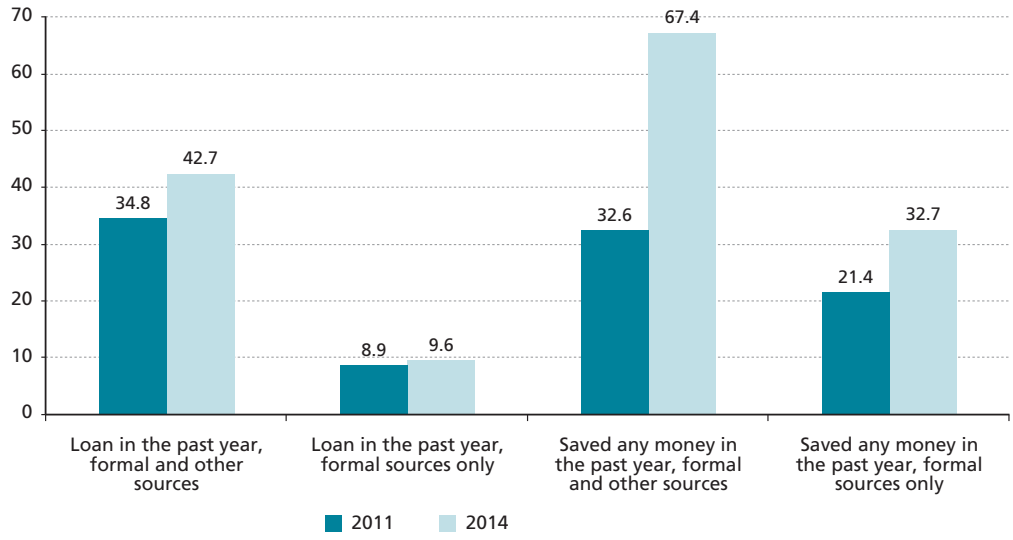
Note: the number in parentheses is the number of countries in the sample.
Source: Syed and Miyazako, 2013.

The following section describes in greater detail the sources of financial services for the rural population in Asia in general, and those sources of specialized financial services for agriculture. The evidence shows that rural and agricultural financial markets are dominated by service providers that are outside of the formal financial sector, representing an opportunity for formal financial institutions to develop new products and services for a large segment of rural clients – a segment that is currently paying for financial services – in the context of growing agricultural markets. Seizing this opportunity would require overcoming the significant challenge implicit in improving the value proposition of formal financial services to the rural population, using innovative and feasible business models and processes that rely on an improved understanding of the clients, their livelihoods, the actors with whom they have commercial transactions, and the dynamics of those markets in which they are engaged.

1.2 THE PERFORMANCE OF RURAL FINANCIAL MARKETS AND THE LAG IN THE PROVISION OF SPECIALIZED FINANCIAL SERVICES TO THE AGRICULTURAL SECTOR

There is consensus that the financial sector in Asia has improved its rural outreach during the past decade. What has been difficult to quantify in the past is the share of the rural financial market that the formal financial sector actually captures. Until recently, there has been an emergence of nationally representative surveys (e.g.

FIGURE 7
Percentage of the rural population over 15 years old in the East Asia and Pacific (EAP) region (developing countries only) that made use of savings and credits service between 2011 and 2014



Source: recompiled by authors from the Global Findex database.

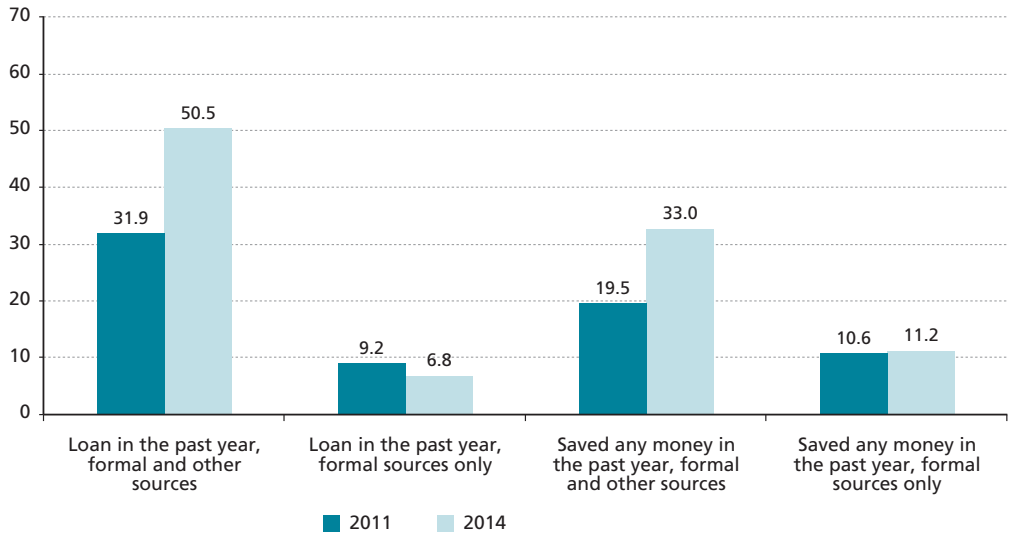
the Global Findex and Finscope) from where we can estimate the market shares captured by formal and informal financial service providers.[1]

The emerging evidence shows that financial services used by the rural population are provided for the most part by agents who do not belong to the formal financial sector, such as rural enterprises in the commerce and service sector, agribusinesses active in specific value chain segments, informal lenders, community savings and loans groups, family and friends.

Figures 7 and 8 show how in the Asian region, from the total percentage of the rural population that actively makes use of credit and saving services, only a minority share reports obtaining such services from formal financial institutions. The remaining proportion of the rural population, represented by the differences between the columns in Figures 7 and 8, have been provided by informal actors (i.e. those not formally regulated as institutions providing financial services) and represents the size of informal credit and savings markets. Although the coverage of financial services in rural areas by formal financial institutions improved between

[1] For the purpose of this work, the definition for formal financial institutions used is the same one adopted in the FINDEX surveys. This means banks, credit unions, microfinance cooperatives, savings and credit cooperatives, or any other institution authorized and supervised by the government to provide financial services.

FIGURE 8
Percentage of the rural population over 15 years old in developing countries in South Asia (SA) that made use of savings and credits service between 2011 and 2014



Source: recompiled by authors from the Global Findex database.

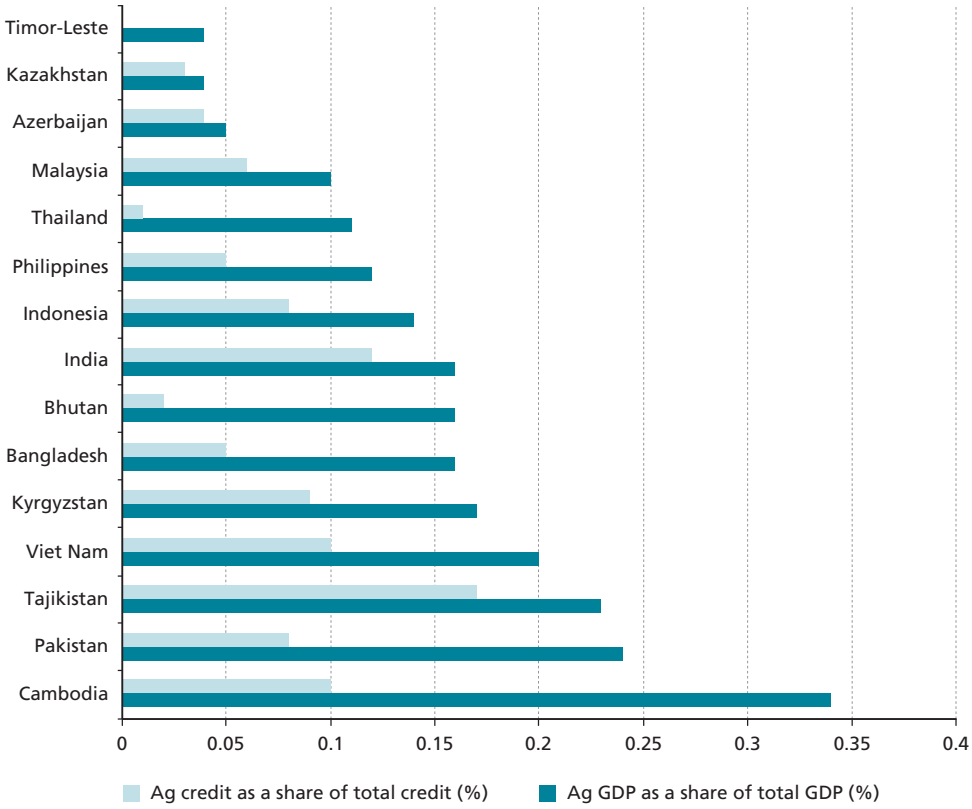
2011 and 2014, the percentage of the rural population that obtains financial services from informal actors has grown significantly more within the same period, as represented by the growing difference between the columns in Figures 7 and 8.

There are some interesting pattern differences to note between the EAP and SA regions when it comes to savings and credit markets during 2014. In the EAP region a greater percentage of the rural population makes use of credit services relative to savings, while the contrary occurs in the SA region, where there is more predominant use of credit services. This is probably the result of more mature rural economies in the EAP region, where investment opportunities to make use of loans have been better seized and savings represent a service that more people find useful to manage their liquidity and fund investments.

It is possible to infer from this data that those informal financial service providers that dominate rural financial markets possess significant informational advantages that allow them to identify client needs and viable investment opportunities, and to deliver financial services in a feasible manner in rural areas. They can also asses and manage the risks associated with providing such services more accurately than their formal counterparts, thereby capturing a greater share of rural financial markets. With the agricultural sector playing an essential role in most of the countries within the region under analysis, and which have shown to be expanding.

The informational advantages of the actors that dominate the rural financial and agricultural markets derive from their knowledge: knowledge of local markets, of the

FIGURE 9
Agricultural (Ag) credit as a share of total credit vs. agricultural (Ag) GDP as a share of total GDP in selected Asian countries during 2012



Source: FAOSTAT.

strengths and weaknesses of each of the actors with whom the client interacts, and of the investment risks linked to climate, production, commercialization and financing.

Considering the relevance of agriculture within the diversity of economic activities in rural areas, it is worthwhile specifically focusing on the performance of the formal financial sector in serving agricultural actors. Evidence suggests that in the majority of the countries within the region, formal financial institutions have played a marginal role in providing credit to the agricultural sector, relative to the ability of the sector to generate wealth in the overall economy (see Figure 9).

Despite the fact that agricultural sector financing depends on the intensity of the use of capital, the great imbalance observed in certain countries between the percentage of the national credit portfolio that belongs to agriculture, and the percentage of the GDP that derives from agriculture, suggests that the financial sector does not serve the agricultural sector to an extent that is proportional to its capacity

for generating wealth.[2] This includes very poor countries with a high potential for agricultural development.

This scenario is consistent with the data shown in Figures 7 and 8, which implies that the financing activity currently fostering the increase in investment, production and productivity in the region's agricultural sector tends to stem from the activity of financial service providers that do not belong to the formal financial sector.

1.3 THE PERSISTENT SUB-OPTIMAL EQUILIBRIUM IN RURAL AND AGRICULTURAL FINANCIAL MARKETS

There is evident contradiction between the low level of exposure of formal financial institutions to rural financial markets in general—and the agricultural sector in particular—and the rising levels of investments, production and productivity registered in local, regional and international agricultural markets. Increasingly, academic literature has been providing explanations for this scenario, highlighting the significant innovations led by rural small and medium enterprises (SMEs) in developing countries focused on developing more efficient business models that overcome challenges that, ideally, formal financial service providers, as well as other public and private services, would help to resolve. The inability of formal financial institutions to feasibly respond to this demand from rural areas, due to factors that will be discussed in the next chapter, has forced these rural economic agents to provide different forms of financial services to facilitate transactions and seize business opportunities in rural areas and the agricultural sector. While these economic agents do not see financial services as their core business, they offer these services in order to stabilize commercial transactions and improve efficiency across the different value chain segments. This enables them to effectively satisfy the growing demand for their products (Reardon *et al*., 2012; Miller and Jones, 2010).

It is very important to define the concept of informality when referencing the dominant sources of rural finance. Throughout this study the informality associated with financial service providers is the result of the nomenclature adopted by financial regulators. Although these informal financial service providers are not registered as formal financial institutions, and therefore are not necessarily captured in official data related to national financial systems, this does not necessarily mean that they are outside of the overall formal economy. Rural commercial enterprises, agribusinesses, individual agricultural traders—all documented as important sources of financial services—are in many cases commercial actors that are fully inserted in the formal economy. Nevertheless, they are not listed as formal financial institutions, given the fact that in most cases their main line of business is not related to finance.

One must also consider within the mix of financial service providers those who are completely outside of the formal economy, such as local moneylenders, savings and credit community groups, family members and friends. However, emerging literature suggests that these type of informal rural financial service providers are

[2] It is worth recalling that GDP is a value added unit, therefore being an indicator of the gross profits generated by an economic sector. The tendency in well-developed financial markets is that the financial sector attends to the need of a specific economic sector in a manner that is somewhat proportional to the sector's capacity to generate wealth.

not particularly active in providing financial services specifically for agricultural activities, since the terms and conditions for agricultural financial services usually exceed the capacity of this type of service provider (including relatively high loan volumes, longer maturity periods, principal and interest payments of a seasonal character, and much larger saving volumes).

Although the role of the different informal rural financial service providers seems to have been essentially enabling the documented dynamism in agricultural markets and facilitating an effective supply response against the rising demand for agricultural products, there are distinct limitations in the financial services they offer. They tend to be *inflexible*, *lack diversity*, *and are relatively expensive* (USAID, 2011; Milder, 2008).

These services tend to be less flexible than those offered by formal financial institutions with fixed terms and conditions that cannot be changed by the provider (e.g. unique repayment conditions, applicable only to clients active in certain crops in a certain geographical region). They lack diversity in the sense that each service provider can only offer one or two financial services (e.g. input credit, emergency loans, or guarding savings). In addition, these services tend to be more expensive than financial sector standards, given that the actors offering them incur much higher capital costs than formal financial institutions, and the capital they use to provide services also has high opportunity cost, since these actors usually have other potential investment options within their core businesses (FOMIN, 2014; USAID, 2011; Milder, 2008; Gonzalez-Vega, *et al*. 2006).

This contrasts with the well-documented demand of rural households for a wide variety of financial services, which might include savings, insurance, transfers, remittances, as well as different kinds of credit (Collins *et al*., 2009; Rutherford, 1999). This reflects the fact that, in the context of dominant informal economies, financial needs of the individual and the rural enterprise are strongly linked, since members of rural households act as a coordinated unit that manages risk by diversifying the agricultural and non-agricultural activities in which members are engaged, as influenced by its geographical position. Through this approach, rural clients make interdependent decisions related to risk management, smoothing consumption, making different types of investments, and providing products and services (Fafchamps, 2007; Dercon, 2002; Stark and Levhari, 1982).

The limitations within informal financial services represent exclusion mechanisms that affect potential rural clients who could contribute to the agricultural sector and the rural economy overall but cannot access the right type of financial products to fully optimize the performance of their livelihoods and make investments that enable them to reach their aspiration for the future. This contributes to a state of underinvestments in rural areas and the agricultural sector below the socially optimum, and a persistant or growing level of inequality (Zimmerman and Carter, 2003; Fafchamps and Pender, 1997; Baland and Kotwal, 1998).

In spite of the prevailing trend, in FAO's field experience, the current favourable environment in global, regional and local agricultural markets—as well as the rise of investment in the sector—has revealed pioneering formal actors in the financial and agricultural sectors, who are in a continuing innovation process for the development of financial services and risk-management strategies that enable them to serve a greater number of rural clients currently underserved or excluded

by any financial service provider. There is also a renewed interest by governments to encourage agricultural development, given its high impact on poverty reduction (Christiaensen, L.; Demery, L. and Khul 2011; World Bank, 2008). Part of these public efforts consists in allowing small-scale producer families, agricultural SMEs, and the rural population in general, to access the tools and knowledge required to benefit from expanding agricultural markets, which includes the provision of economically feasible financial services that are more aligned to rural client needs.

In the next chapters of this study some of these innovative experiences will be documented and analysed, in order to extrapolate and support development of more effective public policy recommendations aimed at fostering the development of more inclusive rural financial systems.

1.4 THE IMPORTANCE OF GENERAL AND SPECIALIZED FINANCIAL SERVICES IN THE SOCIO-ECONOMIC DEVELOPMENT PROCESS

In the debate on how to foster financial inclusion in developing countries—i.e. how to facilitate access to formal financial services for a larger share of the population—it has been acknowledged that rural populations face the largest provision gap. In this kind of debate it is worth discussing the values that general versus specialized financial services hold for those rural households either excluded or underserved by the formal financial sector.

General financial services are defined as those services that do not aim at facilitating specific economic activities within the rural household, but instead facilitate the daily management of all the activities performed. Examples include general savings accounts, life insurance, or consumer credit.

In contrast, specialized financial services refer to those services that are designed to facilitate some specific household activity, such as agricultural production, marketing or processing, child education, or treatment of specific illnesses. Examples may include leasing of agricultural machinery, savings accounts to finance schooling for children, or health-motivated loans.

Focusing on those poor rural households that are dependent on agriculture, it has long been recognized that they have a highly diversified income-generating portfolio, which includes both agricultural and non-agricultural activities, with the latter often being responsible for more than half of total household income (Ellis, 2000; Davis *et al*., 2010). Considering this evidence, it is useful to assess what kind of financial services, general or specialized, are of greater value for these specific households.

To begin answering this question it is necessary to analyse what is known from different disciplinary sources, which assess the different roles that the financial and agricultural sectors play in the process of socio-economic development. Evidence suggests that the development of financial markets possessing extensive coverage and depth (as well as providing a wide range of general financial services) not only has a poverty-reducing impact, but also an inequality-reducing effect (Levine, 2005; Beck *et al*., 2007). The effects on poverty and inequality are more identifiable at a macro level, when observed over a long period and across multiple countries.

In turn, impact studies done at the household level suggest that access to financial services does not carry a poverty-reducing effect in the short term, although it does aid in stabilizing household income (Banerjee *et al*., 2009; Karlan and Zinman,

2010). One can infer that this increase in resilience allows amelioration of poverty over the long term (as suggested by the previously mentioned studies done at macro level), by facilitating investment in human and physical capital that ultimately benefits the succeeding generations within the household.

These studies are based on samples in which the provision of general financial services dominate. Nevertheless, when analysing the impact of specialized financial services, there is evidence that they facilitate more sizable investments, which can effectively transform household production systems, instead of just improving the efficiency of already existing systems, (Fafchamps and Pender, 1997; Sogo-Temi and Olubiyo, 2004; Fafchamps and Schündeln, 2012).

These specialized financial services in agriculture acquire greater relevance in developing contexts, since they foster GDP growth in the agricultural sector at country level, which carries a higher poverty-reducing impact if compared with an equivalent growth in non-agricultural sectors (Ligon and Sadoulet, 2007; Christiaensen, Demery and Khul, 2011).

Therefore, both, general and specialized financial services play important—albeit different—roles in the process of socio-economic development. This study focuses mainly on documenting innovations that have fostered the offer of specialized financial services in agriculture, such as credit for working capital, inputs and long-term investment, agricultural insurance, leasing and factoring. Nevertheless, parallel offers of general financial services have also been documented, as the diversification of several general and specialized financial services have enabled the financial institutions under analysis to exploit economies of scope that facilitate their financial sustainability.

Chapter 2

The barriers to agricultural financing and the emergence of new models of financial intermediation for the sector

Claudio González-Vega

2.1 THE LAG IN RURAL AGRICULTURAL FINANCE COVERAGE

In the processes of financial deepening in low-income countries, lags prevail in the provision of services in the rural areas, particularly in the supply of the financial services required for agricultural activities and of those demanded by households that earn an important portion of their incomes from crops. These *outreach* lags display different dimensions (Schreiner, 1998). A limited *breadth* of outreach is reflected both in the low proportion of the rural population that has access to institutional financial services as well as in the low ratio of agricultural credit flows relative to the value added that the sector contributes to the GDP (Von Pischke, Adams and Gordon, 1983; Yaron, Benjamin and Charitonenko, 1993; Carroll *et al*., 2012). A limited *depth* of outreach reflects the exclusion of the poor (women and ethnic minorities in particular) from the supply of the few institutional financial services provided in the rural areas. These agro-rural lags are also underscored by a restricted *variety* of outreach, as reflected by the narrow range of services provided, with a distinct emphasis on the supply of short-term credit only. Their limited range restricts the degree to which these services can contribute in augmenting investment opportunities in the sector.

Since the services provided do not adequately respond to the demands and requirements of the segment, the *quality* of outreach is poor (Adams, Graham and Von Pischke, 1984). Moreover, high transaction *costs* are added to the interest payments of borrowers. These transaction costs tend to be higher than the interest rates charged on loans, especially in the case of the poor. This increases the total cost of loans, frequently to prohibitive levels (Gonzalez-Vega, 1976 and 2012; Adams, González-Vega and Von Pischke, 1987). In turn, the high transaction costs faced by depositors reduce the net yields of their savings, way below the interest earnings they can get. Low quality and high costs thus reduce the *value* of the outreach that these financial services have for clients. Finally, the fragile institutional sustainability of many formal rural financial services providers contributes to their insufficient reliability, while the *permanence* of outreach (in addition to the convenience and opportunity of services) represent the attributes most valued by clients, especially when they seek to invest and innovate in the agricultural sector (Adams, 1995).

These lags in the supply of financial services represent critical constraints to the expansion of agricultural investment. *Per se*, agribusiness investments as well as the adoption of more profitable production and marketing technologies face, in any case, major obstacles, which are intrinsic to the agricultural sector. A more efficient provision of financial services could, nevertheless, play an essential role in overcoming these obstacles (Guizar, Gonzalez-Vega and Miranda, 2015). However, the provision of financial services itself faces similar obstacles, which might be even more challenging to overcome, in part due to a widespread incidence of market failure (Jaffee and Stiglitz, 1990). Therefore, the combination of barriers to investment and innovation with barriers to financial deepening leads to vicious circles, which are hard to break. Diverse innovations in risk management are attempting to surmount these traps.

2.2 BARRIERS TO INVESTMENT

This chapter first briefly examines some of the main barriers that hinder agro-rural innovation and investment as well as different ways in which financial services can assist in overcoming them. Efficient financial services can foster agricultural investment and innovation to the extent that they: (i) provide tools that improve risk management, (ii) allow for a more efficient inter-temporal resource allocation, and (iii) facilitate the overcoming of indivisibilities and the generation of economies of scale and of scope. Next, the chapter elaborates on the barriers (similar, *albeit* potentially higher) that limit the very supply of financial services. Finally, some of the innovations that have been used to overcome these barriers are identified.

Barriers to agricultural investment: systemic and idiosyncratic risks

This section describes the risks related to agricultural investment, derived mainly from nature, the market, and the political and institutional environment. The sources of these risks are in great part exogenous; therefore, they are independent from the producer's traits and behaviour (although a number of comparatively costly measures can be adopted by the producer, to mitigate the consequences of adverse events).

First, *nature*-related risks arise both from the impact of climate and pests on harvest results and livestock activities as well as from the damages inflicted by different kinds of natural disasters, such as loss of machinery, equipment and other capital goods, and the destruction of infrastructure and soil degradation, with the accompanying reduction of future production capacity. Usually the nature, frequency and intensity of these damages are influenced both by geographical parameters and by the extent of development of the local physical and institutional infrastructure. In turn, financial services providers recognize the existence of these systemic risks, and they will not expand their supply when the incidence of these risks is high, unless the agents on the demand side or on the supply side of the market or both acquire instruments (such as insurance, among others), which allow them to deal with potential catastrophic events.

Second, risks associated with *market* performance, related to unforeseen variations in the prices of goods and inputs and to the uncertain availability of factors of production (land, water, public services, skilled labour, fuel and other modern inputs), contribute to the volatility of rural household incomes. Specialized financial tools, developed to deal with market-related risks, are usually outside of the reach of small producers (Carroll *et al*., 2012).

Third, there are risks derived from the lack of institutions that enable the design and enforcement of *contracts* to facilitate market transactions: the absence of a legal framework and of judicial processes that ensure, with a fair deal of certainty, that transactions are bound to be carried out in compliance with the agreements. These risk factors are particularly challenging in the case of agricultural activities, since the delivery of a product or a promised payment occur a fair time after contract negotiation, due to biological production cycles and prevailing business practices.

Fourth, in general, the shortcomings of the political and institutional environment in low-income countries can also be a source of exogenous risk, making investment in agriculture unattractive. In some cases, the barrier constitutes the prevailing insecurity (due to different manifestations of crime, political unrest or civil war). In other cases, the barrier is legal uncertainty, especially regarding property rights, in particular on land (due to an unclear definition and weak enforcement of titles or to the possibility of expropriation either by the State or by groups – such as squatters – insufficiently discouraged by the State). Finally, both the uncertainty over potential policies that might be adopted by the authorities (supporting, repressing or distorting the performance of markets) and regulatory asymmetries (that arbitrarily grant relative benefits or penalize specific actors in the market) also represent important barriers to investment.

In addition to these four types of systemic exogenous risks, rural households are exposed, usually more than their urban counterparts, to *idiosyncratic* adverse events, over which they have some (possibly little) control: diseases, deaths, accidents, and other circumstances which undermine the level and quality of their labour supply. Facing the same event or accident, the longer distances, the infrastructure shortcomings (lack of roads, hospitals, police stations) and the inadequacies of available services increase the damage caused by systemic or idiosyncratic shocks in rural areas, in comparison to urban ones.

Furthermore, even when these idiosyncratic events are not directly related to the value of their agricultural production, the fear of being unable to deal with these emergencies makes the rural household-firms less inclined to investing (since they have to commit, in holdings of low-liquidity assets, an important part of their wealth), as well as less inclined to experimenting with new technologies, since these could threaten their ability to cope with these emergencies (Alderman and Paxson, 1992; Morduch, 1995; Fafchamps, Udry and Kzucas, 1998; Gomez-Soto and Gonzalez-Vega, 2007). Furthermore, when rural households lack access to institutional financial markets, they have to accumulate precautionary liquid *reserves* in anticipation of these events, which limits their investment capacity (Deaton, 1990 and 1992). In turn, in case that their income falls below the minimum consumption threshold, the adverse event could lead the producers to abandon the recently adopted modern technology. To achieve a sustained increase in household revenues it is thus necessary both to eliminate barriers to adoption and to reduce the probability of abandoning the more profitable technology (Guízar, Gonzalez-Vega y Miranda, 2015).

Finally, the higher or lower incidence of these risks also reflects the relative scarcity of adequate protection mechanisms that assist in facing their consequences (support networks, insurance, deposit facilities, emergency credit). In the rural areas of low-income countries, these mechanisms are either absent, prohibitively expensive, or very low in quality. In view of the strong incidence of such risks, expanding

the supply of financial services in ways that prevent or mitigate them can play an important role in alleviating the consequences of risk-related barriers to investment and innovation.

Barriers to innovation: learning and externalities

When the investment process is associated to a change in technology (innovation), some specific risks can emerge in relation to *adoption* (Salasya *et al*., 1998; Kochar, 1999; Jalan and Ravallion, 2001; Ouna *et al*., 2002 and 2011; Moser and Barrett, 2006). First, although the expected returns of the new production function are usually higher than those obtained through the traditional technology, they could be more volatile and uncertain. Given their low income levels, the poor farmers display a stronger preference towards safety (*i.e.,* maintaining a stable consumption) than towards high non-risk adjusted returns on investment. Due to the higher volatility associated to the returns from using a new technology, if the risk that the actual returns get lower than a minimum consumption threshold is high, the farmers will be inclined towards not innovating (Zimmerman and Carter, 2003; Guizar, Gonzalez-Vega and Miranda, 2015). Unless the producers have adequate tools within their reach (such as different types of financial services) to protect their consumption when facing a potential fall in revenues, the farmers will choose to avoid adopting the new technology.

Second, there are other risks related to innovation, in addition to the high volatility of returns from use of the new technology. The farmer's lack of experience could lead to costly (if not irreparable) mistakes. *Learning* processes are usually expensive and risky, and credit supply is by all purposes non-existent until the producer has demonstrated his experience and abilities. The importance of learning in the process of innovation suggests that it is desirable that the producer has access both to financial services as well as the necessary technical assistance.

Third, pioneers in the adoption of new technologies often suffer from the effects of *externalities,* given that, once the soundness of an innovation has been demonstrated, competitors could copy it with ease, thus diluting the expected returns to the investment for the pioneer. Although this represents a positive externality for society, it is also a potential barrier to experimentation carried out on an individual basis, which could justify some sort of state intervention. In these cases, nevertheless, interventions in financial markets (in particular interest rate subsidies) are not necessarily the correct solution. Recognition of this policy mismatch would then lead to questioning when a financial intervention is appropriate and when it is not, an issue not addressed here. Nevertheless, the existence of these simultaneous and complex barriers implies that it is desirable to provide producers with appropriate combinations of different financial services, technology transfers, and improved access to markets.

Barriers to investment and innovation: indivisibilities and economies of scale

Beyond the level of the different risks and the challenges in preventing or mitigating them, there are other kinds of barriers to agribusiness innovation and investment which could also be overcome with a more efficient provision of financial services. When the required inputs are divisible (*e.g.*, fertilizers or improved seeds), low-income producers would potentially have the chance of expanding their usage of

such inputs in a gradual manner, financing this investment through the accumulation of their own savings. The green revolution in Asia largely evolved in such a manner (Croppenstedt, Demeke and Meschi, 2003). This self-financing process could, nevertheless, take too long and, in any case, it might defer exploiting opportunities that would allow the poor farmers to improve their income levels sooner. Meanwhile the producers would continue to being tied to traditional low-yielding technologies in most of their endeavours, and the learning process would be slow.
In contrast, when the capital goods required are *indivisible* (*e.g.*, tractors, irrigation systems, greenhouses), individual savings might never be enough for adoption to take place (or the process of accumulating the minimum amount required could take too long a time). In this case, the farmer would be stuck in a poverty trap (Fafchamps and Pender, 1997; Dearcon, 1998; Parker, 2000; Dearcon and Christiaensen, 2011). Consequently, access to institutional credit (given that informal credit usually does not finance these long-term investments) would allow the producers to overcome the double barrier of the investment indivisibility and their own savings limitations. In turn, access to convenient and safe deposit facilities would allow for a less risky and less costly accumulation of individual wealth, required to complement the command over resources obtained through the loan funds.

A similar effect to the overcoming of indivisibilities would be achieved when the production function shows economies of scale (especially when reaching a minimum scale is indispensable in order to be competitive in the market). Efficient financial services would allow the farmers to reach the required scale, even if their own resources were still not sufficient to attempt it.

Barriers to investment and innovation: flow gaps and impatience

In their role in facilitating inter-temporal transactions, financial services can assist in overcoming the flow inconsistencies that arise over time, which are very pronounced when undertaking agricultural activities (Binswanger and Deininger, 1995). The biological cycles associated with crops and livestock lead to seasonality and require specific durations. There is a time for sowing and a time for reaping. There is a period for breeding and fattening, and an optimal moment for slaughtering. As a result, the right timing for the household production and consumption expenditure flows does not coincide with the timing of the harvest income flows. The role of financial services is then to fill these flow gaps (through deposit facilities to manage surpluses, and through credit to cover shortfalls). The slow rotation and seasonality of these flows makes, nevertheless, the task of financial intermediation more difficult. Innovations such as frequent payments, typical of village banking and other microfinance technologies, do not fit easily with these time profiles. What is needed, instead, is the design of products with flexible repayment schedules, which respond better to the idiosyncrasies of the producers' flows of funds.

In all cases there is, in addition, a waiting time and its duration is influenced by the length of the gestation period for the fruits of the investment. There is a shorter waiting time (but waiting, nevertheless) in the case of seasonal crops. There is a longer waiting time in the case of permanent crops (*e.g.*, coffee), which usually need a few years before production starts. Furthermore, many of these crops are affected by cycles of good and bad years, due to biological reasons. The waiting time is very long in the case of forestry crops. These waiting times are in conflict with the char-

acteristic impatience of producers which is greater, the poorer and more vulnerable they are. Financial services are useful in creating bridges between the producers' time preferences and the material possibilities of the investment.

2.3 BARRIERS TO RURAL FINANCIAL INTERMEDIATION

Many of the circumstances which explain the barriers to modern technology adoption and to agribusiness investment also account for the constraints to financial intermediation in the rural areas. These circumstances respond to two dimensions associated to the concept of *rural*. From a territorial perspective, the concept of rural is characterized both by low population density, which hinders the generation of economies of agglomeration, and by the long distances from urban centres, which causes market fragmentation and high costs for all transactions (Adams y Nehman, 1979; Gonzalez-Vega *et al*. 2004). Nevertheless, the territorial is not an absolute dimension; rather, it resembles a gradient. Hence, there is a gradual transition from urban to rural, with challenges for financial intermediation rising along the way.

In turn, from a sectoral perspective, the concept of rural is characterized by the relatively high importance of agriculture, as well as of other natural resources-intensive activities, thus carrying all the risks and challenges already outlined. These risks and barriers reduce the demand for institutional financial services, while heavily raising the cost of supplying them. Nevertheless, along the process of structural transformation that accompanies economic development, rural households evolve from a subsistence economy, in which agriculture-derived employment and incomes are predominant, into either a diversified household-firm, which carries out activities both in agriculture and in other sectors (commerce, manufacture, services), or towards a growing specialization in commercial agriculture. In accordance with this transition, the producer's demand for financial services changes and service provision has to adjust to these demand shifts.

The barriers that constrain, distort or suppress rural financial markets are essentially of five kinds: (i) various manifestations of distance, (ii) imperfect information, (iii) incompatible incentives and obstacles to contract enforcement, (iv) demand heterogeneity, and (v) various forms of covariance.

Distance as a barrier

The dominant barrier to increasing the depth of financial intermediation is distance, both geographical (deriving from the topography of the territory and the low coverage of the physical infrastructure), as well as ethnical, linguistic, cultural and social. All of these manifestations of distance limit access to various financial services for small producers, although they affect each type of service in a different way. In particular, distance results in high transaction costs for all participants in financial markets (Gonzalez-Vega, 2012). In turn, the lack of an efficient institutional infrastructure increases risks, due to the greater challenges faced when enforcing contracts. Furthermore, the increased distance (in all of its manifestations) aggravates information problems (making information incomplete, costly and asymmetrical), which can cause potential failures in financial markets.

Distance also makes financial transactions difficult by raising the cost of verifying the results of the producer/borrower's activities. Is the loss of repayment capacity, as a consequence of a bad harvest, imputable to purely exogenous factors,

or to the producer's lack of diligence, or to opportunistic behaviour (such as in the case of side selling)? A correct answer to this question should advise the lender's or insurer's reaction, although correctly verifying the source of the problem is particularly costly. Distance also raises the costs of monitoring and coordinating with officers working for a financial institution: is the low quality of the local portfolio imputable to exogenous and systemic factors within the locality, to the branch manager's lack of diligence, or to fraud? In all these cases, distance accentuates the challenges created by the problems typical of a principal-agent situation (verification, coordination, incentive compatibility), as well as the costs that the agent (bank, insurance company) has to incur to mitigate them.

Low population density and dispersion make the delivery and use of financial services more costly, on both the supply and the demand sides of the market, because the costs for each transaction tend to be fixed (independent from the size of the transaction). These costs increase as long as the transactions become relatively small. As a result, not only transaction costs are high, but also, in particular, costs per dollar transacted (borrowed, insured, or deposited), are high when compared to a given revenue per dollar transacted (through interest rates or insurance premiums).

These costs become for all purposes prohibitive when the transactions are too small, and they rapidly decrease for both demand and supply actors in the market as the size of the transaction increases. Therefore, transaction costs act as a regressive tax, which negatively affects proportionally more the small debtors or depositors (*i.e.,* the poor) in comparison to large ones. For this same reason, small debtors and depositors care a lot more about their respective transaction costs than their loan interest payments or the interest income from their deposits.

Furthermore, if setting a ceiling on interest rates leads to increased transaction costs for borrowers (as it usually happens, given that limiting interest rates accentuates credit rationing mechanisms), those most affected by these ceilings would be the smallest borrowers (hence those who are precisely supposed to be benefitted by the policy). Plenty of empirical evidence has shown how these interest rate distortions result in a deterioration of income distribution.

In turn, credit technologies that severely limit the amounts borrowed, usually below the actual repayment capacity of the borrower (as is the tendency in village banking), accentuate the regressive effect of transaction costs. The dilemma lies in the fact that those increases in loan size, which would aid in diluting these transaction costs, are usually associated to increased risk. The correct way to solve this dilemma is to improve the capacity of the credit technology to provide amounts that are more in accordance with the actual repayment capacity of each individual applicant, without increasing risk.

Imperfect information as a barrier

Information imperfections may cause adverse selection and moral hazard threats, which discourage potential lenders and lead to credit rationing (Gonzalez-Vega, 1976; Keeton, 1979; Stiglitz and Weiss, 1981; Jaffee and Stiglitz, 1990). When individualized information (on ability and willingness to repay) is incomplete and unreliable, large groups of credit applicants "look the same" and potential lenders cannot adequately distinguish their true and diverse credit profiles. They cannot *separate* them, in order to design different contracts based on their diverse risk type. Furthermore, given

information asymmetries (since the applicants know more than the potential lenders about their actual circumstances, capacities, and intentions to repay), some applicants might have incentives to "conceal" or "disguise" their true risk profile.

This means that lenders are unaware of the actual risk that they would assume upon lending, given the characteristics of the diverse but apparently similar applicants or those of the projects that they decide to pursue. To face these challenges, lenders prefer not to raise interest rates, up to levels that might increase the chance of accepting excessively risky applicants. This fear of *adverse selection* is born precisely because, when rates rise, the less risky applicants abandon their requests (*i.e.*, they do not exercise their demand), leading to a deterioration of the applicant pool (*i.e.*, the pool becomes more risky). Instead of raising interest rates, lenders prefer to exclude, in some cases entirely, some kinds of potential borrowers for whom they do not have enough information. In other cases, they ration credit, disbursing amounts smaller than those demanded (or issue loans to some applicants, and not to others who are apparently identical), at the prevailing interest rates (willingly limited by the lenders themselves) that they are charging. This market failure, caused by imperfect information, leads to exclusion and rationing.

Due to such imperfect information, interest rates and other contract terms and conditions are set as a function of the average credit risk for each one of a few classes of risk types. As a result, different clients are treated as if they were the same type. That is, clients who represent a lower-than-average credit risk end up paying a higher interest rate and receiving smaller amounts than they should, while clients carrying a higher-than-average risk pay lower interest rates and receive larger loans than they should. This results in serious inefficiencies in resource allocation. By using a single contract for both applicant sub-groups, a *pooling equilibrium* is achieved, instead of a separating equilibrium. Therefore, the market leads to non-interest (quantity) credit rationing. This becomes the source of a substantial market failure.

Unfortunately, setting ceilings on interest rates would increase exclusion and accentuate rationing instead of easing the situation. Hence, it would not represent the correct policy instrument to deal with this market failure (Bester, 1985; Besley, 1994; Gonzalez-Vega *et al.*, 2004). Manipulating the terms of the transaction does not improve the availability of information. If the challenge stems from an information imperfection, the correct way to deal with it is by improving the available information. This can be achieved both through the development of the institutional infrastructure, which improves access to public information on borrowers (such as credit bureaus), and through the refining of credit technologies, in order to allow for a better differentiation of the distinct risk profiles (Gonzalez-Vega *et al.*, 2004). This differentiation has been an important achievement, in particular, of individual microcredit.

Incompatible incentives and incomplete legal institutions as a barrier

When information asymmetries are combined with incentive incompatibility between borrowers and lenders, there is a threat of *moral hazard.* Given the nature of the credit contract, the promise of a fixed payment (amount of the principal plus interest, regardless of the borrowers' results), and their limited liability allow for opportunistic behaviour on the part of the borrowers. That is, once the loan is disbursed, the borrowers could undertake activities which are riskier than what was

previously agreed upon (but potentially more profitable, if things go well), and keep the higher profits without sharing them with the lender. If things go badly, however, the borrowers would simply not repay. Furthermore, if faced with an adverse event (for example, a pest damaging the crops), the borrowers might not behave with the diligence required to avoid defaulting on the loan repayment. These actions, undertaken for the borrowers' own benefit, represent a risk of losses for the lender, while the borrowers avoid assuming the total costs of their choices and behaviour.

In a similar manner to adverse selection, when there is a threat of moral hazard, lenders are inclined to exclude certain kinds of potential borrowers, or to engage in non-interest credit rationing, issuing smaller amounts compared to what is demanded, given the going interest rates. This market failure, due to imperfect information and incentive incompatibility, again leads to rationing or exclusion. As indicated earlier, however, this failure cannot be corrected by expanding directed credit or by setting a ceiling on interest rates, since this would only lead to a larger number of non-performing loans and losses from default.

In this case, what is needed again is an improvement of credit technologies (innovation), which would allow for better contract design, so as to introduce incentives for the borrowers (such as guarantees, collateral substitutes and reciprocal obligations in a credit relationship) that are compatible with the lenders' interests. Similarly, an improvement of credit technologies would lead to more effective monitoring of the borrowers' behaviour, in order to better prevent their opportunism. In agricultural and rural credit markets, nevertheless, potential applicants frequently do not possess the kinds of assets that are traditionally accepted as collateral, and distances prohibitively increase the monitoring costs faced by lenders. Having said that, a number of innovations in credit technologies, such as those described in this document, have been gradually overcoming these constraints, with a view to overcoming them in an even better manner in the future.

Many lenders also resort to excluding and rationing when, in the cases of potential default, they cannot rely on legal instruments to see their rights enforced, and consequently the threat of losses is high (Fleisig and de la Peña, 2003). In these cases, the solution would be to support the development of an institutional infrastructure that improves available mechanisms to define contracts (*e.g.*, with new types of collateral) and to enforce them in a prompt and not too costly manner (by reforming judicial proceedings). Nevertheless, many of the recent innovations that allow expanding credit for small producers seek to address the credit risk issues up front (at the time of screening and contract design) and avoid judicial enforcement of the loan obligations.

In the end, market failure due to imperfect information, incentive incompatibility, and the absence of institutions capable of enforcing contracts can only be corrected with more financial innovation and with the development of a physical and institutional infrastructure that promotes innovation and competition (Gonzalez-Vega *et al.*, 2004 and Gonzalez-Vega 2012).

Heterogeneity as a barrier

In the rural areas, the great heterogeneity of agricultural producers and the high variance of their expected investment results intensify even more these informational and incentive problems. Heterogeneity represents a significant barrier to rural financial intermediation because it is at odds with the possibility of achieving cost

reductions through homogenous products and process standardization. Nevertheless, in the context of a heterogeneous clientele, the greater product differentiation there is, the greater the value of the services provided to potential clients as well as the contribution of these services to promoting investment and the adoption of new agricultural technologies.

Not all farmers are the same. There are vast differences among their operations, related to: (i) their geographical location (and, consequently, on the impact that distance has on their costs and outcomes), (ii) their agronomic potential (given differences in microclimates, access to water, and soil quality), (iii) their labour force (experience and human capital), and (iv) the technologies used in the production and the marketing of their crops, among other characteristics. As a result, there are vast differences in terms of the risks they face and the opportunities they encounter. In turn, there are large differences in their ability and willingness to repay loans as well as in their savings and asset accumulation potential.

There are vast differences among poor rural households also in terms of their demographic composition (gender, age, health), in what they are lacking (in comparison to their particular needs), and in their preferences. Not all of the rural poor are the same. In their endeavours, these poor household-firms not only pursue multiple and diverse objectives, they also develop a diversified portfolio of multiple activities, which they implement through various channels, according to their livelihood strategies. The composition and evolution of this portfolio of activities responds to diverse resource endowments, comparative advantages, and opportunities. Thus, there are large differences among them regarding their capacity to accumulate savings and their inclination towards assuming risks and waiting for the rewards (*i.e.*, in relation to the degree of their impatience and their risk aversion).

For these reasons, rural household-firms demand a multiplicity of financial products (not just credit), they value multiple attributes in such products (not just the interest rates), and they seek combinations of terms and conditions of the transactions (quality and cost) that correspond to their specific circumstances. Responding in an adequate manner to this heterogeneity of demands is already costly by itself, and achieving it in rural contexts is particularly challenging.

Covariance as a barrier

In addition to distance and heterogeneity, the other significant barrier to agro-rural financial intermediation is the covariance of results. Covariance presents itself in different manners. One of them is the seasonality typical of all agricultural activities. All producers sow at the same time during the year (when they are all deficit units and demand credit) and they all harvest at the same time of the year (when they all become surplus units and wish to make deposits). These circumstances increase the difficulty of local intermediation between depositors and borrowers and the institution's liquidity management. Furthermore, if all producers undertake the same productive activities (reflecting local comparative advantages), there will be few opportunities for trading among themselves and what will matter for increased productivity will be the degree of access to external (not local) markets available to them, which in the more distant areas is limited by infrastructure deficiencies.

The most detrimental dimension of the covariance of outcomes is the conversion of local adverse events into systemic risks at the level of the locality. This prevents

credit portfolio diversification and liquidity management for those intermediaries that only handle local operations (like a credit cooperative), and as such become extremely vulnerable to these local events that affect the totality of their portfolio. One single event can lead to the collapse of the organization.

Covariance also makes it impossible for community members to self-insure against locally systemic events, which means that local informal institutions (*e.g.*, extended families, savings groups, informal moneylenders, rotating savings and credit associations, and others), formed to share risk, can only insure participants against idiosyncratic events of the individual household-firm, but not against systemic events at the local level (Adams and Fitchett, 1992).

A scarcely acknowledged aspect of covariance lies in the limits it imposes on the expansion of joint liability and village banking credit technologies, in which the group members issue reciprocal guarantees, used to implicitly self-insure against idiosyncratic events, which affect one or a few members, but which lead to the collapse of the credit group in case of systemic risks that affect everyone (Gonzalez-Vega and Villafani-Ibarnegaray, 2011). This vulnerability to systemic adverse events (at the local or credit group level) has possibly influenced the difficulties encountered in adapting these microcredit technologies to financing agricultural innovation and investment.

A solution to the covariance challenge could be to develop financial intermediation systems anchored to a "headquarters" capable of diversifying risks, when it operates in broader areas (for example, at a national level), while achieving greater proximity (to exploit the informational and incentive advantages achieved through the direct contact with the client) by using "local" agents. These local agents could be branch networks, correspondent networks, different kinds of strategic partnerships, village banking programs. These systems would offer a solution to the dilemma between proximity advantages (operations at the local level) and opportunities for diversification (operations in larger, non-covariant spaces).

Nevertheless, this potential solution would encounter new challenges, given the high agency costs as well as the difficulties of coordination and monitoring of the participants in the system. The distance barrier between the intermediary and the client would be replaced by the distance between the headquarters and the agent. As the system expands and becomes more outstretched and complex (as distance increases, as the possibility of conflict between partners in the system rises, and as the complexity of transactions augments), it would become necessary to rely upon sophisticated and expensive coordination mechanisms and internal control tools.

Another possible solution would be to transfer systemic risk beyond the operational level of the financial intermediary or its agents. When the risk is systemic at the local level, local financial and insurance institutions (or the local agents in a network of service points) become unsustainable. A single adverse local shock can make unfeasible for these institutions the management of their loan portfolio and hinder the refund of deposits, unless their operations can be protected by some kind of insurance mechanism obtained beyond the local level. When this insurance option does not exists, floods, droughts and other systemic climate-related events limit the expansion of financial services in the rural areas of low-income countries.

Facing these risks, traditional crop insurance becomes too expensive for all of the parties involved, given the issues arising from asymmetric information (adverse

selection and moral hazard) – which also characterize the insurance market – and given the high costs associated to damage verification, due to the multiple circumstances that can influence the results of agricultural activities. Furthermore, if the insured amounts are small, while long distances separate the insured from the insurer, the operational and transaction costs for both sides end up being too high and usually prohibitive. The resulting failures and high costs lead to insurance market shortcomings, and both the majority of rural household-firms and financial intermediaries that cater to the market either do not have access to these instruments at all, or they would refuse using them under the terms and conditions available at the moment.

In the absence of adequate insurance instruments to secure their loan portfolio, lenders would prove to be reluctant to lend in localities or to clienteles exposed to such risks (a common adversity in the agricultural sector), when the probability of observing such systemic risks is high. Innovative index insurance practices have shown good promise in overcoming these obstacles, although there have been few practical applications, while several unresolved issues still remain when it comes to implementing them (Kazianga and Udry, 2006; Giné and Yang, 2009; Miranda y Gonzalez-Vega, 2011; Miranda and Farrin, 2012).

If index-based insurance were not necessarily an adequate instrument to manage risk at the farm level, and if the lack of traditional insurance methods were to persist (given the constraints that have to be overcome in their case), the expansion of innovation and agricultural investment would depend greatly on the rise of further innovations in risk-management instruments. In this respect, value chain development (as an agglomerating and risk-mitigating element, among others) offers promising options in a number of specific cases.

2.4 THE ROLE OF VALUE CHAINS IN AGRICULTURAL FINANCIAL MARKETS

There has been a lot of debate recently over the role that value chains play in fostering agricultural innovation and investment, as well as in facilitating the provision of financial services in rural contexts (Gonzalez-Vega *et al*., 2006). This section attempts to briefly review some of the dimensions of this debate. Among the tasks that modern value chain development accomplishes in promoting agricultural investment and innovation, it is possible to find, on the one side, opportunities for the producer to transfer risks to actors with better opportunities to mitigate them and, on the other side, changes in the producers' access to financial services.

These functions can be achieved, in part, as a result of the selection processes through which producers are incorporated into modern value chains. In fact, producers selected and retained by other actors within these chains possess some specific traits that are vital for the success of their common efforts, albeit quite hard to observe. Among these one can list a heterogeneous and frequently intangible endowments of traits such as specific skills, experience, adaptive capacity, ability to respond, innovative attitudes, habits and values. These are traits which also influence the demand for financial services (and, in particular, in determining the condition of creditworthiness), although financial intermediaries find them even more difficult to observe -due to their lack of proximity- in order to be able to distinguish and separate different risk profiles. The participation in modern value chains can be considered, then, as a *signal* of the presence of these intangible traits.

Furthermore, participants in modern value chains usually possess a stronger inclination towards risk taking, which makes them more predisposed towards investing and adopting new technologies. If they could rely on their access to institutional financing sources, they would become capable of accumulating the required physical capital. When they possess a greater predisposition towards learning, the offer of technical assistance from other links in the chain, as well as opportunities for imitation, can contribute towards both achieving productivity increases and better risk mitigating mechanisms. These circumstances improve the creditworthiness of these actors.

Different types of contracts (formal and informal), agreed upon with other value chain actors, contribute to alleviating the risks faced by the producer. Market risk is mitigated when there is a contract that offers a guaranteed market. Risks and challenges related to the producer's liquidity management are diminished when there is a strong expectation of continuity in the relationship. Expanding horizons allows for a more efficient production and marketing planning. The stability of income flows is guaranteed by contracts that mitigate price risk.

Non-financial services provided by different actors throughout the chain (technical assistance, technology transfer, human capital development, market information, commercial links, quality control mechanisms, certifications, managerial techniques, and others) mitigate production risks, minimize environmental risks, and reduce the chance of rejections or penalties at product delivery.

The debate on the role of value chains in financing producers could be described through three different visions. The traditional vision has acknowledged the possibility that some value chain actors (input suppliers, harvest buyers, processors) might finance the producer (sale on credit, advance payments on the harvest, direct loans against harvest receivables). On occasion the funding source is informal (itinerant harvest purchasers, local stockers) while in other cases it is actually a well-established organization, with its own assets (supermarkets, exporters, dairy chains, coffee mills, sugar mills, cigarette factories). These other actors possess informational advantages, due to their proximity to the producers, as well as incentive advantages, due to the important role of the producers' participation in the chain, which generates compatible incentives.

Having said that, these actors frequently do not issue credit in sufficient amounts or in adequate terms to maturity for investing in fixed capital assets, especially if they themselves are expanding, given that they have their own liquidity needs. When they do, they are usually linked to products with well-established national and international marketing mechanisms and can rely on strong market power. In any case, these are flows that are internal to the chain, in which the buying power available to a particular value chain actor is temporarily transferred to another actor within the same chain. This is, therefore, a zero-sum exercise, in which the resource availability for the chain as a whole does not change.

Another vision acknowledges that participating in the value chain either improves the producers' creditworthiness, allowing them to access loans from a formal financial institution, which were previously outside of their reach, or improves their bargaining power when it comes to negotiating the terms and conditions of their loans (Gonzalez-Vega *et al*., 2006). The financial intermediary has to deal with serious information and incentive issues, which are expensive to overcome. In contrast,

actors strategically situated within the value chain can collect "private" information, difficult to acquire for outsiders, but whose handling is a key part of the business of the anchor company. Furthermore, to guarantee the smooth functioning of their operations, these actors carry out a constant and detailed monitoring of the activities of those producers that provide them with raw materials.

By observing or verifying the existence of a relationship or explicit/implicit contract between the anchor company and a specific producer, the financial intermediary can assume this connection as a "signal" of the producer's ability and willingness to repay. This is an implicit "delegation" of the screening of creditworthy clients, to be undertaken by some actor within the chain that has the capacity and the incentive to do it well. In some cases, the value chain actor can offer to the financial institution an endorsement or guarantee, given the knowledge of the producer that it possesses. Although this last intervention creates a contingent liability for the anchor company, it preserves its liquidity. Furthermore, when the anchor company provides various technical services to the producers, which increase their productivity or allow them to manage risk better, this makes the producers' creditworthiness more attractive.

In contrast with the traditional vision, this is in fact a positive-sum exercise, in which the resource availability for the chain as a whole increases, since it attracts financial flows from external institutions to the value chain (such as in the case of formal financial institutions). Furthermore, the value chains provide the opportunity to establish different kinds of strategic partnerships with other actors (financial and non-financial service providers), which can improve access to financial intermediation services. Meanwhile, different producer organizations can, after overcoming the typical principal-agent issues, either play the role of an anchor company or serve as an intermediary in the relations of the producers with this company and with other value chain actors, improving their bargaining power and connectivity.

A third vision interprets the focus on value chains as a global focus on the evaluation of credit risk. Beyond the evaluation of the ability and willingness to repay of individual producers, and the consideration of potential systemic events deriving from nature or markets, this focus incorporates an evaluation *of the relations throughout the chain*: the degree of competition in the market, the quality of the services obtained, the nature and reliability of the relationships linking the producer with suppliers and buyers. The successful financial strategies in the agro-rural setting documented in the following sections are characterized by having adopted this third vision.

2.5 COMMON TRAITS OF RECENT INNOVATIONS

Numerous barriers hinder investment and innovation in the rural agricultural sector. An efficient provision of financial services could aid in overcoming many of these constraints. The provision of financial services in these environments faces, however, similar barriers, which results in vicious circles and poverty traps. Agricultural productivity keeps being low as a result of these parallel barriers, which contributes to the persistence of rural poverty (Bravo-Ureta y Pinheiro, 1993; Sherlund, Barrett and Adesina, 2002; Chavas, Petrie and Roth, 2005; Alpizar, 2007). Despite the challenges, a number of innovations in agricultural credit risk management have recently contributed towards overcoming these barriers. These innovations, several of which are described in this document, share a series of similar traits.

First, they all share a better appreciation of the importance of the value chain structure in facilitating the supply of credit: as a source of guidance to the institutions in the development of new products and financial services, in the solution to the information problems that are common in these markets, in the creation of compatible incentives for the fulfilment of financial contracts, in risk mitigation, and in the support that various value chain actors provide in the management of credit transactions (for example, in the withholding of loan payments or savings program quotas).

Second, the bulk of recent innovations provide a *comprehensive* vision in overcoming numerous simultaneous barriers. Indeed, given the greater complexity of the challenge, a multidimensional solution is proposed. For the most part, there is an emphasis on the need to ensure that an adequate combination of various financial services is provided (not just credit and that, in particular, insurance is available). Also, most of them consider it important that effective technical assistance and adequate access to input and product markets exists. This renewed vision does not consider technical assistance, however, as a tool for state planning and directed credit, but rather as an instrument to mitigate credit risk on the part of the financial intermediaries. In this sense, promoting access to appropriate technical assistance has become an element of credit portfolio management, which is in the interest of the lender and the lender should have an incentive to cover the cost of providing it, at least partially. Furthermore, those financial entities with a double bottom line of outreach and sustainability view technical assistance as a necessary ingredient to ensure that a meaningful impact is achieved, due to sustainable increments in yields and income.

There are important differences, nevertheless, in the approaches used to combine these three dimensions (finance, technical assistance, and access to markets), whether through the simultaneous provision of the three on the part of the financial entity itself (which requires solving some complications regarding management and incentives), or, preferably, though the development of strategic partnerships with entities specialized in each type of service.

Third, risk management is becoming increasingly more sophisticated and dependent on computational skills. This is a professional specialization, which makes use of risk maps, geo-referencing of clients, statistical analysis of yields and price series, as well as the use of non-traditional guarantees. Nevertheless, this highly professional approach to risk management is not disconnected from the nurturing of a long-term and personalized relationship with the client, which keeps being the foundation for credit contracts and in the creation of compatible incentives.

Fourth, greater attention is given to the higher incidence of systemic risk and to the environmental consequences of the clients' activities as well as those of the institution itself. Innovative instruments have thus been developed to evaluate and monitor these environmental impacts and to mitigate systemic risk. The latter represents the most significant barrier (still not adequately overcome) that hinders the chances of making a qualitative and quantitative leap forward in the role that financial services can play in agricultural investment and innovation.

Chapter 3

Financial innovations and inclusive investments for agricultural development in Viet Nam

Sauli Hurri, Quang Nguyen and *Emilio Hernández*

3.1 INTRODUCTION

Over 70 percent of the Vietnamese population live in farming households, and 90 percent of the Vietnamese poor live in rural areas, where agriculture is the dominant livelihood. Among the rural poor households, about 50 percent of direct income derives from small-scale producer agriculture or from wage labour in agriculture (World Bank, 2014a; Phi *et al.*, 2004; Tuan, 2011). Such income is often insecure due to the weak productivity and profitability in those local agricultural markets to which small-scale producer families currently have access. Higher rent agriculture is largely inaccessible to these households, and so they usually either produce to support their own subsistence or to trade whatever surplus they have in local low-profit markets. These limited conditions slow down the process of equitable economic growth and poverty reduction in the country (Coxhead *et al*., 2010).

To improve their productivity and income, small-scale producer families and agricultural enterprises require capital investments in their production systems. In addition, due to high input costs and the seasonal nature of agriculture, all stakeholders require access to short- and medium-term working capital to cover their costs during growing and processing periods (Gittinger, 1982). In low- and middle-income countries, however, small-scale agricultural producers have difficulty in accessing formal financing to finance their required investments. This difficulty derives from production risks such as disease and climate, or risks related to market volatility (Weber and Musshoff, 2012; IFAD, 2011). Currently in Viet Nam, agricultural production and investment takes place with financial services that are for the most part informal, sourced from local lenders or from stakeholders in the production and trading chains, and such mechanisms have varying influences on the economic and social development of the localities (Coxhead *et al*., 2010; Tam, 2011).

How do Vietnamese small-scale producer families and agricultural entrepreneurs finance their investments? Under what conditions can farmers and enterprises access formal credit? What are the characteristics of informal sources of finance available? Overall, how are financial resources identified and mobilized for agricultural value chains, and how are risks managed by relevant stakeholders and financial service providers? This study explores these questions in depth based on observations made by researching the ginger value chain in Back Kan province in northern Viet Nam. This value chain is an example of several agricultural products where value

chain actors and domestic investors are generating innovations to seize growing agribusiness opportunities. The existing production and investment mechanisms are studied, leading to an analysis of financial risk management instruments used by private value chain actors and private or public financial institutions in Viet Nam.

During primary data collection aabout 100 households from various districts and communes were reached. Eleven financial service providers, fourteen government agencies, several private enterprises, civil society representatives and grassroots associations were met for semi-structured interviews.

The first section of the paper introduces the overall agricultural development status and related government strategies in Viet Nam. The second section explores the case study province of Bac Kan. Sections three and four describe the production and financing patterns in the ginger value chain under analysis. The fifth section maps the risks faced by value chain stakeholders. Finally, the sixth section concludes the study by analysing financial risk management strategies for increased resilience and investment levels in agriculture.

3.2 OVERALL AGRICULTURAL DEVELOPMENT IN VIET NAM

Rural development policies and strategies

It has been 30 years since the economic reform (*Doi Moi*) of 1986, which focused on ensuring a path of economic growth and poverty reduction. Viet Nam has successfully seen three decades of sustained growth that has brought a sharp decline in poverty (Coxhead. *et al*., 2010). Viet Nam's poverty rate fell from 58 percent in the early 1990s to below 10 percent in 2013 (World Bank, 2014a). Agricultural GDP has had an average annual growth rate of 3.1 percent since 2001 and Viet Nam has been able to shift from a subsistence-based economy to one with an significant export orientation, while food security levels have improved (Coxhead *et al*., 2010; Tuan, 2011; Rudengren *et al*., 2012). Many products, such as coffee, rubber, black pepper, cashew nut, catfish and shrimp, have gradually become more important in the international market.

Throughout the Doi Moi process, government policies have had a tremendous influence on agricultural growth, and hence on rural development (Tuan, 2011; World Bank, 2014a). In this period, formalization of land use and de-collectivization policies have shown to be critical to enable agricultural growth (Son, 2009; Tuan, 2011; Rudengren *et al*., 2012). The land use reform started by Resolution 10 in 1988 was highly significant, whereby large areas of agricultural land were revoked from ineffective state cooperatives and enterprises and allocated to rural households for long-term cultivation. At later stages, more comprehensive land policies – including the Law on Forest Protection and Development in 1991 (revised in 2004), and the Land Law in 1993 (revised in 2003 and 2013) – have extended the initial successes of Resolution 10 to widen its scope to include forestlands and various stakeholders such as private enterprises and Vietnamese living overseas. Land policies ensured the essential rights to *transfer*, *donate*, *lease*, *mortgage* and *collateralize* land, hence encouraging people to invest (Sunderlin and Ba, 2005).

In parallel with land use reform, de-collectivization policies laid the foundation for rapid rural development (Coxhead *et al*., 2010; World Bank, 2014a). The de-collectivization policies reduced the overwhelming role of the state and expanded the role of private sector in economic development (World Bank, 2014a). The role of the private sector was officially recognized in 1990 in the Private Enterprise Law.

This Law was revised in January 2000, focusing more on simplification of business registration and licensing procedures, which sharply reduced transaction costs for businesses and helped to promote greater confidence, in particular among domestic investors, who dominate agricultural investments (Coxhead *et al*., 2010; World Bank, 2014a). Further supporting the expansion of the private sector in rural development, the 2003 Cooperative Law paved way for operation of private and business cooperatives, in addition to the non-profit, government subsidy cooperatives.

Despite remarkable progress over the last decades, the faltering economic growth in recent years indicates a loss of momentum in reform (World Bank, 2014a). Various instruments and policies that applied to Viet Nam's emerging economy in the 1990s are no longer relevant to current conditions (Coxhead *et al*., 2010). There is substantial scope for policy reform for the Viet Nam agricultural sector in order to maintain its dynamism and profitability (Coxhead *et al*., 2010). Apart from the well known needs for improved technical innovations, productive infrastructure, extension services, and skill acquisition by farmers, later studies have shown that there is a great deal of room for efficiency improvement in access to markets and financing (Coxhead *et al*., 2010; Tuan, 2011). Although the de-collectivization process is well underway, state-owned enterprises still dominate both input supply and the post-harvest processing and marketing of many agricultural products. Efforts to find ways to enhance their efficiencies continue, so that farmers in general can have access to better and cheaper support services (Son, 2009; Coxhead *et al*., 2010).

The above challenges were addressed in the recent 2010–2020 strategy for agricultural and rural development: the *Tam Nong* resolution (Resolution No. 26/2008/NQ-CP on agriculture, farmers and rural areas). This strategy lays the groundwork for a set of policies and programmes to encourage efficiency improvements, productivity growth and enhanced competitiveness in agriculture, a more productive and higher-skilled rural workforce, and other social and environmental goals consistent with a higher level of wellbeing in the rural population (Rudengren *et al*., 2012: 60).

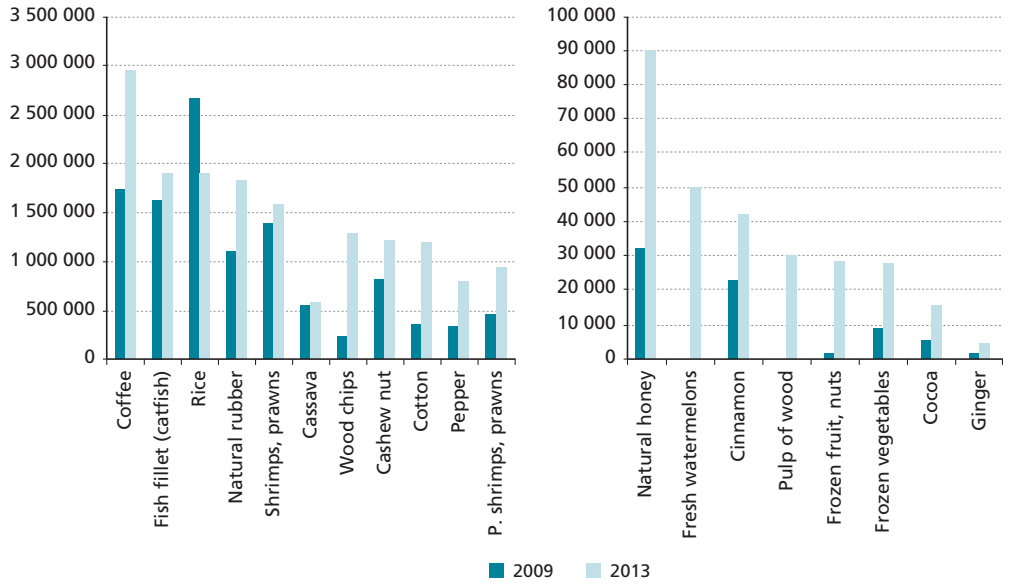
Export trends for Viet Nam's agricultural commodities

Viet Nam's most important agricultural export commodities in 2009 and 2013 are shown in Figure 10, and include coffee, with a total export value of US$2.95 billion, catfish fillets with US$1.90 billion and rice with US$1.90 billion. Since 2009, the trend in export values is increasing in all these key commodities except for rice. On the right of Figure 10, a selection of small scale export commodities is shown which are emerging in the country. Export value for these commodities are high.

Agricultural production overall comes mainly from small-scale producer families. In Viet Nam, there are more than 10 million small farms, and average farm size is about 0.2 ha (Vu, Duc and Waibel, 2012; Thapa and Gaiha, 2014). In the past decades, the Viet Nam land reforms have enabled small-scale producer land ownership, which has resulted in a rise in agricultural productivity and increases in rural incomes. This growth, however, is now slowing down, mainly due to persistent fragmentation of production zones, limited human and physical capital accumulation, ineffective agricultural extension services and lack of financial services (Kompas *et al*., 2009).

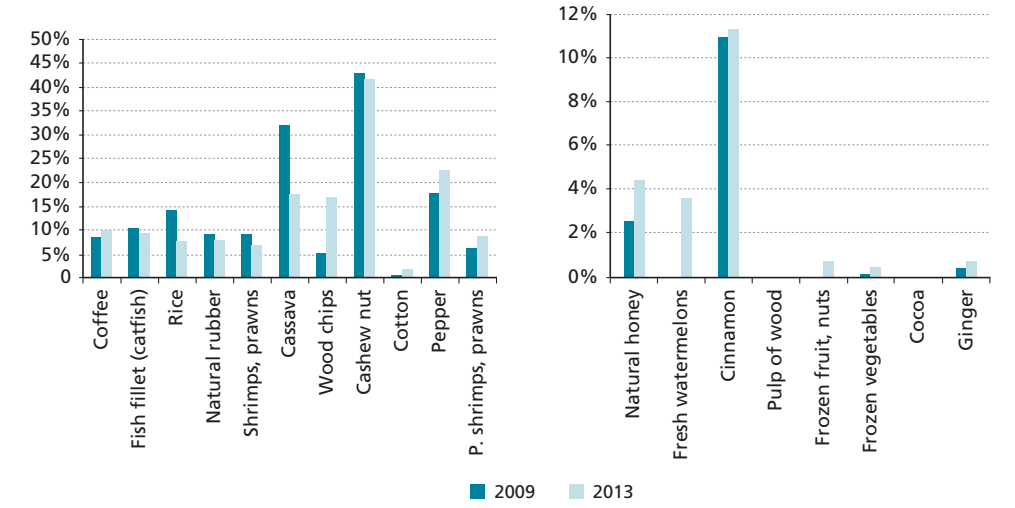
When comparing growth rates of world export value and Viet Nam's exports during the 2009–2013 period, some strengths and weaknesses of the Vietnamese agricultural sector can be noted. In the group of more established commodities,

FIGURE 10
Agricultural export volumes in Viet Nam



Source: data from ITC Trademap 2015; graph by authors.

FIGURE 11
Viet Nam's shares in world agricultural markets



Source: data from ITC Trademap 2015; graph by authors.

Viet Nam has grown its market share most rapidly in trading wood chips (up by 211 percent), cotton (up by 105 percent), and natural honey (up by 71 percent).

Among emerging small commodities, in view of global market growth and newly increasing Vietnamese market shares, a potential opportunity is visible in commodities such as watermelon, frozen fruits, frozen vegetables and ginger, where the country's market share in the world has been increasing. Some instability is shown in Viet Nam's exports of tea and cassava, where the market was growing until 2012 and then dropped significantly in 2013. For rice production, Viet Nam has lost export shares yearly since 2010. Figure 11 illustrates Viet Nam shares in global trade volumes.

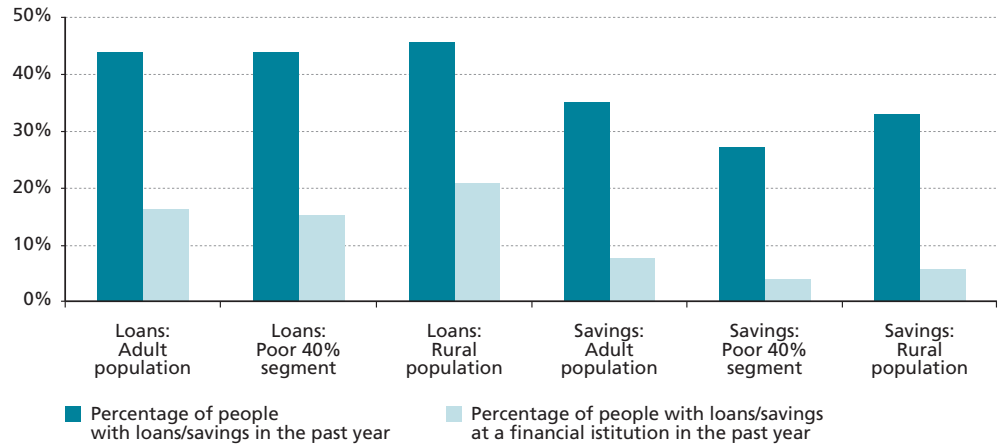
3.3 RURAL INVESTMENT AND ACCESS TO FINANCE IN VIET NAM

The outreach and depth of the Vietnamese financial sector

To enable continued improvement in Vietnamese agricultural production and rural incomes, further increases in productivity and product quality are becoming increasingly necessary (Coxhead *et al*., 2010; World Bank, 2014a). In order to achieve this, increased investment is required by small-scale producer farmers and enterprises involved in value chains: capital investment for the upgrade of production and processing facilities, and working capital for improved and increased production inputs (Gittinger, 1982).

Rural households in Viet Nam have difficulty in accessing formal financial services to manage their diverse livelihoods and investment needs. Figure 12 compares the percentage of the adult population in Viet Nam that made use of savings and credit services during 2014 from any source, compared with the percentage of the same population that received such financial services from formal financial

FIGURE 12
Percentage of the adult population (including the 40 percent poorest and the rural population) that made use of credit and savings services during 2014



Source: Global Findex Database.

institutions. The same comparison is made for the rural population and the 40 percent poorest segment of the population. The difference in size between columns illustrates the size of informal financial markets in the country.

The financial system of Viet Nam is relatively large, with assets worth about 200 percent of GDP in 2011, dominated by a banking sector with assets worth 183 percent of GDP. The public sector is still very much involved in banking, with five state-owned commercial banks accounting for about 40 percent of all assets, and through equity participation in many of the 34 joint-stock banks. Overall credit risks of the banking sector in Viet Nam are high, with the non-performing loan ratio as high as 12 percent at the end of 2012, much of which is accounted for by the state-owned banks with poor performing credit portfolios to large state-owned enterprises. The predominant credit methodology relies on collateral, with an average collateral-to-loan ratio of 218 percent (World Bank, 2014b). Despite its size, the formal banking sector has limited outreach and depth, and a high degree of concentration within the wealthier and urban population. The informal financial sector is much larger.

The main source of formal financial services for small-scale producers is through the heavily subsidized Viet Nam Social Policy Bank (VSPB), which provides loans with reduced interest rates to poor households with no collateral requirement (World Bank, 2014b). These loans, however, are designed as social policy programmes for the poorest segments of the population, and loan products are reported to be too small for agricultural investment. Access to bank lending outside the social policy loans is constrained by the collateral requirements of the banks and households' limited capital. (Tam, 2011).

Rural financial markets in the Bac Kan province

Bac Kan province is located in northeast Viet Nam. It shares borders with the provinces of Lang Son, Cao Bang, Tuyen Quang and Thai Nguyen. The province comprises one urban municipality and seven districts. The total population is 350 000. The total land area of the province is 486 841 ha, of which forest land is 301 722 ha, and agricultural land is 30 509 ha. Out of 301 722 ha of forest land, 170 000 ha is considered productive forest land suitable for agro-forestry production.

There are 10 ethnic groups in Bac Kan, with the Tay group in the majority (56.4 percent). Mong, Dao, Nung and Tay are among the ethnic minority groups with the highest poverty rate. Poverty in Bac Kan is due to poor infrastructure and relative lack of access; the mountainous karst topography; low per capita land access, especially for irrigated agriculture; limited education level; low productivity of food crops; and few opportunities for commodity production and income diversification (3PAD, 2014).

The case studies conducted in Bac Kan show that some farmers and most enterprises in the provinces have limited access to formal financial services and credit, thus limiting opportunities for investment and overall livelihood development. For agricultural credit needs, informal financing arrangements between the value chain stakeholders are common. The stakeholders that are in a stronger financial position would often offer credit to their business partners, thus enabling continued and expanded production and income for all stakeholders. As per Reardon *et al.* (2012) and Miller and Jones (2010), financing through transactions between value chain

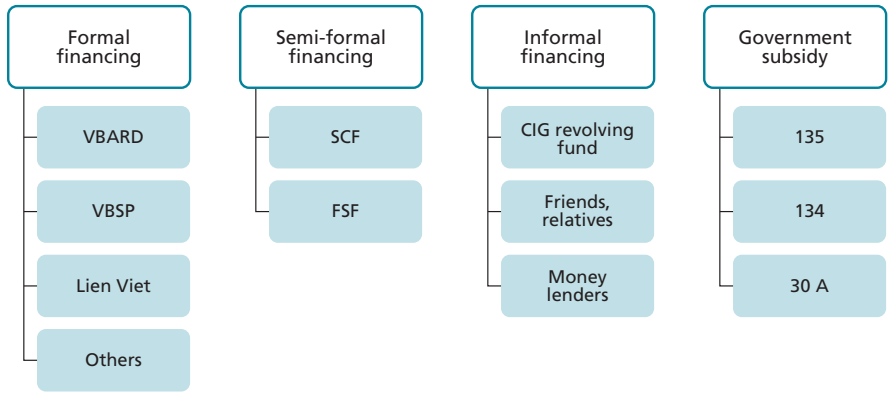
actors is defined as internal value chain finance, while external financing refers to accessing financial services from actors that do not form part of the value chain. Typically, internal value chain financing supplements other sources of financing that the actors can access. This section describes the different sources of financial services present in Bac Kan and access to them by small-scale producer families and agricultural enterprises.

Figure 13 maps the different sources of finance for small-scale producer families in the Bac Kan district. These sources can be divided into three categories: formal, semi-formal and informal. Furthermore, the Government also provides various subsidies to agricultural production, processing and trading.

Enterprises in Viet Nam report limited access to finance as their major constraint to growth, and for food processing industries this rate is even higher, with 29 percent of enterprises pointing out access to finance as the biggest individual obstacle (World Bank, 2009). In Bac Kan province, the identified opportunities for formal external financing can be divided into three: commercial bank loans; policy loans; and matching grants. In addition to these, informal financing is available to most enterprises, mainly loans from other stakeholders from within the value chains. Figure 14 shows the different sources of financing for small and medium enterprises in Bac Kan.

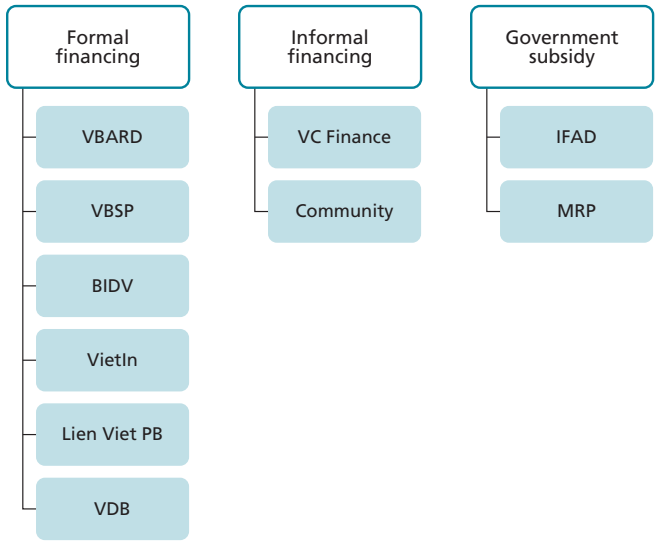
Among formal financial institutions, the Viet Nam Bank for Agricultural and Rural Development (VBARD) is the largest credit provider for farmers and agricultural enterprises nationwide (Tam, 2011), with overall 56.34 percent of the rural financial market. In Bac Kan, its market share is about the same. Although VBARD is a commercial bank with a for-profit orientation, about 60 percent of its capital is owned by the Government. Apart from commercial banking, VBARD also imple-

FIGURE 13
Farmer's access to finance in Kao Bang and Bac Kan



Note: VBARD = Viet Nam Bank for Agricultural Development; VBSP = Viet Nam Bank for Social Policy; Lien Viet = Lien Viet Post Bank; SCF = Women's Union Saving and Credit Fund; FSF = Farmer Union Farmer Support Fund; CIG = Common Interest Group; 135 = Programme 135 on public infrastructure and agricultural production inputs for poor communes; 134 = Programme 134 on public infrastructure and agricultural production inputs for poor communes; and 30A = Programme on agricultural production inputs for the 62 poorest districts nationwide.
Source: adapted from Tam, 2011.

FIGURE 14
Rural enterprise access to finance in Cao Bang and Bac Kan



Note: BIDV = Bank for Investment and Development Viet Nam; VietIn = Viet Nam Industrial Bank; VC = Value Chain; IFAD = International Fund for Agricultural Development; MRP = Mountain Rural Programme; VDB-Viet Nam Development Bank.
Source: adapted from Tam, 2011.

ments State Bank policies for rural development, such as Decision 2213/QD-TTg of 2009 and Decree 41/ND-CP of 2010 for preferential rural credit conditions. Following these policies, VBARD offers input loans to farmers to buy fertilizers, pesticides and construction materials, with a maximum loan period of 12 months and a 4 percent yearly interest rate. However, according to Tam (2011), in practice many farmers have no access to such packages due to complicated and costly bank procedures and lack of information.

For enterprises, the bank follows practices of commercial banking in its lending and risk management, including customer, capital and business plan assessments, collateral requirements and conditions of repayment. At the end of 2014, Bac Kan VBARD had 200 enterprise clients, including about 50 agribusinesses, and an estimated VND 300 billion of outstanding loans in the agricultural sector. This makes VBARD the most experienced bank when serving agriculture, and has accumulated significant knowledge in agribusiness relative to other banks, together with one of the widest branch networks, including branch offices in each of Bac Kan's districts.

The Viet Nam Social Policy Bank (VBSP) is a State owned non-profit entity, focusing on subsidized social policy lending to poor households and disadvantaged groups. Poor and near-poor farmers borrow from this bank up to VND 30 million (about US$1 450 million) for a loan period of up to 3 years with interest rate of 0.65 percent per month without collateral (Tam, 2011). Most of the loans are

invested in livestock, especially cattle raising, since people in the rural areas still consider cattle as a valuable asset providing the households both a safe investment and improved means for land preparation. In addition to household loans, VBSP also provides credits to a few agribusinesses that are in need of small loans and are doing business with poorer households. Since the bank's activities are highly subsidized and conditions are favourable, clients rarely complain about lending procedures; however, the bank's outreach to the target population is limited and the percentage of non-performing loans is rising, while the subsidy programme is a heavy fiscal burden on the government (Tam, 2011; World Bank, 2014b).

Next to VBARD, the other major commercial bank in the province is the Bank for Investment and Development (BIDV), which serves mainly large enterprises and usually outside the agricultural sector. Some of the largest scale agricultural companies can access BIDV services on commercial terms. Another significant commercial bank with presence in the district is VietIn Bank, with a focus on urban households and service activities. Both BIDV and VietIn Bank are open to agribusiness with the standard collateral conditions. However, these two commercial banks have their branches only in the province capital and their experience of rural economies is limited.

A recent addition to formal financial institutions is the Lien Viet Post Bank, established in 2008. Its presence is growing quickly in rural areas, including in Bac Kan. It has a specific focus on agricultural development, particularly on small-scale retail banking targeting rural households. The Lien Viet was established through the privatization of commune and district level postal savings services. Thus, the bank inherited a broad network of transaction offices and a large number of savings clients in rural areas. At the end of 2014, the bank had 620 000 borrowers, most of whom were farmers. As observed in Bac Kan, the bank was offering competitive yearly interest rates of around 8 to 9 percent, but the bank could not compete with the subsidized loans from the state-owned banks VBARD and VBSP.

All of the formal financial institutions operating in Bac Kan are encouraged to invest in the rural sector by government policies that include a 1 percent per annum interest rate subsidy for all of the credit portfolio in rural areas. The incentive policies leave risk management and client assessment fully as the banks' responsibility, and in the banks' experience, in most cases the creditworthiness of most of the rural clientele is considered too low given that the banks' financial technology relies heavily on collateral, which in turn determines the bank's provisioning requirements as per the financial regulation imposed by the central bank.

In Bac Kan there are several sources of what are considered semi-formal financial services. Small-scale producer families in particular have access to micro-credit services by the Child Fund NGO, and the Women's Union Savings and Credit Fund (SCF), and the Farmers' Union Farmer Support Fund.[3] Among these, the SCF, established in 2011 and implemented by Women's Union, is the one with most

[3] Farmer Support Fund is managed by Farmer Union, operated via grass root Farmer Union networks at village level. Lending mechanism, interest rates, loan terms, and loan management system are similar to those by the below described Women's Union SCF. The fund is still small, however. See further detailin section 3.3.

outreach in the province. This fund has received grant funds from the International Fund for Agricultural Development (IFAD) and has shown high sustainability, with 97 percent of loans performing well (Ruotsi, 2014). In order to access the SCF, farmers and especially women, organize into savings and credit groups. Each member within the groups needs to save an agreed monthly amount as assurance of their commitment and the SCF will correspondingly provide loans for group activities at an interest rate of 0.65 percent per month. The group jointly manages the loan, and provides loans to individual group members on a rotating basis.

Informal financing in Bac Kan is very common, both for small-scale producer families and for small and medium agro-enterprises. A common source is through common interest groups (CIGs) that community members have established to support their crop and livestock activities. In addition to sharing production and marketing knowledge, these groups form revolving funds with their own savings in order to provide short-term credit to members that need it.

Friends and family are also an important source of loans that are sometimes used for certain agricultural-related activities, such as purchasing seed and pesticides. But for the most part loans from these sources are meant for general households needs during emergencies. Moneylenders are also active, including small-scale shopkeepers, traders, input suppliers, and some of the value chain lead firms, which lend to farmers on highly varying terms.

For agro-enterprises, supplemental to formal financing by banks and development funds, a major share of the investments required are raised from informal sources, mainly from commercial partners from within the value chains and from surrounding communities. These methods are discussed in detail in the case study presented in the following sections.

Various government subsidy programmes are available for rural and agricultural development in Viet Nam's mountainous and poor provinces such as Bac Kan. For farmers, the major sources of support include Programme 134 for house construction materials for the poor,[4] Programme 135 for public infrastructure and agricultural production inputs for poor communes, Decision 147[5] for productive forest development inputs, and Programme 30-A for agricultural production inputs in the 62 poorest districts nationwide.[6] In the context of Bac Kan's ginger value chain, farmers benefit most significantly from the 30-A programme. It provides farmers with a 40-100 percent subsidy on seed and fertilizer, interest-free fertilizer loans, and interest rate discount of 50 percent from commercial loans for agricultural investment.

For enterprise investments, where high development impact is visible, the Government of Viet Nam sometimes supports investments through direct financial support. In the province there are examples of government non-returnable grants to private enterprises, with a requirement of continued business activity with vulnerable farmer groups in the rural areas. A specific Agribusiness Promotion Investment Fund (APIF) has been established to increase private sector investment

[4] http://web.cema.gov.vn/modules.php?name=News&op=Print&mid=1935
[5] Decision 147/2007/QD-TTg dated September 10, 2007
[6] http://giamngheo.molisa.gov.vn/vn/News.aspx?CateID=66

in agricultural development.[7] Nine companies investing in Bac Kan (active in ginger, Irish potato, poultry, cassava/maize, rabbit, and chili processing and trade) currently have access to the fund, with total investment value of VND 76 billion, including 66 percent enterprise contributions. About 6 000 farmer households have signed farming contracts with APIF co-financed enterprises, and according to project evaluations the farmers have increased their incomes significantly due to the supported arrangement.[8]

3.4 THE GINGER VALUE CHAIN FINANCE MODEL ESTABLISHED BY MINH BE

The global and national ginger market

The global ginger market has grown rapidly during the last ten years. The value of traded volume globally was US$132 million in 2003, and grew to US$648 million in 2013. During this same period, Vietnamese ginger exports increased from US$438 000 to US$4.5 million. As can be seen from the graphs in Figure 15, Vietnamese ginger exports have been growing alongside the value of global trade; however, Viet Nam's

FIGURE 15
Value of ginger exports from Viet Nam and the world (in US$ millions)

Source: ITC Trade Map 2/2015.

[7] APIF is a part of International Fund For Agricultural Development (IFAD) project Pro-Poor Partnership for Agroforestry Development 3PAD (2009–2015) in Bac Kan province (see http://backanifad.com)

[8] See more: IFAD Viet Nam 2014 3PAD Supervision Mission Report.

exports still represent only a small share of world ginger trade. The main importers include Japan, United States of America and the EU countries. For Viet Nam, the main markets are Japan and the Netherlands (ITC Trade Map 2015).

The Vietnamese production and export of ginger stagnated during 2012–2013 due to a drop in world price. In 2014 and early 2015, market prices increased dramatically, which is very likely to stimulate production in Viet Nam. Next to requirements in farm technology improvement, price fluctuation is a significant factor in the development of the industry. The lowest reported raw ginger prices in 2011 were about US$0.15/kg, while peak price in 2014 was US$3.75/kg.

Ginger commodity production in Bac Kan

Ginger as a commercial value chain that emerged in the disctrict only about 20 years ago and has seen an important rise in production and trade in the last 10 years when a prominent local trader called Minh Be, whose small company has been monitoring local and regional agricultural markets for over two decades, saw the opportunity to produce and trade ginger for the growing demand from Hanoi. Soon, the company dedicated itself exclusively to ginger trading. The enterprise promoted ginger production among local farmers as it established trade relations with small and medium traders in Hanoi and also an export enterprise called Hai Duong Export Company, that exports ginger to China.

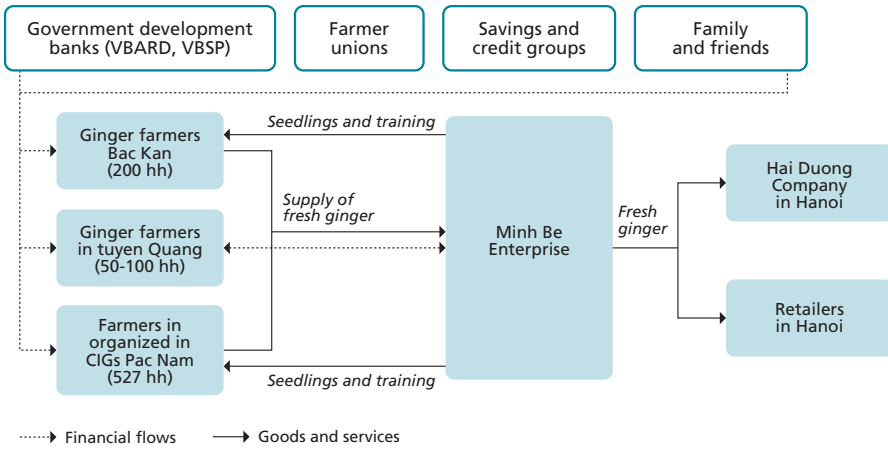
As documented in previous sections, the access that small-scale producer families in Bac Kan had to larger and longer-term agricultural loans, as well as savings services was particularly low, given problems related to limited outreach and capital from public banks and programmes, complex application processes that increased the farmer's transaction costs, and the inadequacy of informal financial services to respond to agricultural household needs.

In this context, Minh Be company began developing an internal value chain finance model that complemented the limited financial and other support services to which small-scale producer's had access. The model of financial service provision for ginger growing farming households and Minh Be is illustrated in Figure 16.

Minh Be company was able to use part of its capital to provide loans for several unsatisfied client needs, like loans for the purchase of ginger seeds, and working capital loans for ginger-related activities such as land preparation and harvesting. As the number of farmers with stable commercial relations with Minh Be grew, the company began to take on the role of a true financial intermediator, by receiving the savings from farming households with a surplus as an interest bearing loan, which the company could then use to provide loans to those deficit farming households that needed it. The main purpose behind Minh Be providing these financial services is to improve trust, and stabilize the business relationship among all actors.

In addition to financial services, Minh Be provides seedlings and extension services to the small-scale producers with whom it works. This need arises given the scarcity of seed of the cultivars preferred by the market in Hanoi and China. In addition, government extension services have not developed technical support programmes for ginger, and the experience of public extension officers with this particular crop is very limited. Minh Be is able to source seedlings from the most experienced farmers in the district, and then sells them to those farmers that need that cultivar to meet Minh Be product requirements. Given its long experience in

FIGURE 16
The value chain model developed by small-scale producers and Minh Be, and existing financial service providers



Note: hh = number of households engaged.
Source: authors' elaboration.

the ginger business, Minh Be has accumulated a lot of expertise on agricultural good practices for the crop.

The internal value chain model developed had a scale limit given the capital constraints faced by both Minh Be and the group of farmers with whom it engaged. A recent expansion has taken place by leveraging through a new government programme aiming to support the capacity of small and medium agribusinesses. This is the 3PAD-IFAD programme. Further details on the financing model and up-scaling efforts are described below.

Minh Be trading and processing enterprise

Minh Be enterprise started its ginger business in 1992. At that time, it was still a small trader buying limited amounts of ginger, and selling within the Bac Kan province and in Hanoi. The business of Minh Be enterprise became larger from 2004, when the enterprise established constant trade relationship with some large buyers in Hanoi, especially the Hai Duong Export Company. Since the start of its ginger business, Minh Be enterprise has become specialized in collection of raw ginger, cleaning and packaging of the commodity, and trading through two main market channels: the majority is sold to Hai Duong Export Company in Hanoi city (to be exported to other countries via Hai Phong Port); and a smaller part is sold to small-scale domestic traders, also in Hanoi. Minh Be is a family enterprise with all five of the family members involved in the management of the enterprise. At the implementation level, the enterprise employs one full-time accountant and several part-time staff for collection, transportation, cleaning and packaging ginger.

The enterprise has a working capital of about 4 billion VND Dong (equivalent to US$190 000) and fixed assetsof VND 5 billion (equivalent to US$245 000). In 2014, the enterprise built a new warehouse and purchased new equipment (1 refrigeration room, 1 lifting truck, 1 truck) to enable increased trading volumes. The majority of this investment (about US$155 000) was financed through a matching grant from the 3PAD-IFAD programme.

In 2013, Minh Be enterprise purchased, sorted, packaged and sold 3000 ton of ginger, of which 2000 ton were produced by Bac Kan farmers, 500 ton by Pac Nam farmers and 500 ton by farmers in the neighbouring province of Tuyen Quang. There are two types of ginger products that the enterprise purchased: young ginger (700 ton) and old ginger (2300 ton). The farm-gate prices in 2013 were US$0.85/ kg for young and US$1.05/kg for old ginger. According to the enterprise, market demand is stable and far greater than what the enterprise can currently satisfy. However, the price has fluctuated significantly, between US$0.2/kg and US$1.5/kg. The continuously increasing demand for ginger is the main reason why the enterprise has invested in the new warehouse and equipment, while continuing to expand its network with ginger growers. By upgrading its facility, Minh Be has now the capacity to increase its trade to 5000 ton/yr. Furthermore, with the installed refrigeration room, the enterprise can store ginger for longer periods, thus allowing flexibility in purchase and sale of ginger to take advantage of price fluctuations.

Primary producers

During the last two decades, Minh Be enterprise has enlarged its supplier network in Bac Kan and neighbouring provinces. Currently, the enterprise has a working relationship with three distinct supplier groups. The first group, with the longest business relationship to Minh Be, is the ginger growers in Tan Son commune, which is located adjacent to the enterprise, in Bac Kan province. This group comprises about 200 households planting ginger, and supplying Minh Be enterprise since 1992. This group has the most experience in ginger growing. Their skills in planting, tending and harvesting techniques have improved with long experience in growing this commodity. Since this group is close to the Minh Be base, the enterprise provides them with significant production and marketing advantages. Often, information about production and prices is directly exchanged between the growers and the enterprise, and in addition some forms of trade financing have been established. The enterprise can advance seedlings, fertilizer or cash to growers in need. Similarly, the growers can also lend money to the enterprise with an interest rate reflecting commercial markets, which the enterprise uses to make cash loans to other producers in need of credit.

The second group is located in Pac Nam district which is about 80 km away from the enterprise. The trade relationship between this group and Minh Be became established in 2012, and represented an increase in scale of operations for the company. The small-scale producer group comprises 527 households belonging to 40 CIGs in 6 communes. The ginger trade with this group is a result of a matching grant provided to the Minh Be by the Bac Kan APIF fund, which is part of the 3PAD-IFAD project. According to the grant conditions, a package of US$200 000 was provided to the enterprise for upgrading the enterprise's facilities and equipment, against the enterprise's commitment to: (1) introduce the ginger value chain to Pac Nam district;

(2) provide technical assistance to farmers to enhance their growing and tending practices; and (3) sign contracts with the ginger farmer groups to purchase their produce.[9] In this group, 259 households were poor or near poor by the national poverty line assessment, and their input seedling costs were 100 percent subsidized by the 3PAD project in the first plantation year (2012), and 50 percent in the second year (2013). Minh Be started buying ginger from growers in Pac Nam at the end of 2012.

The third group with a trading relationship with the Minh Be enterprise were the ginger growers in the adjacent province, Tuyen Quang. Minh Be had been trading with this group for about 10 years, after the company faced an increase in market demand for ginger. There are no binding commitments in the trading between Minh Be and these farmers,[10] which implies those credit and savings services provided by the company do not apply for the group. Minh Be visits the areas for purchase of ginger from any farmer that has surplus available, each time depending on market demand. Farmers also have no commitments to Minh Be, but sell to any available traders offering the best price.

End markets

Minh Be's two main trading partners are the Hai Duong Export Company (2900 ton), and small-scale traders in Hanoi (100 ton). The Hai Duong Export Company exports ginger to other countries, including China and Japan, via Hai Phong port. Most is exported to China. The price at Minh Be enterprise's farmgate is US$1.05/kg for young ginger and US$1.25/kg for old ginger. Minh Be does not need to cover transport costs as Hai Duong Company sends a truck to collect the commodity at the enterprise. Minh Be only needs to prepare packages of cleaned ginger and load them on to the company truck. Minh Be receives payment via bank transfer after the truck has arrived in Hanoi, which is a day or two later.

For the small-scale traders in Hanoi, Minh Be packages ginger into small bags and loads them into the Bac Kan – Hanoi bus, to be picked up by the traders in Hanoi. Although Minh Be enterprise is usually paid via bank transfer, it only arrives about one or two months later, when the traders have sold the ginger load. The selling price is similar to the price for for the Hai Duong company. However Minh Be needs to cover the transportation costs via bus which is about US$15/ton of ginger. The small-scale traders sell the ginger in Hanoi markets for consumption by individual households.

Supply of agricultural financial services in Bac Kan

Through interviews and discussions with various actors involved directly or indirectly in the ginger value chain, it was found that the financing mechanism for

[9] At the time of the interview in December 2014, the third condition regarding formalizing contracts was not yet implemented. However, the contract terms were being implemented, whereby Minh Be had bought most of the new groups' ginger for the previous two seasons and showed high commitment to continue the business relationship.

[10] Reasons for the different treatment for this group, as indicated by the enterprise, are: (1) the group is geographically distant from the enterprise; and (2) there are a lot of ginger traders in this province that compete for the farmers' product. Farmers and Minh Be therefore prefer to choose non-binding trade relation for the provision of loans and savings services.

commodity production is very dynamic. It involves multiple sources of financing, including formal financial institutions, semi-formal financial institutions, enterprises, individuals and government agencies. In this section the functioning of Bac Kan ginger value chain finances is examined.

Key challenges faced by small-scale producer families and small and medium agribusinesses for long-term agricultural investment

In recent years, ginger has become a high value product due to increased global market demand (Valenzuela, 2011). Ginger growers around the world benefit significantly from the growth trend (Camacho and Brescia, 2009; Valenzuela, 2011). However, increased market prices also cause increased production costs, due to higher value of seedlings, with rising production costs having a greater impact upon small and medium-sized farms (Camacho and Brescia, 2009). In order to reach the harvest of 70–80 ton/ha (as achieved on fertile and flat land in Australia), capital-intensive production methods are required. The high capital outlay is due to cultivar, irrigation, fertilizer, and labour. The present study of the ginger value chain in Bac Kan province confirms these regional trends.

However, it was observed that most ginger farming in Bac Kan is still extensive in nature with almost no application of fertilizer or irrigation. Therefore the only inputs used are the cultivar seedling and labour. Because of this, maximum productivity in Bac Kan was only about 21–30 t/ha in 2013, which is far below levels elsewhere.[11]

Nevertheless, even with relatively low productivity, the incurred costs are still relatively high for farmer households. For 1 ha, 3 ton of ginger seedlings are required, equivalent to US$3 250 at seedling price in 2014. Further, during the ginger farming cycle of 10 to 12 months, 276 labour days are required for planting, tending and harvesting the crop, equivalent to US$1 250, at labour prices in 2014. While the labour costs are partly covered by using family labour, farmers do need to contract extra labour if they are to expand production. For this, many of the farmers benefit from working capital loans and loans to purchase seedlings that the Minh Be company provides.

However, to make longer-term investments in irrigation, appropriate financial tools are not available. If intensive methods, including fertilizing, are to be practiced, the investment becomes considerably greater.[12]

For Minh Be, since market demand for ginger has increased significantly year after year, the enterprise has had the opportunity to continuously increase its trading volumes. As mentioned earlier, the enterprise has increased its capacity to 5 000 ton/yr of ginger traded. To fully utilize this capacity, as described by Minh Be: first, the enterprise needs to continue to expand its network of producers and

[11] According to Minh Be enterprise, a 1 ha plot that is fertile but with slope in Bac Kan can produce up to 45 to 60 ton if fertilizer and irrigation are used.

[12] According to Minh Be enterprise, and confirmed by the ginger plantation website http://www.2lua.vn/article/giau-tu-trong-gung, 1 ha of ginger requires about 500 kg of nitrogen as urea, 1 000 kg phosphate, and 100 kg potassium. Total fertilizer cost per hectare are (500 × VND 8 000 + (1 000 × VND 2 200) + (100 × VND 8 000) = VND 7 000, 000 (~US$320).

gain access to increased working capital to match increased trading volume. Second, the enterprise needs more vehicles for transporting. Third, a new storage facility is required to minimize post-harvest storage losses and ginger rots as the volume increases. Fourth, more staff is needed for collecting, cleaning, packaging, and loading the product. Finally, even though the enterprise has built good trade relations with some small-scale traders and the Hai Duong export company, the price volatility risk remains high. Thus Minh Be needs to invest in simple processing equipment, including dryers and slicers, to be able to store produce for longer periods, in order to enable flexibility in sales timing and price negotiations. For all of the above, the Minh Be enterprise estimates its investment finance requirement to be about US$95 000 for working capital, and about US$145 000 for facilities and equipment.

The challenge for this small to medium company is that financing options are non-existent, since the public and private banks require collateral-to-loan ratios that are too high for the company to satisfy.

Financing by banks and other financial institutions

Interviews with the ginger farmer groups that sell to Minh Be have shown that all the small-scale producer families that qualify as poor in Bac Kan, Pac Nam and Tuyen Quang provinces could, in principle, access credit from the VBSP. The bank offered a maximum loans of US$1 450 with an interest rate of 0.65 percent per month, without collateral. To access this loan, qualifying poor farmers needed to, first, join a farmer group or a women's group (the two main VBSP channels) in a village, and, second, develop a production or business plan describing the loan use purpose.

Depending on the purpose of the loan, the loan's term could range from one year (e.g. for a crop) to a maximum of 5 years (e.g. for cattle raising). In Tan Son commune (the most experienced ginger growing group working with Minh Be in Bac Kan) and in Tuyen Quang province, the ratio of poor farmers is far less than in Pac Nam (the new group in Pac Nam), thus eligibility among farmers to access VBSP loans varies. From the total number of ginger growers, the share that are poor in Tan Son is about 20 percent, while in Pac Nam is about 65 percent.

Information from the groups indicated that poor farmers often grew about 0.1 to 0.5 ha of ginger, requiring about VND 35 million (~US$1 600) for investment in seedlings and working capital. This is slightly above the maximum loan offered by VBSP financing, but is deemed very useful by small-scale producer families. However, there is some inflexibility in the requirement to form groups and agree on joint business plans in order to access these loans that translates into higher transaction costs for poor farmers. Therefore, those poor farmers that live in the Tan Son commune prefer the agricultural loans from Minh Be, as they are more flexible and expeditious, whereas poor households in Tuyen Quang and Pac Nam did not have access to loans from Minh Be, and thus used as much as they could afford the loans from VBSP.

In contrast to VBSP's social policy loans, which were only available to disadvantaged and poor groups, VBARD agricultural credit could in principle be accessed by all. As noted earlier, this bank also had a wide presence in rural areas, and it was one of the commonly acknowledged options for farmers to borrow money for various purposes, including agricultural investment. This study observed, however, that none of the growers in Tan Son had access to VBARD lending, even when they

clearly knew about the presence of VBARD. Meanwhile, about 30 percent of the growers interviewed in Pac Nam (poorer district) borrowed from VBARD.

The key reason for this difference is that those non-poor ginger growers in Tan Son had access to loans and savings services from Minh Be long before the special subsidy programmes with VBARD became available, like the 30-A programme. The value proposition for farmers of the financial services provided by Minh Be was much higher, as the application process was simpler, the time it took to receive the loan much shorter, there were no collateral requirements, and there were additional non-financial services provided by Minh Be, such as extension and market advice, that VBARD did not offer.

Pac Nam province is among the 30–A programme districts benefiting from an interest rate discount policy, hence those ginger growers categorized as "non-poor" that cannot access loans from VBSP can borrow from VBARD on better terms. According to information provided by ginger growers borrowing from VBARD in Pac Nam, a loan for crop production can be up to maximum US$470 for a duration of one year and with monthly interest rate of 0.57 percent (half of the loan interest costs is subsidized by the government). The interest rate is low compared with the VBARD's usual rate, but the credit rationing is significant compared with this clientele's agricultural finance needs. In addition, the requirement for land use certificate collateral prevents many farmers from accessing VBARD loans, which explains a still low uptake of the special loans provided by VBARD through the 30-A programme in Pac Nam.

Minh Be reported that it intended to complement the offer of financial services in Pac Nam with those services it offers to producers in Bac Kan, but its ability to do so was currently limited by its own restrictions on accessing financial services and the trust with farmers that needed to be built through a longer transaction history.

Apart from VBSP and VBARD, there were some commercial banks active in Bac Kan province, such as BIDV, Lien Viet Post Bank and VietIn Bank. It is worthwhile mentioning that these banks also encouraged farmers to apply for loans, although access was still limited due to various constraints, such as limited presence in rural areas, high collateral requirements, and competition from government subsidized loans. It was foreseen that in the future when government subsidy policies reduce, these banks would become important partners with farmers because of their dynamic management and increasing presence in the overall financial market.

All banks mentioned had a special offer of savings accounts for small-scale producer families in all the districts in question. Inquiries suggested that most of the families selling to Minh Be had access to a savings account.

According to regulations guiding the 30–A programme, the small-scale producers in the poorest districts also received direct subsidies for agricultural production. In the case of Pac Nam district, each hectare of agricultural production received an input subsidy (for seeds and fertilizer) equivalent to VND 10 million (US$470). However, it is interesting to note here that most ginger growers receiving fertilizer subsidy through the 30–A programme chose not to use the fertilizer for their ginger land. Instead, most of the fertilizer was used for other crops such as rice, maize and cassava, even when the subsidy was received for a registered ginger plantation. This is because the growers still tended to choose extensive ginger growing without using fertilizer at the prevailing prices and costs.

The APIF provided significant financial support to Minh Be for upgrading of its facilities (see discussion below). At the same time, through Minh Be, the fund provided seeds and technical assistance to the ginger growing groups in Pac Nam. In 2012, when ginger was for the first time grown as a commercial product in Pac Nam, APIF provided 129 ton of ginger cultivars for 43 ha (527 households; VND 3.225 billion VND {~US$155 000}). One year later, 2013, the fund continued the effort with a provision of 65 ton (50 percent of costs covered at VND 1.625 billion, ~US$80 000). Along with the input distributed, training courses on growing, tending and harvesting were also provided. The director of Minh Be personally delivered the training courses at the group locations.

Besides the APIF fund, the 3PAD project established another fund, called Savings and Credit Fund (SCF). This fund was managed by the Provincial Women's Union with its network throughout districts, communes and villages. The fund lent microcredit to households through their established savings and credit groups (SCG) at village level. Group members had access to loans of a maximum of US$950 for a maximum loan term of 5 years. Mechanisms for borrowing were flexible, requiring no collateral and with interest rates equal to VBSP (0.65 percent monthly). Farmers could flexibly use the credit not only for various agricultural purposes, such as purchase of planting material or fertilizer, but also for non-agricultural purposes, such as tuition fees or weddings. The fund was active in Pac Nam district, and about 70 percent of ginger farmers there had joined SCGs and, at the end of 2014, about 30 percent had accessed the fund. The fund volume was limited, thus limited numbers of group members had access to the fund, with the credit opportunity rotated between each group's members.

Furthermore, another source of farmer financing has been the Farmers' Union-managed Farmer Support Fund (FSF), with total capital of VND 10.8 billion (US$540 000). This fund has been used to lend to farmers for agricultural production, with an interest rate of 0.7 percent monthly, with loan terms of 1 to 5 years, and a maximum loan amount of VND 25 million (~US$1 240). To borrow from this fund, farmers needed to join the Farmer's Union at village level. Farmers all over the province could access the fund. Due to a limited portfolio and the wide geographical coverage of the fund, only a few ginger growers in Pac Nam and Tan Son had access to it. It was reported by two farmer groups that only 1 or 2 ginger growers borrowed from the FSF.

In Viet Nam, informal microcredit is popular, especially in rural areas (Tam, 2011). Farmers often organize themselves in a group (e.g. friends, neighbours, relatives) to manage a fund based on contributions from members, and jointly manage lending on a rotational basis. Such informal microcredit mechanisms are very effective for small-scale farmers since it has low interest, no collateral requirement, and high flexibility in lending terms. Usually, farmers can most easily access such informal credit for their urgent needs (tending, harvesting, weddings and funerals). For what concerns ginger in Tan Son and Pac Nam, various farmers joined such groups of relatives. However, such informal microcredit was seldom used for ginger production, because of the other possible sources of financing for commodity production. Also, informal microcredit tends to be small and short-term, more applicable for consumption purposes, such as tuition fees or weddings.

Minh Be company was able to kick-start this value chain model by using its own savings, accumulated over time. Even though in principle, Minh Be could access working capital and investment loans from all banks in the region, the company has always been disadvantaged by having very low collateral levels relative to bank requirements. And this in turn was the result of a historic regulatory requirement for the banking sector that determines provisioning based on collateral-backed loans, which excludes small and medium agribusinesses from working capital and investment loans. Simultaneously, the Minh Be company is not eligible for the government-subsidized credit lines targeting small-scale producer families and producers in general.

In this context of lack of specialized financial services for rural SMEs, the Government's APIF support programme came as a critical instrument to scale up the value chain model that Minh Be and the producer groups had established. The matching grant received by the company was used to invest in a warehouse, cooler room, vehicles, and technical assistance for the new ginger growing groups in Pac Nam district (US$200 000 of APIF support in 2013). The investment helped the enterprise to increase its yearly trading capacity to 5 000 ton of ginger (better storage, faster transportation), and thus expand its network of growers.

Key features of internal value chain finance in the model

Cultivating ginger has brought significant benefits to the farmers in the Tan Son commune over the last two decades, and interviews and discussions indicated that the increased revenues had been mostly spent in re-investments for ginger growing.

With a long experience in growing ginger, the Tan Son group has been able to keep the old ginger from previous season as planting material for their next farming season. In this way the farmers are able to save a major part of ginger growing investment costs. Often, the better off groups fully cover the seed needs from their own harvest, while the medium and poorer groups would usually sell most or all of their available ginger roots to Minh Be enterprise. When the planting season comes, the poorer households need to either borrow cash or inputs from other growers or the enterprise. According to information provided by Minh Be, out of about 500 ginger growers in Tan Son, approximately half did not need input financing, while the other half, which was poorer, typically requested such agricultural finance support.

The social cohesion between ginger growers significantly helped various households in covering their financial gaps in ginger production. As reflected by the groups in Pac Nam and Tan Son, some growers who urgently needed money for ginger production (e.g. to buy fertilizers or herbicides), could borrow cash from better-off growers. Oftentimes, if the loan term is less than one month, it could be provided with no interest. If the loan term exceeded one month, the standard interest rate for such loans among Bac Kan ginger farmers was 1 percent monthly. Such loans were usually used to cover urgent short-term needs, thus the borrowers of these informal loans normally did not need to pay interest.

Apart from the normal trade relationship between Minh Be and ginger growers, there has also been a financial relationship between these two actors in the ginger value chain. For growers in need of financing, Minh Be enterprise could lend cash or advance seeds and fertilizer to the growers. For what concerns cash lending, the

enterprise had practised it for over 10 years. The interest rate has been 1 percent per month with no predefined loan duration (often from 1 month to 12 months), and the amount normally ranging from US$500 to 5 000.

These loans are not restricted to use for ginger production, and generally are multi-purpose loans to help manage the small-scale producer household's overall cash flow coming from ginger production, in addition to other agricultural and non-agricultural activities.

Growers approaching Minh Be to borrow money do not need any written proposal for the loan, nor proof of a collateral security. The enterprise does not issue loan contracts or loan certificates, but only keeps track of loans in a simple notebook as per verbal agreements between the farmers and the Minh Be. Based on the security derived from long-term trade relationship and trust, Minh Be can quickly disburse the loans to its business partners. According to the enterprise, the rate of non-performing loans is 0 percent, even though the loan mechanism lacks most of the security requirements practised by formal or semi-formal financial institutions. The enterprise would reportedly continue its lending operations although this was not directly benefiting it financially. The purpose of the lending was to improve trust, and consolidate the business relationship between the actors. The loans in fact seemed to serve as informal farming contracts, ensuring that the growers would continue selling their produce to the enterprise. By the end of 2014, the portfolio of cash loans provided to farmers that Minh Be managed was ~US$75 000.

Another form of credit provided by Minh Be was to advance production inputs. This in-kind lending was for ginger growers in direct need of inputs. The enterprise could advance seeds or fertilizer to the growers, with certain conditions: (1) the price of inputs is the market price at the time of purchase; (2) the grower is to pay back the loan to the enterprise in cash at the end of the harvest season; (3) no interest is collected; (4) the growers agree to sell their ginger to the enterprise at a discounted price (~US$0.05 discount per kg).[13] The in-kind loans can also be considered as contracts to secure the trade relationship between the farmers and the enterprise. According to Minh Be, its in-kind loan portfolio consisting of advanced inputs was around ~US$50 000 at the end of 2014.

Apart from lending out capital to ginger growers, Minh Be also borrows capital from better off growers in Tan Son. Interest rates were 1 percent monthly, with unlimited amount and flexible terms. When the growers need the loan back, they inform the enterprise about 10 days in advance. They then will get the loan back. This raised capital is not for the purpose of running the trading business. Rather, the mobilized savings allow increased lending to medium-income and poor farmers that need investment capital for their farming inputs. The enterprise thus acted as a small-scale financing intermediary, using its networks to provide both savings and credit services to the ginger farmers. All of these financial transactions had the motive of maintaining and improving trade relations with the growers. To a certain extent, the saving mechanism run by Minh Be is more convenient for ginger growers since it offers good interest rates, requires less procedures, and most importantly,

[13] This price discount already represents an implicit interest rate of approximately 1.5% per month.

makes growers feeling more secure about saving. At the end of 2014, Minh Be reported a total borrowing amount of about US$50 000.

It should be noted that both of the abovementioned credit schemes[14] by Minh Be were currently only active with the Tan Son group of ginger farmers. As noted above, the Tan Son group had no opportunity to access credit incentive policies, while access to commercial loans was still prevented by complicated and demanding application procedures. Thus, the convenient financial services provided by Minh Be were considered the main source of financing for the group. The new ginger farmers in Pac Nam district had not yet accessed Minh Be loans, mainly due to the physical distance and short-term nature of the commercial relationship. A new commercial arrangement between these producers and Minh Be opened the possibility for the company to begin providing some financial services, as trust increased.

Finally, besides financial arrangements with ginger growers, Minh Be also lent money to the end-market small traders who buy ginger from Minh Be and sell it in local markets in Hanoi. The loan mechanism was as simple as with the growers, with the same interest rate of monthly 1 percent. However, the amounts are considerably larger. At the end of 2014, two traders in Hanoi had loans from the enterprise, worth ~US$37 000 in total. According to the enterprise, these loans dated back more than two years, and the enterprise was afraid these traders would continue to be unable to pay back the loan. However, to maintain a continuing business relationship with these traders, Minh Be was not urging the traders to return the credit. Instead, Minh Be was waiting and hoping that the traders would soon be able to repay their loans.

3.5 CONCLUSIONS: POLICY IMPLICATIONS FOR OVERALL RISK MANAGEMENT IN THE IMPLIED VALUE CHAIN FINANCE MODEL

In the current model, the lead enterprises in the ginger value chain has been absorbing most of the financial risks. The deposits the company takes as loans from better-off producers represent a minority share of financial risks absorbed by a segment of the better-off producers.

The company was not making a profit from its lending activities, although the lending facilitated the production activities, thus introducing stability in the whole supply chain. It also confirmed the business relationship with the farmers. This scheme, however, increased Minh Be's operating risks. If production or market risks materialize and farmers are unable to repay their loans, this would make it difficult for Minh Be to pay back the farmer deposits. Even under normal farming conditions, unexpected deposit re-payment requests may cause some liquidity challenges for Minh Be, potentially causing delays and damaged reputation as a local lender, entailing the potential risk of a small scale "bank run" where many depositors demand back their cash due to doubts of the financier's liquidity.

The uncertainty of the lending schemes is increased by the fact that Minh Be does not sign contracts for the loans and deposits, nor does Minh Be request collateral

[14] The Minh Be credit schemes in summary: (1) Cash lending for agricultural input materials and/or consumption, (2) in-kind input material lending, in reliable quality and freely transported to the farm household.

security for the loans. All lending security is based on trade receivable arrangements and a long-term built-up trust relationship between the ginger farmers and Minh Be, and transactions are simply recorded in a notebook. All of this is fully informal, and broken agreements have no legal implications.

The model has been stable for the past 20 years such that no actor engaged in this particular chain considers the risks mentioned above are likely to materialize. This stability, and actual expansion of the model, to include producers in the Pac Nam district, is the result of proper management of different risk dimensions. Analysis of these risk management practices is presented below. Some important policy implications are also drawn aimed at highlighting how public interventions can significantly enhance the quality and variety of financial services as well as the outreach and depth of the model.

Securing the loan portfolio performance through an enhanced value proposition to small-scale producer clients

One important highlight of the value chain finance model described is the diversified suite of financial and non-financial services that Minh Be can offer to those small-scale producer farmers with whom it can engage in a commercial relationship. This capacity as a service provider relies on its knowledge of small-scale producer financial needs to facilitate their livelihood's daily management.

From the small-scale producer perspective, working with Minh Be implies having a stable market outlet for its ginger production (one of the several sources of revenue for the household). It also represents a source of technical advice on ginger production—technical advice of a quality not available from the public extension system. For those small-scale producers that need it, Minh Be can offer a source of interest-bearing savings services, critical for smoothing consumption. Finally, Minh Be is also a source of input and working capital loans that either no other lender can offer, or that complement the credit rationing faced by many households. In addition, the low transaction costs and expeditious loan disbursal process implied in the loans offered by Minh Be represent an important comparative advantage that reduces the client's own transaction costs in accessing the service.

This suite of services can be seen as an "ecosystem", with a significant value proposition for small-scale producer families. The fact that a small-scale producer can access such a diversity of services by entering in a relationship with Minh Be makes small-scale producers report that they value highly this relationship. Given the alternatives, they will not risk losing access to these services, and this secures small-scale producer willingness to pay loans received, resulting in a loan portfolio with very low default rates that sustains itself despite it being based on informal agreements.

It is hard for other actors to compete with the services that Minh Be provides. This is because even if a service provider comes with better terms and conditions for a single service (e.g. credit at lower interest rates or longer terms), the competitor probably cannot offer all the other complementary services Minh Be provides. The value proposition for smallholders of the whole "ecosystem" of services is higher than that of a single service.

However, it has been stressed that the outreach of the services that Minh Be provides is very limited. The company only reaches 200 small-scale producer house-

holds in the Bac Kan district and, even though Min Beh expected to start providing financial services in the Pac Nam district in addition to those extension services already being provided, it had not done so yet. The company relied on proximity to be able to deliver services to small-scale producers, and was also severely limited by liquidity constraints.

There are important policy implications in this scenario. First, that the segment of small and medium agribusiness in developing countries has a tendency to be severely constrained in terms of access to financial services. The formal financial sector is not able to cater this clientele segment because: first, it does not have the capacity nor the experience to assess the agribusiness case; second, it has to operate within a regulatory framework that prevents it from servicing clients with a demand for relatively higher loan amounts, but that do not have enough collateral backing, which in turn determines the reserve requirements for the financial institution; and third, government-supported financial services exclude these type of actors from being eligible to access subsidized forms of financial services as they are not seen as a priority.

The Vietnamese Government's APIF programme recognizes the strategic importance of facilitating finance and investment tools for small and medium agribusinesses as this can expand the provision of valuable and supplementary services for small-scale producer families. However, one of the main challenges is that the strict regulatory framework forcing the financial sector to rely on collateral as the main indicator of risk in a credit portfolio, and makes self-sustaining credit lines for this clientele segment difficult to put in place, as serving the rural areas and the agricultural sector would imply significant reserve requirements that are too costly to establish and maintain. Not being able to address this regulatory constraint, an alternative has been to set up a matching grant facility, whose scale is limited by the availability of public subsidies.

This highlights an imminent need to evaluate ways in which financial regulation can be tailored to accept those financial institutions aiming to develop a portfolio of services for excluded or underserved rural clients, adopting risk assessments and provisioning rules that recognize alternative forms of collateral, and consider longer time frames before a loan can be considered non performing, given the nature of agribusiness.

Securing the loan and savings portfolio through an enhanced ability to determine the capacity of the client

Minh Be is able to provide financial services that are rather specialized to facilitate those ginger production activities carried out by small-scale producer families in the vicinity. As explained in chapter one, financial products designed to facilitate agricultural and agribusiness activities tend to be lacking. Formal financial institutions have historically not been exposed to these smaller-scale agricultural markets, so their knowledge of those value chain actors and their livelihoods is rather limited. Even with the commendable efforts of the agricultural banks in Viet Nam, the majority of the rural population still relied on informal financial service providers. And when seeking financial services to support agricultural activities in particular, such services have tended to come from value chain actors, such as Minh Be.

Minh Be could provide these services because of its wide knowledge about the individual clients as well as the agricultural value chain in which the client is

engaged. The company has enough proximity to small-scale producers to know their agricultural performance each season, to have a general understanding of their character, and the different sources of income its household has. All of this helps the company identify the client's financial needs, which of those needs the company is able to satisfy, and the willingness and ability of the client to pay for such services.

In addition to the individual client, Minh Be has extensive understanding of the production, marketing and climatic risks faced by the ginger producer. The company has been a promoter of the crop in the Bac Kan district, for which the company needed to engage in the direct production of ginger for years, understanding climate patters, engaging in a research process with traders in Hanoi catering to the local and international markets to identify cultivars and quality required by consumers. The company's experience working with specific traders allows better assessment of contract risk failure, and monitoring demand dynamics. In fact, the company has provided loans to small retailer in Hanoi as well who can not find better credit products from other lenders.

This holistic understanding of the client and the agricultural market in which the client is engaged enables the company to determine the feasibility of the agricultural loan services – and savings services – it provides to small-scale producer families producing ginger. Formal financial institutions find it extremely difficult and costly to have this level of information to assess the viability of agricultural financial services.

The policy implications of this dimension of analysis are that these small and medium agribusinesses represent a valuable partner for financial institutions in order to allow the expansion of agricultural financial services to small-scale producer families currently excluded or underserved by formal financial markets. Although many of the agricultural banks in Viet Nam partner with value chain actors, these tend to be bigger players engaged in more developed agricultural value chains, where the participation of poorer rural households is less. This is because the larger-scale actors are not only more visible thus easier to engage, but also it is easier to meet legal and administrative requirements to formalize collaboration agreements.

Smaller agribusinesses tend to engage much more with the poorer rural households, given the agricultural market segments in which they are active, and therefore represent valuable partners for financial institutions as they can help supplement significant informational gaps on clients and agricultural markets. However, these actors have a tendency to be outside the network of financial institutions. The potential benefits of such partnerships have a tendency to grow, as the Minh Be experience suggests.

Not only can the financial institution learn about the small-scale producer client in order to provide agricultural financial services with greater outreach and at better terms and conditions using information provided by the agribusiness; but it can also provide additional general financial services that the agribusiness firm cannot provide like life insurance, better savings accounts, remittances, and payment services, among others. In addition, the agribusiness firm and the smaller retailers working with it can also become clients as the relationship develops, with the possibility of providing investment loans, leasing, factoring and payment services, for example. From the financial institution perspective, this diversification of the clientele and the financial services provided facilitate the achievement of scale to reduce unit operating costs and enhance the sustainability of its rural portfolio.

The APIF programme has facilitated dialogue among Minh Be, a growing number of small-scale producer families, and government development banks like VBARD and VBSP. Such dialogue encourage collaboration among actors that have important supplementary capacities and knowledge to expand and deepen rural financial markets. There is expectation that these banks collaborate in partnerships with Minh Be and similar agribusinesses in the future. Meanwhile the APIF programme has been instrumental in expanding the ginger value chain model by reaching more small-scale producer farmers.

Chapter 4

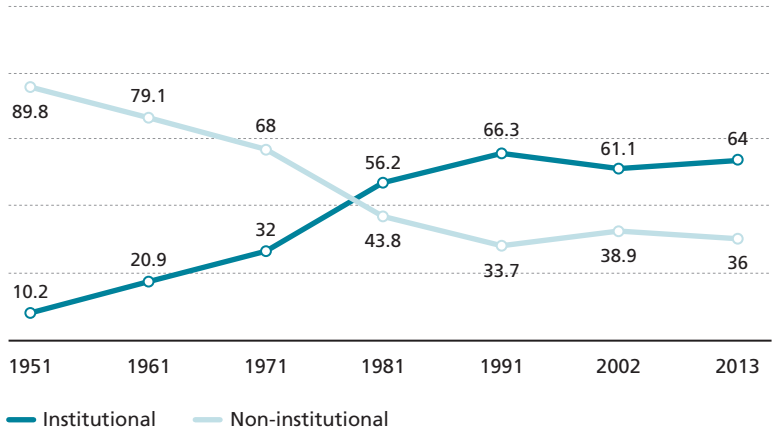
ICT as a risk management tool in India's agri-finance markets: the case of e-trade platforms and e-payments

Nitin Puri and *Pradeep Shrivastava*

4.1 INTRODUCTION TO THE AGRICULTURAL FINANCE POLICY FRAMEWORK IN INDIA

Agriculture is the backbone of the Indian economy. Although the sector accounts for 15 percent of the national GDP, as well as roughly 11 percent of its exports, half the population still relies on agriculture as the most important source of income, and agriculture is a source of raw material for a large number of domestic industries. India ranks second in total farm output on a global level. During 2013-14 the total production of cereals amounted to 245.6 million tonnes. The horticulture production reached 277.4 million tonnes in 2013-14, representing a 66.2 percent increase from

FIGURE 17
Institutional (formal) and non-institutional (informal) agricultural credit as a share of the estimated total nationwide



Source: ICRIER, 2015.

2004-05. The dairy sector is one of the major livelihood activities in rural India, and a significant contributor to the country's agricultural economy. With an estimated 139.7 million tonnes of production, the country is responsible for approximately 17 percent of global milk production, the majority of which is consumed domestically. Milk production has increased by approximately 51 percent during the last 10 years. By keeping a sustained growth rate, the production is expected to reach 180 million tonnes by 2020-21.

To facilitate the efficient management of and investment in agriculture and agribusiness systems, the Indian Government has been very proactive in defining policy support measures. The main objective of the policy framework has been to ensure financial inclusion, with as strong focus towards ensuring the expansion of agricultural credit by formal financial institutions, although also insurance and payment services have been promoted in recent years.

The overal result of the different policies has been an important increase in the market share of formal credit providers for agriculture since 1951, as shown in Figure 17. This representes a reduction in market share of informal service providers for agriculture and in recent years current policies seem to have reached a limint in promoting further formalization of agricultural credit markets. Formal credit providers are mainly commercial banks and cooperative bankswith very similar shares each (Hooda & Tarwey, 2015).

4.2 SOME OF THE MOST IMPORTANT AGRICULTURAL FINANCE POLICIES CARRIED OUT BY THE GOVERNMENT

Priority Sector Lending (PSL)

Priority sector lending remains an important element in banking policies. Agriculture and small-scale industries were the original beneficiaries of priority sector lending, but now a number of other categories have been added, including micro and small enterprises, education, housing, export credit, and loans and borrowers belonging to the weaker sections. The original target of 40 percent for all priority sector lending and the sub-target of 18 percent for agriculture are still enforced. However, the target for agriculture now applies not only to direct lending to farmers but indirect financing as well, with a sub-target of 4.5 percent. Indirect agricultural loans include loans up to Rs. 50 millions to dealers/sellers of agricultural inputs, loans for setting up of agri-clinics and agribusiness centres, loans to customs service enterprises who provide tractors, bulldozers, well-boring equipment, threshers, combines for being hired by farmers, loans up to Rs. 50 millions to co-operative societies of farmers for disposing of the produce of members, loans for construction and running of storage facilities including cold storages, and loans to MFIs, NGOs and regional rural banks (RRBs) for on-lending to farmers.

Even deposits that commercial banks make under funds managed by government development banks like, NABARD, count as indirect agricultural loans. Examples of these funds include the Rural Infrastructure Development Fund, the Warehouse Infrastructure Fund, and the Short-term Co-operative Rural Credit Refinance Fund. Although the activities brought under the purview of indirect agricultural lending have the potential to support farming, it deserves to be underlined that the earmarking of a sub-target for indirect financing has stagnated the volume of direct lending to farmers given by commercial banks.

TABLE 2
Achievement of Priority Sector Lending Targets by public, private and foreign banks
(in thousands of rupees)

Outstanding as of March 31st	Public Sector Banks	Private Sector Banks	Foreign Banks
2014	16 190 (39.4)	4 645 (43.9)	907 (35.8)
2015*	17 512 (37.3)	5 303 (42.8)	970 (35.9)

Note: figures in parenthesis are the share of their total credit portfolio; the target set by the RBI is 40 percent;
* figures for 2015 are estimates.
Source: RBI Annual Report, 2015.

Banks that fall short of achieving the agricultural sub-target, are allocated targets for contribution to the Rural Infrastructure Development Fund, established with NABARD, the main agricultural development banks in the country, by the Reserve Bank of India (RBI). These amounts are determined on the basis of the shortfall magnitude; the rate of interest payable to them by the Fund is also related to the deficit. This form of penalty rises with the level of the shortfall.

The government of India and the RBI have been monitoring the flow of agricultural finance very closely. As can be evinced from the figure below, the results have always surpassed the target set for the agricultural credit flow. The targets for agricultural credit flow have been fully achieved by the financial institutions every year, as shown in the graph below. (For 2014-15, numbers are available only up to December 14, which explains the lower figure for the period)

The main focus in the priority sector of agricultural lending has been on indirect lending, which represents a more viable segment. In the very unique context that India represents, priority sector lending mandate has been a critical factor contributing to the expansion of agricultural credit in the country. Here public sector banks dominate, accounting for about 84 percent of the bank branches and 63 percent of the ATMs, and employing nearly 76 percent of bank staff in the country. The contribution of public sector banks to mass banking, however, does not overshadow the contributions of private and foreign banks to competition, professionalism and operational efficiency.

Private sector banks have been functioning in India ever since the banking industry in the country was born. Due to their domestic nature, private sector banks contributed more towards enthusing efficiency in the banking industry if compared to foreign banks, by creating healthy competition for public sector banks. In fact, some of the technological innovations introduced by private sector banks in India have been adopted by public sector banks and have enabled the latter to extend banking services to remote regions. Examples include the introduction of internet banking, online bill payments, and mobile banking in India. These platforms – which are now offered by almost all banks – have made banking more client-oriented.

Multi-channel funding approach

India has a widespread network of public and private commercial banks, cooperatives, rural banks and non-banking financial institutions. This has also meant that each of these categories of entities is targeting specific segments in agriculture, leading to several financing options available for both small and large players. There

has been a manifold increase in the volume of direct agricultural credit advanced by institutional agencies in the last four decades. Indirect credit has risen even more impressively, mainly due to more and more categories being brought within the ambit of agricultural credit. A dedicated regulatory framework for agency banking and mobile banking has been an important enabler in the proliferation of diverse formal financial institutions serving the agricultural sector.

Risk management – examples of crop insurance in India

Crop insurance as an approach towards risk management in agriculture has emerged in India since the turn of the twentieth century. In October 1965 the Government of India decided to introduce a Crop Insurance Bill and a Model Scheme of Crop Insurance in order to enable the States to introduce this financial service. In 1970, the draft Bill and the Model Scheme were referred to an Expert Committee. Some of the most relevant programs in support of agricultural insurance are briefly mentioned below. This list is not exhaustive.

Weather Based Crop Insurance Scheme (WBCIS): The government introduced the WBCIS as a pilot in 2007 and currently it is a full-fledged component of the National Crop Insurance Program, NCIP, which has the mandate to develop and distribute different agricultural insurance products through insurance companies. The WBCIS is a parametric insurance product covering adverse weather events during the cultivation period that are deemed to adversely impact harvest yield. Reference Unit Areas are areas where measurements of different indices, such as rain and average yields, are made and are linked to a Reference Weather Station. If the indices measures go beyond or below the threshold indicated in the insurance policy then pay outs to producers are made. The WBCIS offers policies for 35 different crops (including perennial crops) and are distributed through several private insurance companies.

Varsha Bima / Rainfall Insurance: Varsha Bima was introduced in 2004 by the Agricultural Insurance Company, a private insurer. It is a weather insurance product intended to provide pay outs for crop losses suffered due to deficit or inadequate rainfall. The policy focuses mainly crops. Varsha Bima is based on precipitation outputs and is totally unsubsidized by the Government. The policy is offered for voluntary purchase to non-borrowing farmers at an average premium of 2.8 percent of covered damage during the first year and 5.5 percent in the following years. The 2004 pilot was offered to about 20 sub districts in Andhra Pradesh, Karnataka, Rajasthan and Uttar Pradesh to cover rice, sorghum, maize and pearl millet. In 2004 alone, 1 050 policies were sold (more than 0.5 percent of the farming community in the four regions) and 2 200 ha insured (less than 0.5 percent of total cropped area in those regions). In 2005, Varsha Bima was extended to more than 125 locations across 10 states. It rapidly extended its coverage to 125 000 farmers, covering 98 000 ha with a premium income of Rs. 31.7 million against a sum insured of Rs 558.6 million. Since the 2006-2007 season, however, uptake numbers have been stagnant.

Kisan Credit Card Scheme

The Kisan Credit Card Scheme, introduced in August 1998, is an unique credit delivery mechanism to meet the working capital needs of farmers, mainly for input financing. Farmers can use the credit card to purchase inputs from any agribusiness registered. Participating input providers have increased and now cover the whole country.

According to the RBI, 128.5 million Kisan Credit Cards had been issued up to end of March 2013. In terms of share in the total number of KCCs issued since the inception of the scheme (1998), the largest percentage has been issued by commercial banks (48.99 percent) followed by cooperative banks (35.82 percent) and regional rural banks (14.96 percent).

The exponential growth rate of KCC in RRBs is 26.37 percent followed by commercial banks 14.27 percent and cooperative banks 1.57 percent. The overall exponential growth rate of KCC during these fifteen years (i.e. from 1998-99 to 2012-2013) is 9.39 percent. In terms of total amount of KCCs sanctioned until the end of March 2013 since the inception of the scheme, the largest percentage has been sanctioned by commercial banks (63.05 percent) followed by cooperative banks (24.14 percent) and regional rural banks (12.52 percent).

Digitization of land records

The government sponsored scheme on Computerization of Land Records started in 1988-89, with 100 percent financial assistance as a pilot project in eight districts. It was decided that efforts should be made to digitize core data contained in the land records, to enable better planning and to make records accessible to people, policy makers and administrators. Several states have digitized the land records and in a few states the land owners can generate ownership documents through facilitation centres. This has favoured the collateralisation of loans, land rental, leasing and sales.

RBI-Carrot and Stick Policy

RBI as a bank regulator oversees the process of opening new branches. In doing so, RBI uses what may be termed as a "carrot and stick" policy. The objective is to encourage banks to open branches in areas that are underserved, for example rural and peri-urban areas. RBI's guideline on branch licensing ensures that the banks first open the branches in rural/under-served areas before tapping the banking potential in urban areas. On the contrary, however, "100 Small Steps" a report from and independent expert committee on financial sector reforms suggests that branching as a strategy to improve inclusion itself seems to have reached diminishing returns. The rural poor have no more access than the urban ones to branch offices, suggesting that further inclusion will have to rely less on branches.

Warehousing (Development and Regulation) Act, 2007

The Warehousing Act, 2007, came into force with effect from October 29, 2010. The act enabled warehouse receipts as negotiable instruments and facilitated financing against product stocks to smaller scale producers and traders. Banks improved the quality of their loan portfolio. The act has enabled financing against agricultural commodities, lowered the cost of finance, shortened the value chain and enabled better price risk management at the farmer level. During the year 2011-12, the government introduced a scheme for concessional post-harvest loans to small and marginal farmers having Kisan Credit Cards against negotiable warehouse receipts for a period of up to six months at an interest rate of 7 percent per year. In 2013-14, refinance of Rs. 9.6 million was extended by NABARD for this purpose. In the same year, 19 597 warehouse receipts were issued, covering commodities valued at Rs. 3 570 million.

Agricultural Produce Marketing Act

In India agriculture marketing is a matter of state and most of the states have their own Agriculture Produce Marketing Committee (APMC) Act to regulate agriculture marketing. The act was established in 2003 and has the intention of avoiding a situation where a farmer must take his produce to a market yard and sell it through middlemen that offer non-remunerative prices to producers. This is done through the establishment of Private market yards, Direct purchase centres, Consumer and farmer markets. These are all formal exchange centres managed through public-private partnerships where price information is recorded and disseminated to all actors. Also, contract farming arrangements are documented in these centres.

Forwards Contract Act, 1952

The forward market commission is a regulatory body established under forwards contract act of 1952 that regulates various commodity exchanges in the country, promoting forward and futures instruments in commodity markets to improve price discovery and price risk management among all sectors of the economy including farmers and consumers. Futures trading provide a means for appraising the supply and demand situation in the present and the near future and distance through current and future prices estimated by all actors in the agricultural sector. The total volume of trade across all the commodity exchanges supervised by the commission 2011-12 was 14 million MT at a value of Rs. 181 billions.

The Essential Commodities Act

Essential Commodities Act (ECA) empowers the Central Government to regulate or prohibit the supply and distribution of any commodity considered essential with the intention of ensuring the appropriate supply and price of such commodity. Fertilizers, grains for human consumption, sugar, and edible oils are subject to the ECA regulations and from time to time government places controls on stocking and movement of these goods from the point of view of customer protection. However, much of these interventions have shown to cause greater price volatility and prevent investments related to the production and commercialization of these commodities. Accordingly, the number of essential commodities which stood at 70 in 1989 has been brought down to 7 at present through periodic reviews.

Other important enablers

The Department of Agriculture and Cooperation is supporting the establishment of Kisan Mandis, or agricultural auction centres, to enable farmers and Farmer Producer Organisations (FPOs) to directly sell their produce to wholesalers, retailers and ordinary consumers. One such Kisan Mandi is being set up by Small Farmers Agribusiness Consortium (SFAC) on a pilot basis in Delhi. Central government has advised all states and union territories to establish Kisan Mandiss and SFAC has offered its services for technical assistance for replication.

The Government has also kicked off changes in the banking system by announcing the up-coming approvals of 10 “small finance banks” and 11 “payments banks” that are expected to increase competition within the current public and private banking system, considered to be acting as oligopolies. While payment banks, driven by mobile technology, will extend the liabilities side of the business by

making banking accessible to more people, small finance banks will enable more focused lending to small businesses and individual borrowers, thus extending the assets base of the banking system. In other words, payment banks will compete for bank deposits, while small banks will target the highest interest-paying borrowers when they expand across the country.

4.3 REGULATORY BODIES FOR AGRICULTURAL FINANCE IN INDIA

The institutional framework for agriculture financing comprises various ministries, government agencies, banks, financial institutions, and entities like the Reserve Bank of India (RBI) and the National Bank for Agriculture and Rural Development (NABARD). The framework is comprised of a vast network of financing institutions across the country.

Reserve Bank of India (RBI): In terms of financing agriculture, RBI's role is primarily regulating the banking system. RBI endeavours to enhance credit flow to agriculture by eliminating bottlenecks in credit delivery, and in general promote inclusive access to a wide set of financial services throughout the country. The Reserve Bank of India, being the Central Bank of the country, does not provide finance directly to farmers, although it provides credit lines State Cooperative Banks among several other types of financial institutions.

National Bank for Agriculture and Rural Development (NABARD): NABARD is a development bank with the mandate of facilitating access to financial services for rural and agricultural development. The mandate covers supporting all economic activities in rural areas. As an apex development finance institution NABARD handles matters concerning policy, planning and operations in the areas of credit for agriculture and for other economic and developmental activities in rural areas. As the refinancing institution to the banks and financial institutions, NABARD offers production credit and investment credit for promoting agriculture and developmental activities in rural areas.

Some of the main issues and opportunities these regulatory bodies aims to address are summarized in the following table:

Key issues	
Reduced investment	In the last decade, there has been a slight decrease in capital formation in agriculture of 0.22 percent, which has been accompanied by a decrease in public investments in the sector. There are concerns owing to the inadequacy of private investment in meeting agricultural capital requirements, in particular rural infrastructure, which might pose constraints to agricultural growth. Almost 80 percent of the public expenditure that goes into agriculture is in the form of input subsidies (fertilisers, power, and irrigation) and only 20 percent as investments in agriculture. Subsidies in agriculture that are focused on input subsidies seem to have crowded out private investments in agriculture, and have rather dis-incentivised private investments. There are efforts to shift the emphasis of public expenses towards catalytic investments and away from input subsidies.
Issues in Institutional credit delivery	Cooperative institutions (PACS) at the grassroots/village level face serious problems of governance, solvency and operational efficiency in terms of multi-layered structure, under-capitalised, overstaffed and under-skilled, often with mounting non-performing assets coupled with erosion of public deposits in certain cases. The PACS are saddled with problems like low resource base, high dependence on external sources of funding, excessive Governmental control, huge accumulated losses, low business diversification, low repayment rates, among others. Around half of the PACS, are loss-making. More effective support to ensure their development is needed.

Key issues	
Laws discouraging private sector participation	The Essential Commodity Act is seen as major hurdle for private sector participation in agriculture and there is growing recognition that controlling commercialization and licensing of dealers limits stocks and investments in agriculture food-processing industries. The APMC act has been identified by regulating bodies as a major constraint for the diversification towards high value crops. The Act grants marketing monopoly to the state and has effectively prevented the private investments in agricultural marketing as it restricts the farmer from entering into direct contract with any processor/ manufacturer/aggregator, leaving success dependant on governance levels of state marketing committees. The model APMC Act of 2003 has been strongly opposed by the anti-retail lobby since the Act allows private companies to procure produce directly from farmers. The traders' lobby insists that the Act does not require any amendment.
Fragmentation and Exclusion of Small holders	Agricultural Census data shows that there were about 121 million agricultural holdings in India in 2000-01. Around 99 million were small and marginal farmers. Average size has declined from 2.3 ha in 1970-71 to 1.37 ha in 2000-01. Small and marginal farmers account for more than 80 percent of total farm households and their share in operated area is around 44 percent. Yet it is reported that 73 percent of the farmer households are outside the formal financial systems. The inability to offer collateral is often stated to be the hindrance in financial institutions extending credit to small and marginal farmers, and share croppers. Equally important there is a need to better tailor legislation, to encourage formal recording of tenancy, production and marketing arrangements.
Globalization challenges	Increasing globalization has added to the problems faced by the small holding agriculture. The policies for huge subsidies and protection policies implemented by developed countries have negative effects on smallholder farmers in developing countries. In recent years domestic prices for several agricultural commodities have been higher than distorted international prices. To compete in the global market, the country needs to reduce various post- harvest costs and undertake suitable reforms to improve efficiency of domestic markets and delivery systems. To be able to successfully compete in a liberalized trade regime, therefore, there is need for a paradigm shift from merely maximizing growth to achieving efficient growth, not only in India, but also other countries, including industrialized nations.
Impact of climate change	Climate change is a major challenge for agriculture, food security and rural livelihoods for millions of people, including the poor. Climate change is expected to have an adverse impact on the living conditions of farmers, fisher folk, and forest-dependent people who are already vulnerable and food insecure. Adaptation of livelihoods to changes in climate can ensure welfare increases despite climate change. Research and practice have shown that collective action through institutions is very important to ensure successful technology transfers in agriculture and natural resource management among smallholder families and natural resource dependent communities.
Post-harvest losses in the value chain	In India, there is an average of 5 intermediaries between the primary producer and the consumer in agricultural supply chains. There are wastages in the process of multiple handling in the range of 15-25 percent. The food ministry has stated that food grains worth US$6 billion had gone waste in 2010, most of it in state warehouses. With a production in 2010 of around 80 million tonnes of food grains and combined storage space of the Food Corporation of India, State Warehousing Corporations and other agencies of just 60 million tonnes, some 20 million tonnes of food is wasted. The estimated loss was around INR 270 billion rupees (US$6 billion).

4.4 DESCRIPTION OF CASE STUDIES

The Karnataka E-Mandi: an electronic tender system for agricultural commodity markets

Introduction and background

An important aspect in enabling access to agricultural financial services to smallholder families is that financial institutions need to have confidence that their clients and the market actors they engage with are able to predict well price dynamics. To do so, agricultural markets should have transparent price formation and signalling processes, something that is usually not the case in most developing countries. This

prevents financial institutions from being able to assess risks when considering to finance smallholder families and the agricultural sector as a whole.

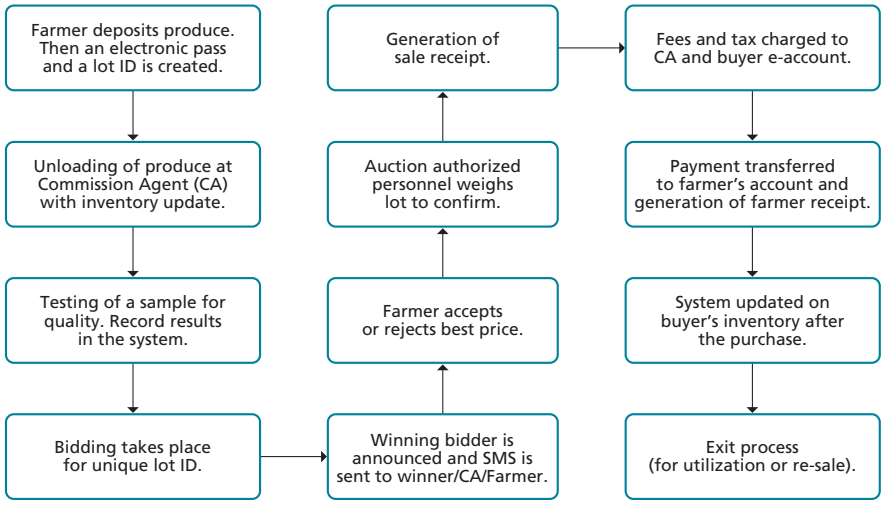
The Government has been taking several steps to ensure a transparent price system in agricultural markets. One such measure is encouraging competitive prices for the farmers produce in the regulated markets through Agricultural Produce Market Committees (APMCs). The APMCs are established in the Sate of Karnataka under the Karnataka Agricultural Produce Marketing Regulation and Development Act, 1966.

The act establishes a manual tender system for commodities that normalizes the trade process and records prices and all transactions during auctions. In practice, the recording system can be inefficient, when, for example, product arrivals may be so large that it may take too long to complete the entire process of trade recording. As a result, farmers sometimes have to wait an entire day in the market place to finalize the trade because of delay in completion of trade records. There is also the possibility of manipulation and mistakes in entering the prices in the tender slip.

In addition, the agricultural marketing system in the country is characterized by various shortcomings, such as heavy sale of agricultural commodities at village level immediately after the harvest when prices are lowest, absence of grading standard for produce, poor packaging, insufficient marketing infrastructure, and long marketing channels.

Considering these limitations and considering the growing availability of ICT solutions in the country, the Electronic Tender System for agricultural commodities, or E-Mandi, was conceived with support from the Karnataka State Government.

FIGURE 18
The process implied in the Electronic Tender System for agricultural commodities in Karnataka State



Source: authors' elaboration.

The electronic Tender System is a unique project involving the adoption of ICT at the primary wholesale markets level aimed at ensuring competitive price for the farmers' produce and encouraging fair marketing practices within the State. The e-tender system was first introduced in 2006-07 on pilot basis for paddy in the Mysore market. It was further extended to 11 commodities in 2010. It is now operational in 55 markets in the state. The new system aims at increasing marketing efficiency by enhancing transparency in the bidding process and reducing the time required for finalizing the tender documents. This apart, the system is expected to increase competitiveness in agricultural marketing, reduce collusion among traders, facilitate quick payment settlement, reduce market fee evasion and enable the delivery of several agricultural financial services.

Process flow for the electronic tender system

The e-tendering of agricultural commodities is a multi-stage operation as shown in Figure 18. The first stage involves the farmers bringing their commodity for sale to the market yards where authorized commission agents operate. Farmers use different transport means like trucks, carts, tractors, beasts, among others. An electronic gate pass is generated at the market entry gate, with different relevant details about the farmer and the commodity. The details include: name and address of the farmer, the name of the commodity with approximate weight, the name of the commission agent or trader's shop where the commodity will be displayed for the sale, nature of expected electronic transaction like direct sale, tendering, mutual agreement, etc. The electronic gate pass also carries a unique lot number to facilitate tracking of trade.

The commodities displayed in the e-platform system by the assigned commission agent will be inspected by the interested traders or their representatives at the market yard for various traits like variety, grade, lot weight, etc. These traits are recorded. Since trade in most of the traditional markets is not taking place on the basis of grades and standards, physical examination of the commodity has proven to be vital for traders to make price decisions. With that being said, some markets in the State like Gulbarga have started grading the incoming produce. On the basis of physical examination, the interested traders may offer a first price per ton through the computer system available to them in the shops or kiosks, or the computers available in the market yard. Quotation by different traders for different commodities will be recorded. Considering the importance of time in the e-tendering procedure, particularly in the peak period when supply is large, the e-platform saves all quotes received and displays them to everyone. Traders can then adjust their quotations up-wards or downwards. When the final submission of quotes from traders is made they cannot be modified and the bidder with the highest price wins. Farmers are electronically informed of the highest price offered for their produce lot, and they have to notify whether they accept or reject the offer.

The results for all successful trades are recorded and made available to all participants. The actual weight of the produce lot is measured and entered into the system in order to arrive to the total price to be paid by the trader. Lots are weighed after the auction to avoid weighing produce that is not sold. Quantities desired by traders can then come from several farmers offering the desired commodity traits as shown in the e-platform. On receiving the final weight, the primary sale bill will be

generated. The farmers can get its sale proceeds immediately in cash or through a mobile or bank transfer and go back to his or her home. The trader who purchases the commodity receives the lot. The APMC charges a service fee to the trader or the commission agent.

Initially the project was implemented with the help of a software developed by the Karnataka State Electronics Development Corporation Limited (KEONICS) although now it is being gradually shifted to a software developed by the National Commodity & Derivatives Exchange Ltd (NCDEX), both are private companies.

The recently introduced software by NCDEX has provisions for various fields like: Goods In, Goods Out, Settlement, Lot Operations, Factory Operations, e-Tendering and Auctions. The items like gate entry, information of farmer, information of commodity, purpose, are provided under Goods In, while Goods Out deals with gate exit (un-traded), bilateral trade, permit, and so forth. Settlement covers items like the generation of primary sale bill, purchase bills, settlement vouchers, and so forth. Finally, e-Tendering takes care of the electronic quotations of the agricultural commodity and price analysis.

Links between the electronic trading system and access to financial services

E-Mandi has made a commercial partnership with ICICI Bank as the nodal financial institution for disbursement of payments in the accounts of farmers, traders and commission agents. Thus all participating actors in the tender system need to open a financial account. For farmers, in addition to the existing service points offered by ICICI, like rural ATMs, agents, and mobile points of service, there are service actors at the market yards belonging to the E-Mandi. Therefore farmers have enhanced options to immediately withdraw cash deposited to their account by buyers.

When farmers keep their produce with the accredited warehouse, they can request bank finance against the warehouse receipt from any bank, not only ICICI. The lending bank marks a lien on the stored goods as security for the loan. The commodity accounting system should preclude offering lien-marked goods for sale unless the borrower offers authority to pay off the loan amount to the bank and only the balance to be credited to the account of the seller. The option to access this inventory financing product in a supplementary reason to participate in the e-tender system and allows the farmer the possibility not to go in for a distress sale in case of low prices, by accessing a loan that allows her to wait until the price improves enough.

Risk management strategy in trade and finance transactions supported by ICT solutions

The electronic trade platform and the dissemination of information on trade prices, quality features, and all bid renders across the whole state provide an unprecedented transparency to the trade process and starts building a unique data set over time, which allows for a better analysis of local agricultural markets to make trade and finance decisions and for the avoidance of moral hazard within buyers and sellers. The seamless system of trading in e-mandi allows for declaration of trade results by 2:00 pm through a public announcement and SMS messages, and farmers are paid that same day. This is in contrast to traditional mandis that announce trade results late into the evening.

Information about the prices discovered along with the volume traded on the e-tendering system is widely available to farmers, general public and policy makers discouraging the formation of trader cartels within specific localities in the state. In a way, the e-mandi has allowed for a defragmentation of agricultural markets within the State, increasing the ability of buyers and sellers to connect in a much wider geographical region in search of the best offer. The inventory financing services made available to traders and farmers not only allow for a more efficient geographical, but also intertemporal arbitrage in commodity markets.

Delay risks in the traded lot delivery to buyers, dispute over payment to farmers and quality assurance of produce are thus favoured by e-mandi. Elimination of counterparty risk in the e-mandi has enhanced confidence amongst market players, as observed by the increase in trade volumes. Establishment of integrated tracking facility to record arrivals, traded stocks, deliveries and prices has enhanced transparency on price trend of agricultural commodities, traceability of each farmers lot, proper cess accounting and rise in market fee collection by the APMCs.

It is precisely the proper storage of information that generates knowledge on clients and markets required to ensure the development of new financial, marketing and logistic products and services for all actors. The continuous diversification of services provided through the e-mandi, represents a stronger value proposition for all users, as it becomes a gateway to access many types of financial and non-financial services with diminishing transaction costs.

Results

By the end of 2014 Karnataka had 82 mandis already operating on the electronic platform with full support from APMCs and local traders. It aims at eventually covering all the 155 remaining mandis in the State. From the day of its launch, February 2014, 0.75 million lots of trading have been carried out on the platform, with 4.5 million bids being made. Transactions on the platform are worth Rs 150 billion since it began – or about US$2 billion. It has serviced over 400 thousand farmers, 31 473 traders and 17 149 commission agents for all the 92 regulated commodities. Having realized the potential benefits of online markets to farmers, other states have evinced interest in implementing similar projects on a pilot basis. Andhra Pradesh has given approval for launching pilot project in six markets, Chhattisgarh for four markets and Gujarat in principle agreed for pilot project in 2 markets. Online spot trading has a huge potential if implemented on a large scale, given that India has over 7 000 market yards, together handling crops worth Rs. 2 500 billion annually. Out of these, 2 500 market yards are significant in terms of daily value of trade executed. Introducing online trading in these markets within next three years will benefit at least 1 million farmers by way of better prices. Based on the success of Karnataka, the Government of India has recently announced to establish the National Agriculture Market by integrating 585 APMCs throughout the country.

The introduction of organised electronic exchanges can bring about a great change in the physical market of commodities. The average cost of intermediation in farm commodities is 50 to 60 percent, which could be reduced to just 10 percent as shown by the experience in Karnataka.

BOX 1
YES BANK LTD. – ADM (Value Chain Finance)

YES BANK began to provide collateral-based post-harvest lending to farmers against pledge of Warehouse Receipts in 2014, thanks in part to improvements in the monitoring of agricultural prices throughout the country. The initiative describes innovative value chain finance mechanisms currently being used in the Latur District of Maharashtra State by YES BANK to provide loans to soybean and red gram farmers to meet direct agri-lending obligations set by the RBI under its "Direct Agri-priority sector lending requirements", maintaining good relation with Agro-processing companies who are also borrowers of the Bank and to achieve granular farmer funding having forward and backward linkage resulting superior asset quality with nil delinquency. Supply chain financing model includes backward and forward integration for high quality asset, leveraging technology in the absence of branch, rigorous market assessment, expanding the coverage through agents, mobile based price communication, electronic processing and approval of loans, issue of ABC Kisan cards to registered farmers, bundling of the inventory credit with savings accounts and remittances. This model of value chain finance primarily benefits farmers with surplus marketable produce and provides them with a storage facility and the option of selling at a higher price after the harvest season. The option of staggering sales over a longer period of time reduces price fluctuation. This finance model also benefits the processors as they store in the name of the farmer and this allows them to overcome government limitations imposed on stocking of agriculture food-grains for processing.

Source: the authors.

Challenges

The major challenges faced, and subsequent recommendations, are as follows:

- Farmers and traders continue to face information asymmetry. The copy of e-tender receipt should be given to the farmer to avoid any tampering by commission agent. Checks can be introduced to weed out traders with unsatisfactory or bad credit history.
- Traders would like guaranteed uniformity in quality of stocks delivered by farmers. Further improvements in agricultural practices among smallholder families are needed in order to supply of more consistent quality. Price premiums for quality are starting to appear to encourage farmers to produce better quality, but farmers have been slow to respond given the shortage of extension services that are responsive to the needs.
- Within production clusters warehouse and procurement centres (buying and storing facilities) are still needed to reduce transportation costs which farmers incur in accessing distantly located APMCs to sell their produce.
- Further reach of inventory finance to smallholder farmers needs to be promoted, through support to producer organizations that can bulk member product and trade collectively, thereby reducing transaction costs to individual smallholder farmers that trade small quantities.

The YES Bank-Hatsun payment system

Introduction and Background

Payment services tailored to agricultural activities are many times a much-valued specialized financial service demanded by smallholder families. This is usually the case when smallholder families are engaged in certain agro-industries where there are frequent sales transactions between producers and traders or processors occurring in remote rural areas. A good example of such an industry is dairy.

India has emerged as the world's largest milk producer, accounting for around 17 percent of the global milk production with an estimated production of 132.4 million tonnes during 2012-13, making the dairy sector the largest contributor to the agricultural GDP. The cash payment system of dairy cooperatives and companies to the millions of farmers poses many challenges such as the lack of safe payment channels in rural areas, big cash handling risk, misuse of cash by intermediaries, among various others. To overcome these challenges, YES Bank is providing solutions in association with Hatsun Agro Products, a diary processor, for real-time electronic payment delivery to dairy farmers. One such innovative solution is the YES Kisan dairy Plus, an instant payment service to dairy farmers. In this product delivery model, digital technology is leveraged to the maximum.

Problems addressed

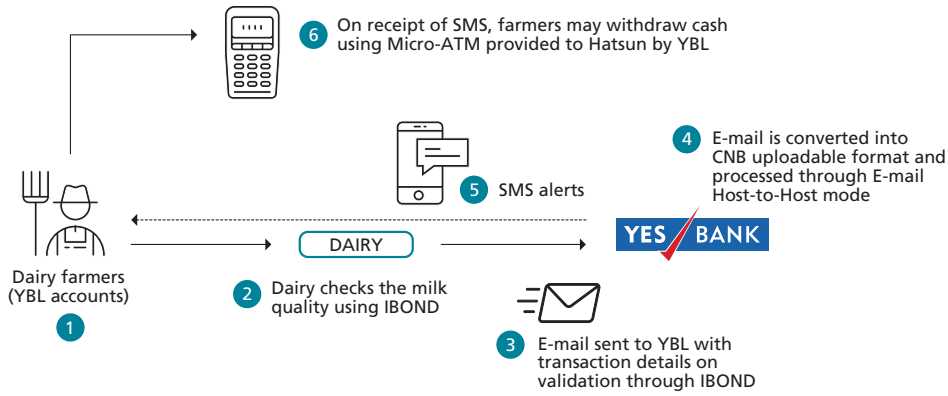
The dairy cooperatives procure milk from farmers in far-flung areas every single day. This sometimes implies challenges, such as cash handling and the disbursal of large cash payments spread out in vast rural areas. Furthermore, there is a risk of misuse of cash on the part of the intermediaries. Thus, to overcome these challenges, YES Bank in association with Hatsun Agro Products introduced a first-of-its-kind initiative to disburse real-time payments to farmers via an electronic medium. At the end of 2015, the bank had opened the accounts of approximately 1 200 farmers, who are actively making use of this facility to receive payments, and has plans to soon further increase the number to 10 000 farmers.

Located at Villupuram in the State of Tamil Nadu, Hatsun Agro Products is one of the largest dairies in South India – it procures around 2 million litres of milk daily from 4 500 milk banks (MBs), strategically located in over 8 000 villages. Every day, more than 300 thousand farmers deposit their cattle's milk at these MBs.

The existing procurement process presented a time lag between the delivery of milk and the receipt of payments by farmers. Hatsun wanted to distinguish itself by paying farmers as soon as they delivered the milk to the collection centres, as a strategy to secure stable supply of milk. To achieve this, the MB in-charge had to maintain sufficient cash during two days a week in order to pay the farmers. However, this payment modality resulted in many operational and security issues like risk of huge cash handling, misuse of cash from the MB in-charge, and, still, farmers had to wait on average 3 days to get payment.

Farmers expressed a need for a transparent and quick payment mode for their produce. Therefore YES Bank introduced YES Kisan Dairy Plus, for immediate payments to farmers at the moment of milk collection and migration from cash payment to electronic modes. Furthermore, the initiative focuses on adding further value to payment services like including overdrafts features that represent short term credit, life insurance to farmers, and short-term savings account in the form of overnight balances.

FIGURE 19
YES Kisand Dairy Plus process flow



Note: YBL = Yes Bank Limited; IBOND = System that transmit the results of milk analysis to a remote server; CNB = file extension name associated with Pegasus Mail.
Source: YES Bank.

The majority of farmers were based in unbanked rural areas. Thus, to initiate the electronic payment modality, it was necessary for farmers to have a bank account. Hence, farmers' "no frill" accounts (accounts that opened with zero balance and with no requirement to maintain any minimum balance for operation) were opened in YES Bank.

Process flow

As illustrated in Figure 19, once a farmer deposits his milk at the milk bank, the product is analysed for quality and quantity. This data along with the amount payable to the farmer is transmitted to YES Bank through a secure electronic channel. Afterwards, Hatsun's account gets debited and the farmer's account gets credited. The farmer then receives a message to his registered mobile number. If the farmer wants to withdraw the cash, it is done through the bank's micro ATMs, deployed at the collection centres. Mistakes due to human intervention were minimized if compared to the previous traditional model, and resulted in better operational efficiency.

Yes Bank opens the BSBD (Basic Saving Bank Deposit) account for the farmer and can immediately credit the milk payments in it, wherever a dairy processor has installed advanced automated milk testing machinery, based on the quantity and quality of milk poured. The farmer can either withdraw money from any of the ATMs, at any point in time, or she can withdraw from a YES Sahaj Micro ATM, an innovative, cost effective and scalable mobile transaction solution, installed at the dairy. Since the Bank is now aware of the farmer's transactional history, seasonal "over draft" facility is also being offered to them.

Risk management framework using ICT solutions

The YES Kisan Dairy Plus processes removes the role of the middlemen. Before the product was available, milk agents used to collect milk from farmers' doorsteps, test

BOX 2
YES BANK-YES SAHAJ (Payment Systems)

Technology has played an important role in financial institutions, achieving last mile connectivity in rural India and facilitating financial inclusion. YES SAHAJ Micro ATM, an innovative, cost-effective and scalable mobile transaction solution, enabled and processed over 0.82 million transactions with an aggregate value of over Rs. 8.78 billions till March 31, 2015. This benefited rural families, migrant workers and generated income for Business Correspondents. Launched in April 2011, the YES SAHAJ Micro ATM played a pivotal role in the operations of YES LEAP and YES MONEY in its collection and remittance efforts by allowing the Bank to track payments in real-time. YES SAHAJ as an innovative, low cost Micro-ATM that marries technological innovation, India's strong mobile penetration with existing principles for mobile banking and the BC model.

Source: the authors.

the milk, and make fortnightly or monthly payments. For farmers living in the most remote areas, Hatsun has made a provision of contractual service providers who collect milk from the farmers in 2 or 3 villages and transport it to the milk centre. These service providers are paid by Hatsun. Hatsun determines the mode by which real-time electronic payments are made to the farmers through immediate SMS alerts on their mobile phones. It also helps the bank to establish a network of micro ATMs at the milk centres that allows farmers to withdraw cash there.

Through this model the bank tries to address the very real and genuine issue faced by dairy farmers who never get timely payments for their produce. Also, the access to basic financial services is addressed through the opening of basic savings accounts with ATM card facility thereby enabling them to make use of their money as and when required.

Two factor authentication mechanisms (one time password and an ATM card swipe) were put in place to reduce the risk of cash withdrawal by a third party. Post-transaction confirmation through messages was also provided. In general, this is a comprehensive suite of financial products, tailored for dairy farmers:

- Instant Milk Payment (as applicable, in association with the respective dairy).
- Basic Saving Bank Deposit Account (BSBDA) with ATM-cum-Debit Card.
- Free unlimited withdrawals on any bank's ATM.
- Withdrawals at YES BANK's specially deployed YES Sahaj Micro ATM, available at milk banks and other bank agents.

Results

The bank has so far opened accounts for approximately 1 200 farmers who are actively making use of this facility to receive payments. Yearly, the system has enabled US$2.5 million in payments charging a transaction fee of 1 percent.

Meanwhile, Business Correspondents, or bank agents, were appointed by the bank for dispensing cash to the farmers upon their swiping of a debit card linked with the account. The bank has plans to begin Intra Bank Real Time payment

mechanism through Immediate Payment Services (IMPS) for the farmers having accounts with other banks. This would allow Hatsun Agro to make their entire payments through electronic mode.

Challenges

The major challenges faced, and the steps taken, are as follows:

- ***Account opening for dairy farmers:*** This is one of the most critical elements of the entire model. Considering that YES Bank has a limited branch network in rural areas, the Business Correspondent (BC) model was used to open savings account of dairy farmers. The individuals operating the milk banks, or collection centres, are appointed as BC agents, and account sourcing and servicing is done through them
- ***Installation of Micro ATM and cash management:*** It was initially planned that most of the transaction would happen at the BC and hence due care was taken to provide ATM devices to the BC agent, but cash management by the BC agent proved to be difficult. Efforts are being made to increase other points where farmers to withdraw their money, by expanding the agent networks.

4.5 CONCLUSIONS AND KEY RECOMMENDATIONS TO PROMOTE ICT INNOVATIONS IN AGRICULTURAL FINANCE AND INVESTMENT IN INDIA

Key lessons from the case studies

The two case studies presented highlight the way certain agricultural finance needs among smallholder families were serviced by formal financial institutions, adapting products based on deep client and agricultural market knowledge and managing risks in a more precise manner making use of digital technology.

Commodity exchanges can serve as an important marketing and risk management outlet for agricultural producers. This is by providing a safe and transparent venue for marketing commodities and their derivatives; improving price discovery and signalling; reducing market volatility; and serving as a conduit for delivering many services like inventory finance, logistics, and market advisory services. The services and benefits of commodity exchanges can be availed by producers of all typologies, as well as participants in the larger agri-food ecosystem. Notably, in fragmented agricultural markets, the inclusion of small-scale actors (producers, traders and processes) is important to achieving market volumes necessary for the financial viability of the exchange.

Furthermore, the effective and strategic use of digital technology to reduce transaction costs and manage information flows in a manner that supports analytics and risk management throughout the network of relevant participants, especially smallholder farmers, is an important element in well-functioning commodity exchanges. These are benefits that have enabled smallholder families to access inventory finance through warehouse receipts, which allows them to profit from rise in prices during the year, even when they face illiquidity right after the harvest.

The case of the dairy payment product developed by YES Bank and Hatsun Agro Products reveals how there are several unmet financing needs that are specific to agriculture among smallholder families, and how they can be identified and satisfied through a collaboration between the financial and agribusiness sector.

One of the most critical challenges to deliver payment services to dairy farmers was to provide them with savings accounts in a cost-effective manner. This was achieved by making Hatsun's milk collection centres business correspondents of the bank, allowing unprecedented low cost proximity to the target clientele. The key issue of making immediate payment to farmers was solved by the design of micro ATM machines with low operational costs, which contributed significantly to enable enough liquidity at milk collection centres.

The implications for the farmer's household cash flow management are significant, as for the first time in the dairy value chain in India, there are no deferred payments from processors to farmers. The benefit for the agribusiness firm is that this service enables it to expand its collection base and respond to growing demand for dairy products.

By studying the history of transactions account balances YES Bank is now offering overdraft facility representing short-term credit for eligible producers. This reflects the potential to expand the variety of financial services to these new clients once the relationship is established. This diversification of services enhances the value proposition for the client and also helps the financial institution achieve economies of scale and scope that favour their sustainability in rural areas. This progressive expansion of services is important to over time expand geographic coverage beyond that of the outreach of the partnering agribusiness like Hatsun.

The regulatory environment

It is a fact that agriculture in India is a state subject matter. Therefore the State needs to initiate regulatory reforms to ensure and enabling environment for the development of the sector.

To scale up mobile banking services successfully, it is important that the attractiveness of mobile money services exceeds that of traditional banking providers, and that these benefits are clearly communicated to farmers. The Yes Sahaj model of Yes Bank (see box 2) is a low cost Micro ATM for mobile banking and the BC model which is an innovative, cost effective and scalable mobile transaction solution, enabled and processed over 0.82 million transactions. The regulatory framework that has enabled payment systems in India consist of allowing cash-out/withdrawal from saving accounts at third party agents with transaction limits adjusted to client needs and also allowing market based pricing for these payment services. The M-Pesa initiative of Vodafone is a successful example of deep penetration in rural India with limited banking infrastructure, mobile payments and transactions such as deposit cash, transfer money, recharge mobiles and pay utility bills.

Public-private partnerships are now considered essential to the long-term viability of most interventions that use ICT in agriculture. The public sector in developing countries particularly may need guidance in providing technological services; a lack of human and financial resources, as well as the overwhelming needs of the rural population, weakens its ability to provide widespread services of acceptable quality. With private investment, public service provision can become more sustainable. Technical experts with experience in various subsectors; information technology (IT) teams for technological maintenance, design, and troubleshooting; multi-level policy makers; and farmers and farmers' organizations who can provide local know-how, are all needed to make services work.

Finally, ICT receipts can be integrated with other services that add value for farmers and co-operatives, including mobile payments and financial services, and can be used for improving the traceability and quality control processes. Cooperatives could also integrate marketplace solutions, enabling them to aggregate demand for input products and negotiate a better price for their members. The current model targets fraud in just one stage of the supply chain, and could be extended to address losses at other stages. For example, there is potential to incorporate a tracking and loading module to improve transparency around logistics and enable the weight of trucks to be measured on loading and arrival. The ADM initiative of Yes Bank describes innovative value chain finance mechanisms to provide collateral based post-harvest lending to farmers against the pledge of warehouse receipts. A supply chain-financing model includes backward and forward integration for high quality assets, leveraging technology in the absence of a branch.

Chapter 5

Leveraging on technology and rural networks to expand rural lending: the Alibaba experience in China

Li Ni and *Emilio Hernández*

5.1 INTRODUCTION

As a background, the Chinese agricultural and agribusiness sector represents a major employer. About 47 percent of the 1.36 billion people living in China at the end of 2014, were working in agriculture (National Bureau of Statistics of China, 2014). The central government recognizes the critical role the agricultural sector plays in the process of socioeconomic development in the country.

In 2004, the State Department adopted the "Three Nong Policy". The three Nong are "Agriculture" (nong ye), "Rural" (nong cun) and "Farmer" (nong min). The policy has become the principal guide for other policies aimed at supporting Chinese agriculture and agribusiness in China. Publically supported programmes to provide financial services to all actors in the agricultural sector are increasingly promoting the delivery of short and long-term loans, savings, insurance, hedging instruments, leasing and payment services.

Along with several measures focused on increasing productivity, the public policy agenda has prioritized the application of new ICT technologies to the different processes implied in agricultural markets and financial intermediation. In November 2014, the Chinese Prime Minister Li Keqiang proposed the approach called "Internet plus" during his presentation at the *World Internet Conference* in Wuzhen, Zhejiang province (Baidu, 2015). This approach encourages the use of innovative digital technologies in traditional economic activities. Agribusinesses and financial institutions have been supported to use digital technologies to build platforms that deliver their services, disseminate information and reduce transaction costs for clients and suppliers. Several "agri-e-businesses" applications have emerged and play an important role in this "Internet plus" trend in China.

This chapter is organized in the following way: first, we present a review of the current regulatory framework for financial markets. Second, we show recent trends in agricultural markets in the country. Fourth we document how, in this context, the Alibaba Group, a conglomerate of private companies, has developed the Ant Micro-loan product targeting rural areas and focusing on households engaged in food production and trade, using a unique business model. Finally, we present an analysis that highlights policy implications for increasing the outreach of similar initiatives while reaching poorer rural households and diversifying services.

The methodology used in this study consists of a collection of primary and secondary information on the evolution of ICT applications in the country's agricultural development. Face-to-face and telephone interviews that were conducted with staff from the Ministry of Agriculture (MoA), the Alibaba Group and Ant Micro-loan Division. Furthermore, several phone call interviews with farmers who had made use of these applications were carried out, to gather supplementary information.

5.2 RELEVANT ASPECTS OF CHINESE POLICIES SHAPING RURAL FINANCIAL MARKETS

The Chinese central government has put in place regulatory and fiscal policies that aim to encourage the financial sector to expand operations in rural areas and provide services, especially to poor small-scale producer families. The main formal financial institutions in China operating in rural areas are the Agricultural Development Bank, the Agricultural Bank of China, and the Rural Credit Cooperatives (RCC).

Some of the main incentives in place consist of a tax reduction or exemption for financial institutions issuing micro-loans in rural areas in favour of poor households. For example, microfinance loans issued to poor rural households are exempt from tax on interest income earned, and overall taxes on business generated in rural areas have a discount relative to those that in urban areas (three instead of five percent).

There are also subsidies that the Government's Poverty Alleviation Department used to pay part of the interest rate charged to clients that qualify as poor small-scale producer farmers. Discounts vary depending of the duration of the loan. In addition, the maximum loan size for eligible agricultural loans intended for small-scale producer farmers have been revised upwards, as a result of surveys determining investment needs greater than initially assumed.

The promotion of ICTs in the process of expanding the financial sector's rural outreach has consisted in the creation of regulatory frameworks that facilitate the establishment national and international ICT companies and the financing of their investments. This has been conducive for banks to increase the application of ICT in their internal processes and the development of financial products (EUSME, 2015).

This has been conducive to increased availability of digital services for agricultural production, marketing and finance. The agri-e-trade started a marked expansion in 2012 and reached to about RMB 20 billion (about US$3 billion) at end of that year. It is estimated the volume will exceed RMB 100 billion in 2016. An example of this trend is that in November 2013, the private conglomerate Alibaba Group cooperated with agriculture department of Hainan province to launch a featured e-trade platform called "Hainan Agricultural Signatures" and in the first 3 days, the total volume of coconut alone sold accounted for 63 percent of the total sales in a whole year. The Alibaba agri-e-trade model, which also has a component of credit services, will be illustrated in more detail in the next section.

There have also been significant exploration in digital technology applications in the delivery of agricultural insurance, motivated by the expansion of the agricultural insurance markets in the country. From 2007 to 2012 the cumulative premiums for agricultural insurance were more than RMB 60 billion (about US$9.5 billion), driven mainly by important government programmes that subsidize farmer's premium costs. The compound annual premium growth rate was more than 85 percent.

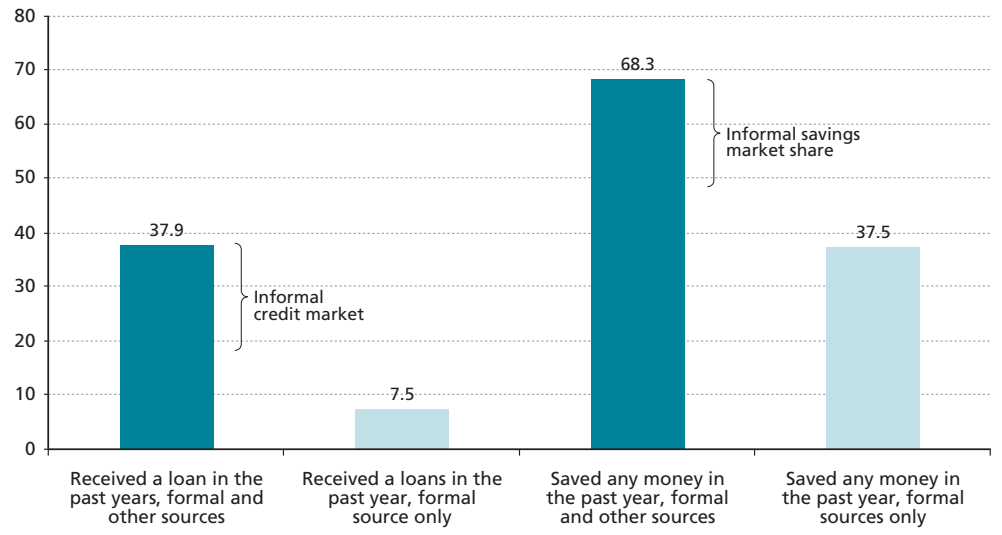
Internet companies have shown a keen interest in agricultural insurance given the relatively abundant production and climatic data availability collected in the country for many years by several government agencies, which enables the development of actuarial models.

In addition, there has been a significant push by the government, mainly through state-owned banks, to increase the presence of financial institutions in rural areas, which has resulted in an increase in the number of bank branches per 100 000 adults from 7.7 in 2012 to 8.1 in 2014, according to the World Development Indicators. In addition, the compounded annual growth rate of the national agricultural credit portfolio was 21.7 percent from 2007 to 2014 (Ministry of Finance of the People's Republic Of China, 2015).

Proper monitoring and implementation of these public incentives to promote the expansion of rural finance has been a challenge both for regulators and financial institutions. Application procedures for those loans that receive some form of subsidy or tax discount are quite cumbersome as they need to comply with monitoring procedures defined by the authorities. This has resulted in high transaction costs imposed on eligible clients who tend to be vulnerable and unable to afford such costs, as well as on financial institutions processing such loans.

In addition, formal financial service providers active in rural areas, like the agricultural development banks or the RCCs, are required by regulation to demand rather traditional forms of collateral to secure loans and reduce the risk category of their agricultural credit portfolio. This risk categorization determines their reserve

FIGURE 20
Percentage of the rural population over 15 years old in China that made use of savings and credits service between 2014



Source: recompiled by authors from the Global Findex database.

requirement levels. Examples of accepted collateral are home and land titles, machinery, and vehicles. This represents a form of exclusion of the poorer rural households that the policies are intended to reach, as few of these households have such forms of collateral available.

The prevailing scenario in rural financial markets in the country is illustrated in Figure 20. While the formal financial sector has been improving its rural outreach, particularly led by the provision of savings services, rural financial markets are still dominated by informal financial service providers, such as agricultural value chain actors, non-agricultural rural businesses, moneylenders, community credit and savings groups, family members and friends. In Figure 20, one can appreciate the proportion of the rural population making use of any credit and savings services, whether informal or formal. One can also appreciate the percentage that receives those services only from formal financial institutions. The difference between these two represents an estimation of the percentage of the rural population that makes use of informal credit and savings services. Informal financial service providers are dominant, especially in credit markets.

5.3 A STUDY OF THE ALIBABA GROUP AND THE ANT AGRICULTURAL MICRO-LOAN

Among many new ICT applications in rural financial markets, one particular case has been selected for further study given the significant scale the service has achieved in a short time. This is the Ant micro-loan, a business line created by the Alibaba group. This internet-based rural loan has many interactions with and complements well Alibaba's entire e-business empire and represents a private initiative without any government intervention.

The Alibaba Group is the biggest e-business service provider in China. It offers services like its online auction/selling platform named Taobao; a consumer goods e-trading platform called Tmall; the biggest e-payment tool in China, Alipay; the biggest rural micro-loan provider Ant Micro-loan; an offline logistics business RiRiShun; and a cloud service provider, Aliyun or AliCloud. Therefore Alibaba covers the entire gamut of on-line trading services.

Alibaba's businesses enable consumer-to-consumer (C2C), business-to-consumer (B2C) and business-to-business (B2B) sales services via web portals offering electronic payment services, a shopping search engine and data-centric cloud computing services. The group began in 1999 when Jack Ma founded the website Alibaba.com, a B2B portal to connect Chinese manufacturers with overseas buyers. In 2012, two of Alibaba's portals, Taobao and Alipay, handled RMB 1.1 trillion (about US$170 billion) in sales. The company operates primarily in China, and on the date of its initial public offering, 19 September 2014, its market value was US$231 billion.

Alibaba's C2C portal Taobao, similar to eBay.com, features nearly a billion products and is one of the 20 most-visited websites globally. The Group's website sales accounted for over 60 percent of the parcels delivered in China by March 2013 and 80 percent of the nation's online sales by September 2014. Alipay, the online payment service, accounts for roughly half of all online payment transactions within China. With a vision of creating a global e-Empire, Alibaba entered India in September 2014.

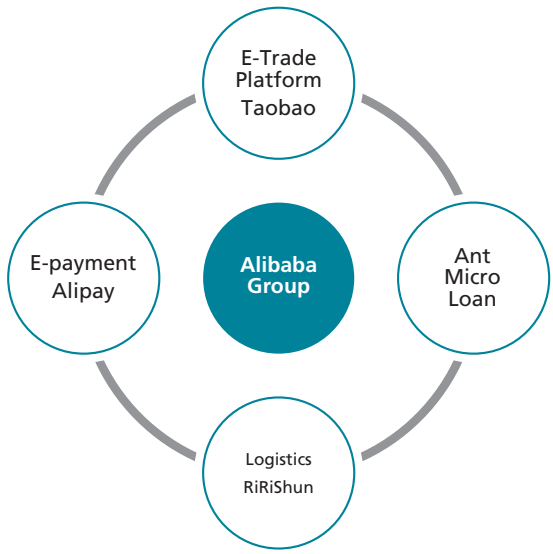
5.4 THE BUSINESS CASE FOR RURAL FINANCE IDENTIFIED BY THE ALIBABA GROUP

Over the years the Group realized that over 60 percent of the total listings in Taobab portal are related to trading food, both fresh and processed. And over 90 percent of all sellers and buyers in the portal are individuals and almost half of them live in rural areas. This suggests that agricultural products are a cornerstone for the online trading platform Taobao, and much of the trade of such products reflects the different sales transactions made by individual actors participating throughout all segments of domestic agricultural value chains.

Alibaba's analysis of the situation highlighted that an efficiency increase in value chain transactions would have a significant effect on the volume and frequency of trade in Taobab, which is one of the core businesses for the Group. Also, examining customer services revealed that rural clients faced significant liquidity constraints and that there was an unfulfilled demand for credit services. Therefore, the concept of a rural micro-loan was developed to ease the financial constraints identified that faced the individual actors in each segment of agricultural value chains. This is how the Ant micro-loan was created and launched in June 2013. Efforts made by Alibaba to launch this rural credit product are a result of a conviction that rural financial markets in China are underserved.

To provide the Ant micro-loan in a profitable manner Alibaba leverages on the logistical possibilities and the enormous amount of client data generated since inception by its many interrelated e-business applications that compose the Group's digital-ecosystem.

FIGURE 21
Alibaba's e-ecosytem, within which the Ant Micro-loan operates



Source: authors' elaboration.

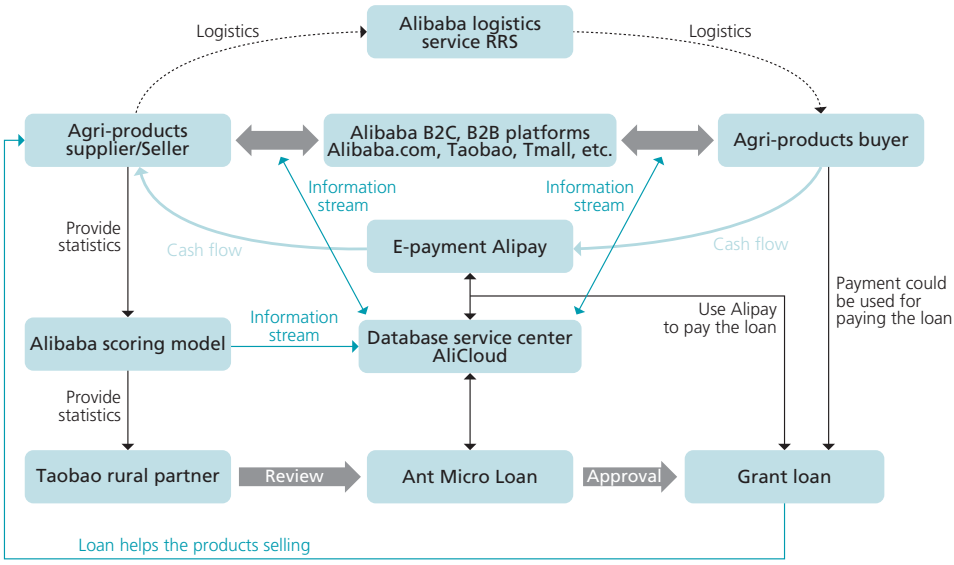
Characteristics of the Ant micro-loan

The loan offered targets rural clients, where there is a perceived demand, and has a maturity of up to a year. It can be used for any purpose but loan amounts have been specifically devised to cater for working capital and short term investment needs in agricultural and agribusiness activities carried out by the relatively poorer rural population in the country.

The main characteristics of the loan are:

- The Ant micro-loan uses the internet for submitting the application material and has an approval time of 1 to 3 days;
- The loan amount ranges from RMB 20 000 to RMB 1 million (~US$3 125 to ~US$156 250);
- No pledge or guarantee is needed when applying for the loan. There are no additional fees for processing the loan;
- The interest rate charged is 0.042 percent per day with up to 12 equal monthly instalments and equal principal repayment;
- The loan period is 12 months; clients may extend the period after the due date;
- If the borrower fails to pay the full monthly quota, they can also pay a minimum monthly amount. An extra interest rate of about 0.05 percent per day for the due unpaid part will be charged until it is paid.
- Quotas can be paid using funds in the client's sold listings on Taobao; and
- Alipay can be used as the account for receiving the loan, receiving the payment for goods or transferring money to any third-party bank accounts.

FIGURE 22
Products and processes for the inter-linked services provided by the Alibaba Groups



Source: authors' elaboration.

After submitting the online application form, the applicant also needs to attach some supplementary documents for the Ant micro-loan division to evaluate, namely:

- Screenshots of the transaction details of the applicant's savings account at a bank;
- A letter stating the source and amounts of past loans at financial institutions; and
- A Marriage certificate for married applicants.

If the loan is granted, the funds will be disbursed to the client's Alipay account.

From all of these conditions, the one that is most revolutionary given the financial sector's current practice is the fact that no collateral is required. The removal of this binding constraint has increased significantly the pool of potentially eligible clients in rural areas. Another enabling starting condition that the product exploits is the relatively high access to savings bank account that the rural population in China have, that contribute to the wealth of information that can be collected to assess client cash flows. Figure 22 illustrates the process that governs the issuance and use of the Ant micro-loans, and how this service links to all other services provided by the Alibaba group.

5.5 RISK MANAGEMENT STRATEGY

There are three key aspects implied in the risk management strategy used to deliver the Ant Micro-loan in two phases.

Risk management during the pre-loan phase

The loan appraisal team at Alibaba's headquarters receive the electronic loan application and evaluate the history of the client by searching for any relevant information from all Alibaba's e-business services. All the client's previous selling and buying logs, their remarks, comments, and its historic transaction flow are assessed. Alibaba has developed a credit scoring model using the inputs from the transaction database. The scoring model evaluates applicants and categorizes them into various levels. The score and category determined by the credit scoring model represent the first assessment.

The results from this quantitative first assessment are verified by a qualitative assessment conducted by Alibaba's loan officers. They will re-examine all information about the applicant, and if the score or risk category is below a certain threshold, then the loan officer requests further checks on the applicant's profile to be conducted by Ant micro-loan partners in communities as close as possible to where the applicant lives.

These partners can be of several types. They can be rural cooperative banks or RCCs, or MFIs, who are asked to check their database to assess the applicant's credit history. If there is no history on record, officers will ask the nearest Taobao Rural Partner to verify client's character.

The Taobao Rural Partners are individuals that live in or close to the village where the applicant lives. Alibaba has recruited these partners to help disseminate and monitor loans at the village level. These partners teach the clients about all of Alibaba's services using computers or cellphones. Partners usually have their own local businesses and Alibaba only pays them commissions based on the business

they generate. Alibaba launched the Rural Taobao Programme in October 2014, with a first investment of RMB 10 billion (~US$1.6 billion) to set up 1 000 county-level service centres and 100 000 village-level service stations (among which there are 2 300 RCCs), and in each of these village stations, there is a Taobao rural partner. These partners can provide additional references on the applicant and if needed, can go and interview the client to assess their repayment ability and character.

The main prerequisites to become a Taobao rural partner are: be over 18 years old, with full capability for civil liability; be proficient in operating computers and mobile phones and have experience in online shopping; and be honest, diligent, possessing a strong will to help villagers and devoted to pursuing a career in Taobao.

Furthermore, there are four steps to be undertaken before becoming a Taobao Rural Partner:

- Step 1: Register one's personal information at Alibaba's Taobao Rural Partner Programme website
- Step 2: Alibaba reviews the qualification and certificates uploaded by the potential applicant
- Step 3: Signing of the agreement
- Step 4: Receive brief training for kick-starting the provision of services.

After officially becoming a Taobao Rural Partner, the partner will receive the following support directly from Alibaba:

- Special technical support from designated staff;
- Business training, e.g. in operations, business skills, promotion, credit investigation;
- Operational support in logistics services from RRS;
- Awareness-raising support, e.g. through advertisements, by radio, TV, newspapers, posters.

Risk management during the post-loan phase

After granting the loan, Alibaba officers will monitor changes in the listings and auctions made in the client's Alibaba accounts. Aspects that are considered suspicious, like the withdrawal of loan funds accompanied by a sudden and sustained inactivity in all accounts, will be communicated to Alibaba partners at the village level for them to meet the client and verify status.

If the applicant maliciously defaults on the loan, all of their online activities will be blocked and the situation will be communicated to the nearest RCC and the Taobao partner. In addition a notification letter will be generated and sent to all their associated Alibaba accounts notifying the alert.

There are some important aspects to highlight about this risk management strategy. The first is that it attempts to leverage on the big data related to clients, to which the Alibaba Group has access thanks to its unique business model. Alibaba has information regarding the client's on-line transactions in Taobab, Tmall and Alipay, as well as off-line transaction in RRS. All this information is managed in the Group's database service centre, AliCloud, and can be processed using the algorithms designed for the credit scoring model.

The use of a credit scoring model is an attempt to reduce as much as possible the costs and time of the overall credit application process and increase the effectiveness

of client screening. However, since the start of the Ant micro-loan division, it was clear that the use of credit scoring is limited by the fact that the target clientele composed of rural individuals are only marginally represented in the current clientele pool, and their creditworthiness has determinants that probably differ from those of current clients.

Therefore, the credit scoring model is a useful tool to decentralize credit approval decision-making, rather than for making final decisions. Costs are reduced by doing a closer client analysis at the village level only for clients whose credit score indicates too much uncertainty. The credit scoring model has been complemented by establishing partner agents that have proximity to clients and can verify client information before final credit approval decisions are made. The identification and establishment of this partner network implied a significant investment for Alibaba.

Second, as illustrated in Figure 22 above, the value proposition of the Ant micro-loan for the client is enhanced by the fact that it comes as a complement to all the other payment and trading services offered by the Alibaba group. This increases client loyalty. Continued access to the useful "ecosystem" of services represents a strong incentive for clients to avoid loan default. The risk of having all of the client's Alibaba accounts cancelled as well as suffering reputational damage within the client's own network of suppliers and buyers is an important default deterrent.

Finally, all of the above risk management considerations enable Alibaba to feel confident in forgoing the need to request collateral, which is one of the main breakthroughs allowing an expansion in rural outreach. It is critical to consider that, as a mass retailing conglomerate, Alibaba does not adhere to the same type of regulatory frameworks as banks, and thus is able to avoid important disincentives faced by formal financial institutions such as large provisioning amounts required for credit portfolios that are not supported by collateral. This experience highlights how catalytic improvements in the financial sector regulatory framework can be.

Ant micro-loan results

Although Alibaba does not publish official figures, local experts consulted estimate that up to 30th April, 2014 (11 months after the launch of the product) the cumulative number of loans granted was 4 030 800 with a total cumulative loan amount disbursed of RMB 81 023 000 000 (about US$12 billion). Which suggests an average loan size of about US$3 200. The non-performing loan rate has fluctuated between 2 and 3 percent of the portfolio.

There are no official statistics showing the composition of the portfolio by activities financed, but the most common activity reported in applications is "fluid capital circulation" hinting this type of loan is mostly used to fill short term financing gaps in net cash flow from the different livelihood activities of the rural households targeted.

5.6 CONCLUSIONS

Rural financial markets in China are quite fragmented, and various types of formal and informal financial service providers co-exist, as they have comparative advantages serving different client segments with different financial products. Informal financial service providers tend to dominate rural credit markets with a clientele composed mainly of poorer rural households with little or no collateral who are

engaged in local agribusinesses as part of their diversified livelihood activities. These informal credit services are recognized to be limited in terms of their outreach and flexibility, and with high costs.

The Alibaba Group saw an opportunity to take a share of this informal rural credit market, by offering formal credit products to rural households that were excluded or underserved by the existing financial sector. The Ant micro-loan launched by the Alibaba Group does not rely on client collateral and is offered as part of the suite of electronic trading and payment systems that form the "e-ecosystem" of services.

The value proposition made to the client has proven to be high relative to other formal and informal options, as evident from the rapid expansion of the portfolio and low levels of non-performing loans. This value relies on a loan that is easy to request, does not require collateral, and is complemented by the suite of trading, logistics and payment services offered by the Alibaba Group. The package of services makes the loan product more interesting than another loan that might have slightly better terms but is offered individually.

The key to Alibaba's risk management strategy for the Ant micro-loan product is the ability to track and analyse information about the rural client and all the actors this client interacts with, through its e-ecosystem. This massive amount of information constituting Big Data, has been instrumental in developing a credit scoring system that contributes to the core process of screening creditworthy clients and avoiding reliance on collateral.

Still, a critical aspect revealed by the experience is that human assessment is always needed in order to cross check and validate information on client performance and character, especially because the rural clients targeted were precisely those that tend to have a marginal presence in Alibaba's current client pool, and their creditworthiness has determinants that are likely to differ from those of current clients. For this reason, Alibaba invested heavily in establishing a network of rural partners comprising individuals that live in the proximity of rural clients, promote the use of all Alibaba services, and assess client character and ability to repay in those cases where the credit scoring model categorizes risk above a certain threshold. Therefore, the credit scoring model is a useful tool to decentralize credit approval decision-making, rather than for making final decisions.

As a mass retailing conglomerate, Alibaba is not subject to the same type of regulatory frameworks as banks, and thus is able to avoid important disincentives faced by formal financial institutions, such as large provisioning amounts required for credit portfolios that are not supported by collateral. This experience highlights how innovations in the financial sector regulatory framework can be catalytic, allowing the categorization of risk to rely less on collateral.

Chapter 6

Two case studies of Agricultural Lending Programmes in the Philippines that use effective risk management techniques

Carlos Ani and *Silvestre Andales*

6.1 INTRODUCTION

Agriculture accounts for a fifth of the Philippines' total domestic economy. The lack of access to agricultural credit, appropriate agricultural technology and a steady market has long been a major challenge for smallholder farmers. While the banking system has an expanding credit portfolio at the national level, not much is being directed to rural areas, and even less to smallholder farmers because of the perceived risks in lending to them.

This research study looks deeply into the operations of two microfinance institutions – "Alalay sa Kaunlaran Inc." (ASKI for short) and "Paglaum Multi Purpose Cooperative" (PMPC for short) – to analyze the different risk-management tools and techniques they are using that have enable them to run healthy and growing financial service portfolios serving smallholder families, as part of wider set of financial services, like savings and insurance, that these organizations have been providing in rural areas for several years.

The two case studies described show that there are common risk management techniques being used by ASKI and PMPC, which can be useful to shape principles for providing agricultural loans to poorer smallholder families in the Philippine's context. The 11 common principles are the following:

1. Lending using a group context approach in the context of limited individual credit technology;
2. As part of a thorough background check on clients, securing village leader's endorsements,
3. Conducting visits to the farm to check on farm size, boundaries, condition, topography and irrigation,
4. Facilitating access to professional sources of technical assistance to smallholder farmers on good agricultural practices, marketing strategies and management skills;
5. Leaveraging on exisiting public programs like the Philippine Crop Insurance Corporation (PCIC), mitigating weather risks, and the Agricultural Guarantee Fund Pool (AGFP), mitigating forms of credit risks;

6. Offering, directly or indirectly, various other financial and non-financial services to farm households that complement the agricultural loan, such as savings and insurance and agricultural extension.
7. Tranche release of loans according to production cycles, to prevent fund diversion;
8. Facilitate access to high quality source of farm inputs and tools;
9. Conducting monthly group meetings to monitor progress of crops and to keep regular contact with farmer-borrowers;
10. Facilitate off-taker contracts to ensure a company or trader buys all of the produce of the farmers and the loan is deducted from the sales proceeds;
11. An efficient, honest and responsive loan administration.

The 11 tools listed above comprise the basic set of risk management tools that can make an agricultural lending program successful, in the Philippine context. A deeper analysis shows that such tools are addressing the various challenges faced by farming families in the agricultural value chain and in its diversified livelihood, where non-agricultural activities are also very important.

One major challenge of farmers is access to more profitable markets segments, as they are usually engaged in local spot agricultural markets with unpredictable volatility and very low profit margins. Both PMPC and ASKI realized that identifying more profitable markets and offering better financial and non-financial tools to mitigate risks are key goals for smallholder families before they decide to invest in transformative agricultural ventures. In the particular case of PMPC, it has been able to operate its own grains facility that provides rice warehousing, milling and drying services. This facility buys all of the rice produce of farmer-borrowers. This complements the various financial services offered to smallholder families.

In contrast, ASKI has a tie-up arrangement with San Miguel Corporation (SMC), which is a large producer of alcohol, starch and animal feeds, which provides technical assistance, marketing and processing services for smallholder families receiving financial services from ASKI. Using this tie-up, ASKI links farmers to SMC to enable the sale of cassava produced to SMC. ASKI also has empowered its onion farmer client to have a marketing tie-up with food chain companies which buy all of the onions and chilli peppers produced by ASKI's farmer-borrowers. These marketing arrangements lead to better prices and higher incomes to smallholder farmers and excellent repayment of loans.

The innovative agricultural lending programs started by ASKI and PMPC can be expanded with further partnerships with the banking sector and public programs, by promoting further increase in the type of financial services offered to smallholder families, and the promotion of policies that improve the enabling environment for the rural economies. These lending programs can also be replicated by financial institutions (rural banks, cooperatives and microfinance institutions) all over the country realizing the significant market potential that poorer rural households dependent on agriculture represent. There are many determined financial institutions like this in the country, and by letting them know good practices for successful agricultural lending, they can then contribute to the financial inclusion goal in the Philippines.

The Government has put in place a law mandating banks to allocate 15 percent of their loans to agriculture and 10 percent for agrarian reform beneficiaries[15] (ARBs). But compliance is considered low, especially for smallholder and ARB farmers, because big commercial banks, in general, do not know how to lend directly and successfully to smallholder farmers and to ARBs. Another reason is that there is a lack of accredited Rural Financial Institutions (RFIs) through which banks can lend to farmers as a form of alternative indirect compliance.

The government should promote to rural banks, thrift banks, cooperatives and microfinance institutions this proven set of risk management tools, so they can adopt them and also lend to smallholder farmers directly and successfully. The successful ones can become accredited Rural Financial Institutions (RFIs); then government should encourage the commercial and big banks to lend to these RFIs. In this way, there will be a hundredfold increase in the volume of credit that goes out to smallholder farmers and ARBs. Using these new bold strategies, the Philippines can make can make significant progress in reaching the large population of unbanked in the country and promote a more inclusive financial system.

6.2 THE FINANCIAL REGULATORY FRAMEWORK IN THE PHILIPPINES

The agriculture sector remains the main source of income and employment for 30.9 percent of the working population. It employs 12 million people, according to official statistics. According to World Bank data, 40.6 percent of the country's total land area is agricultural and 51 percent of the total population still lived in rural areas in 2011.

While agriculture's role in producing food and generating income in the rural areas is essential, the sector's contribution to the country's gross domestic product (GDP) has been declining over the years. According to the statistics office, about a third (29.7 percent) of the country's total output was agricultural back in 1946. By 1995, agriculture's GDP contribution was down to 21 percent; in 2013 it further declined to 12 percent. This is considered part of an on-going structural transformation process where the non-agricultural sector has been growing in part thanks to the labour released by a more productive agricultural sector. The latter produces more output in aggregate terms but represents a smaller share of the total GDP.

Access to agricultural credit has an important role in this process of rural development in the Philippines. However, access to formal credit has been restricted to very few actors that have significant levels of collateral, and thus all other small and medium agro-enterprises, including smallholder farmers, have significant credit constraints, which have been partially met by a very large group of informal financial service providers. The Asian Development Bank (ADB) considered provision of rural credit as one of the seven priority areas crucial to the transformation of the rural economy. Rural credit is an essential agricultural service necessary to meet the requirements in the production and consumption of rural people. However, only 30 percent of the rural credit is provided by banks and formal financial institutions, the remaining 70 percent of credit source is accessed from informal lenders.

[15] Agrarian reform beneficiaries are constituted by landless farmers, including agricultural lessees and tenants, in addition to seasonal wage employees providing labor in farms.

The Agri-Agra Reform Credit Act of 2009

To encourage the flow of credit to agriculture, the government, in 2009, passed the "*Act Providing for an Agriculture and Agrarian Reform Credit and Financing System Through Banking Institutions*". Under this law, also called as the "Agri-Agra Law", all banks are required to have 15 percent of their total credit portfolio destined to agriculture and fisheries in general and at least 10 percent shall be made available for ARBs, for a total of 25 percent. The said law defines "agriculture and agrarian reform credit" as loans granted for the following activities and purposes: (i) agricultural production; (ii) promotion of agribusiness and exports; (iii) acquisition of work animals; (iv) acquisition of lands; (vi) construction, acquisition and repair of facilities for production, processing, storage, and marketing and such other facilities in support of agriculture and fisheries; (vii) efficient and effective merchandising of agricultural and fishery commodities stored and/or processed by the facilities in domestic and foreign commerce.

This law rationalizes the modes of compliance by banks. Apart from direct loans to qualified borrowers, a streamlined list of alternative credit delivery mechanisms is provided in the law. New alternatives for banks include on-lending to accredited Rural Financial Institutions (RFIs), investing in bonds that are declared eligible by the Department of Agriculture (DA) in consultation with the Department of Agrarian Reform (DAR), loans for construction and upgrading of infrastructure that will benefit the agri-agra sector as well as loans to the National Food Authority (NFA) and NFA-registered warehouses, millers and wholesalers. The Philippine's Central Bank, the BSP, will accredit the regulated RFIs while the Department of Agriculture (DA) will accredit the non-regulated RFIs such as cooperatives, microfinance NGOs, among others.

The BSP has established penalties for non-compliance and/or under-compliance with the said law. Banks that fail to comply will have to pay a penalty fee equivalent to half of one percent (0.5 percent) of the amount of non- or under-compliance. Ninety percent of the fines collected is split equally between the Agricultural guarantee fund pool and the Philippine crop insurance corporation to augment their funds, while the remaining 10 percent is remitted to the BSP to cover its administrative expense.

The Agri-Agra law allows the channelling of funds from big banks to accredited RFIs, which are banks, cooperatives or MFIs, that have been authorized to raise funds for Agri-Agra lending by accepting wholesale loans, placements in RFI special accounts and equity investments (preferred stocks) from other financial institutions and especially from big commercial banks. RFIs then act as direct conduits to the agriculture sector and ARBs by channelling the funds specifically allotted by other banks for the program. This gives RFIs a critical role in the funding chain. The use of RFIs eliminate the old practice of "multiple layering" which is lending through several layers of conduits before the proceeds are received by the targeted clients or intended projects.

The BSP monitors compliance. After the Agri-Agra Law rationalized alternative compliance mechanisms in 2011, there was over-compliance in the Agri component, with 27 percent, and under-compliance in the Agra component with only 3.4 percent. Since 2011, banks in general have been able to comply with the 15 percent Agri component (agricultural loans) but fell short of the 10 percent Agra component (loans in support of agrarian reform).

Broken down by type of banks, only rural banks and thrift banks surpassed the law's requirements, while in contrast, the big banks, e.g. the universal and commercial banks, fell short. All policy makers and legislators feel that the Philippine banking system is a rich source of credit resources while agriculture is full of opportunities for productive activity. But what is lacking is the network of linkages that put the two together. Data shows that while universal banks and commercial banks have abundant credit resources, they have been under-complying with the Agri-Agra credit requirements.

One of the primary reasons is that these larger financial institutions are based in urban centers which are close to depositors, and they lack a network in rural markets. Hence, they lack the capability and expertise to assess agricultural credit, and to extend loans to smallholder farmers and ARBs and their organizations (Legarda 2009). On the other hand rural banks and thrift banks are present in rural areas and are able to handle rural credit transactions; hence their compliance with the law is much higher. Universal and commercial banks have a higher alternative compliance than direct lending because they tend to gravitate towards alternative modes of compliance, which represent less risk than direct lending, as larger commercial banks do not currently have the expertise to handle Agri-Agra financing (Virtusio & Padronia, 2014).

In general, most financial institutions still find agricultural lending at the small scale very risky because they have no direct knowledge on the type of production and marketing risks faced by smallholder families. In addition, there is unpredictable weather conditions, and profitability is hampered by a lack of rural infrastructure such as farm-to-market roads; irrigation systems; and post-harvest and storage facilities (Teves, 2014). Some bankers feel that the agricultural sector is not able to accept and payback loans due to basic financial infrastructure issues. Implementing the Agri-Agra law, banks could suffer in the form of higher non-performing loans if their capacities to service agriculture do not improve. Many bankers report that government should provide more support for building post-harvest facilities, agricultural machineries and farm-to-market roads.

The emerging view by BSP and others is that the way to promote lending to Agri-Agra beneficiaries is to address the "underlying conditions" as to why lending to this specific sector is difficult for banks. Here is where case studies of successful agricultural lending programs, such as this paper, can be useful to banks, so they can learn how to successfully mitigate risks.

Institutions that help mitigate risks

Philippine Crop Insurance Corporation: To encourage banks to lend more to agriculture, the government created risk-mitigating mechanisms, one of which is the Philippine Crop Insurance Corporation (PCIC), which provides small farmers and farmer associations with insurance protection and guarantee coverage against crop losses, particularly for rice, corn, high-value commercial crops, livestock, fisheries, and non-crop agricultural assets (i.e. warehouses, rice mills, transport facilities, and other farm equipment due to perils like fire, theft, and earthquake).

PCIC's principal mandate is to provide insurance protection to farmers against losses arising from natural calamities, plant diseases and pest infestations of their rice and corn crops as well as other crops. The Philippines is vulnerable to natural disasters that cause devastation on crops and miseries to agricultural producers

and lenders of agricultural credit. Due to the marginality of most landholdings, the result of these losses is devastating to the finances of the farmers.

In 2012, PCIC's penetration rate was only 4 percent, equivalent to 311 388 farmers, fisherfolk, livestock raisers and other rural dwellers. In 2013, it improved to 8 percent as PCIC was able to provide agricultural insurance to 732 654 stakeholders. (Teves, 2014)

The national government provides funds for PCIC to subsidize premiums paid by farmers. For example, in 2014, government gave a 1.2 billion peso subsidy to cover the cost of premiums of subsistence farmers and fisherfolk, in 20 priority provinces covering various crops, fisheries and livestock. But outside of these 20 provinces, only rice and corn crop insurance are subsidized by the government (Teves, 2014).

Farmers and banks have cited the often delayed payment of indemnities as a weakness of the PCIC, many times going beyond the prescribed 20 days. To accelerate the processing of insurance claims, PCIC has started piloting specialized programs like the weather index-based insurance (WIBI) and the area-based yield index insurance (ARBY). Efforts are concentrating on lowering the total cost that PCIC faces in order to provide insurance to smallholders, which is quite high for international standards, and represents the main constraint in order to reach a much larger percentage of the rural population.

Agricultural Guarantee Fund Pool (AGFP) is a DA program being managed by the Land Bank of the Philippines (LBP). It was created in 2008 to mitigate risks in agricultural lending, thereby facilitating the provision of credit to the agricultural sector. By providing guarantees to unsecured loans made by lending institutions to small farmers and fisherfolk, the program aims to facilitate the flow of formal credit to farming households in the rural areas. AGFP is covering loans made by lending institutions to small farmers and fisherfolk who till no more than 7 hectares of land or engage in small-scale livestock, poultry or fisheries. AGFP covers up to 85 percent of the loan exposure of accredited lending institutions against all types of risks of non-repayment by farmer-borrowers, except fraud.

In 2013, AGFP was able to provide a guarantee cover to unsecured loans amounting to PHP 5.4 billion, involving 134 808 loan transactions with about 87 625 small farmers and fisherfolk. AGFP had a total of 243 partner-lending institutions in 2013. Starting with 19 banks in 2008, 67 banks and conduits now have guarantee lines with AGFP in 2013 (Teves 2014).

While the BSP has already attested to the AGFP's strength to serve its guarantee purpose in case of defaults, not all banks are responsive to AGFP's programs. It seems that credit guarantee still does not minimize the need for collateral required by private banks. It was observed that even with the credit guarantee that AGFP offers, large private banks still prefer to lend to less risky sectors (Teves 2014).

Aside from the inherent risks of agriculture, credit guarantee is also subrogated, which is one factor that banks dislike. Unlike insurance, wherein the loan is extinguished upon payment, banks still have to collect payments from borrowers – which entails costs – and remit at least 30 percent of the guaranteed amount to AGFP. Otherwise, the bank will not be able to renew its guarantee line with AGFP. Given this reality, some banks choose not to avail of the government's credit guarantee at all (Ruiz 2014). In the case of ASKI, it decided to exit the AGFP program because of this onerous provision.

6.3 RECENT TRENDS IN AGRICULTURAL MARKETS

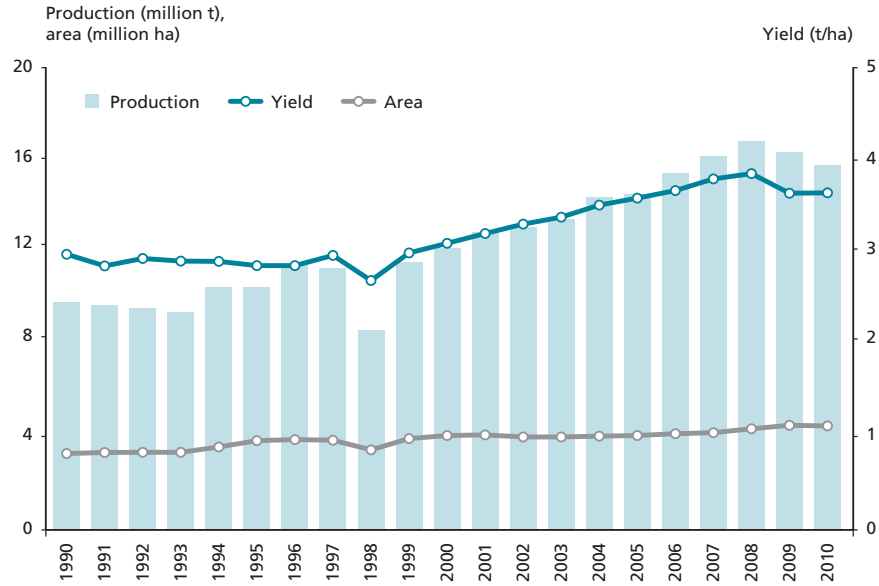
The two case studies included in this study covered crops like: rice, onions, cassava and cacao. This section shall cover briefly a discussion on the trends in the production of these four crops that is useful to keep in mind in order to appreciate the business opportunity that pioneer financial institutions are recognizing in agriculture.

Rice

Rice production in the country of Philippines is important to the food supply in the country and economy. The Philippines is the 8th largest rice producer in the world. Rice is the most important food crop, a staple food in the country. It is produced extensively in Luzon, the Western Visayas, Southern Mindanao, and Central Mindanao.

The Philippines' arable land totals 5.4 million hectares. Rice area harvested has expanded from nearly 3.8 million hectares in 1995 to about 4.4 million hectares in 2010. However, the country's rice area is still very small compared with that of the other major rice-producing countries in Asia. About 70 percent of its rice area is irrigated. The country's production increased by a third, from 10.5 million tons in 1995 to 15.8 million tons in 2010. Although yield improved from 2.8 tons/ha in 1995 to 3.6 tons/ha in 2010, it was still way below the yield potential of modern varieties, as reported by the Philippines Department of Agriculture (see Figure 23).

FIGURE 23
Production in metric tons, yield (in metric tons per hectare), and area planted (in hectares) for rice in the Philippines from 1990 to 2010



Note: Rice production has been slowly increasing since 1990, but the area has remained stagnant, showing overall improvement in yields.
Source: AD.

Rice is a staple food for most Filipinos across the country. The nation's per capita rice consumption rose from 93.2 kg per year in 1995 to 123.3 kg per year in 2009. The country produces 90 percent of its annual rice consumption, and the remaining 10 percent is imported from abroad. In 2010 and 2011, the country was the biggest rice importer in the world, meaning that the aggregate demand for rice implies by the 10 percent of domestic demand is very high. Its rice imports amounted to 2.38 million tons in 2010, mostly coming from Viet Nam and Thailand.

Despite these imports, rice prices for consumers are some of the highest in developing Asia (as are farm-gate prices for farmers). The high prices are enforced through an import control by the National Food Authority (NFA), a government agency, which also procures paddy from farmers at a government support price. The NFA is also involved in rice distribution by selling rice through the agency's licensed and accredited retailers/wholesalers in strategic areas at a predetermined price.

Modern high-yielding varieties account for the vast majority of rice production, with less than 3 percent of production coming from traditional varieties. Labor use on rice is lower than in many developing Asian countries at about 60 person-days per hectare per crop. Some of the reasons for the relatively low labor use are the widespread use of direct seeding and the mechanization of land preparation and threshing in many parts of the country. Moreover, rice farming is the source of income and employment of 11.5 million farmers and family members as reported by the Department of Agriculture.

Farm-level rice yields in the Philippines have grown in the last decade without a significant change in inputs (fertilizer, herbicides) and crop establishment methods. This progress in rice yields could be related to the use of good-quality seeds: hybrid and certified seeds.

Rice production constraints: The major constraints to rice production in the Philippines include frequent typhoons, growing demand from a growing population, declining land area, high cost of inputs, and poor drainage and inadequate irrigation facilities. Some of these constraints are interrelated. Unabated conversion of some agricultural land to residential, commercial, and industrial land reduces the area devoted to rice production, which leads to a shortage in domestic supply.

Climate change and the vulnerability of crop production to drought and heavy rainfall, especially during the typhoon season, severely affect production. The Philippines bears the brunt of typhoons coming in from the Pacific Ocean. Successive heavy rains cause severe drainage problems in paddy fields, thus resulting in a significant reduction in rice yield and quality. There is deterioration of irrigation systems, which is partly due to lack of maintenance due to low collective management skills. Rainfed lowland rice suffers from uncertain timing of the arrival of rains, and drought and submergence. Weeds, drought, diseases (blast), acidic soils, and soil erosion are major problems of upland rice in the Philippines. As reported by the Philippines Department of Agriculture, the high cost of inputs, particularly fertilizer, hinders farmers from applying optimal fertilizer amounts to input-responsive high-yielding varieties.

Rice production opportunities: For the Philippines to become self-sufficient in rice, it has to adopt existing technologies such as improved varieties and know-how to have yield increase by 1–3 tons per hectare. Better quality seed combined with good management, including new postharvest technologies, is the best way to improve rice yields and quality.

Cassava

Cassava (*Manihot esculenta Crantz*), locally known as "kamoteng kahoy", is a basic staple to 500 million people in tropical and sub-tropical regions. It has the potential to reduce hunger because it is a cheap substitute for rice. Cassava is also used for animal feed, alcohol and starch production. In 2006, cassava contributed PHP 9.1 billion to the local economy. Cassava is one of the widest grown root crops in the Philippines.

The average annual production for the past ten years is 2 million metric tons, and 75 percent of it is used for food, 10 percent for starch and 15 percent for animal feeds. The demand for animal feeds is increasing. Cassava has gained acceptance as a high energy ingredient in animal feed formulation, and this partly driven by the high cost of locally produce maize (Bacusmo, 2000).

Imports: The country needs more than 1 million metric tons for animal feeds and alcohol alone every year, but it cannot meet this requirement internally, hence it has to resort to importing from other countries. Thailand and Viet Nam are the biggest suppliers to the Philippines. The value of cassava imports in 2005 was at US$12.5 million.

Production: The area planted with cassava ranges from 210 000 to 240 000 hectares yearly, and experts say that the country need to increase it by 300 000 hectares to meet growing demand. Yield per hectare was 8.58 metric tons in 2006 which is due to the low maintenance or inputs applied by farmers. With optimum input application and use of better agricultural practices, yields can go as high as 20 tons/ha. Major cassava producers are the Autonomous Region of Muslim Mindanao (ARMM) (55 percent), Northern Mindanao (13 percent), and Bicol Region (6 percent) (PCARRD, 2013).

The DA is promoting the expansion of cassava production areas in Region 12 and other parts of the country because the market opportunities for the crop remain high. DA experts say that cassava production is among the most viable alternative ventures for farmers due to its increasing demand and stable market prices.

There are local companies that buy large volumes of cassava. One such company is San Miguel Corporation (SMC), which is a large business conglomerate that produces various food-based products and beverages such as beer, liquor, starch, animal feeds, among others. SMC is offering production and marketing contracts to local farmers in various parts of the country. The DA and the SMC are jointly promoting the massive production of fresh yellow cassava, which is ideal for food production as well as ingredient for bio-ethanol production. SMC is buying cassava for processing into animal feeds, alcohol, starch, and food products. SMC prefers to use cassava as substitute ingredient for maize because of its lower cost. It is not economically viable to always import cassava and besides Filipino farmers have large potential to produce adequate quantities locally (Manila Bulletin, 2013). Farmers will have no problem with possible fluctuations of its market prices as the SMC buys fresh cassava at PHP2.50 per kilo, and dried chips in granulated form at PHP8.50 a kilo.

Under the scheme called "*Production and Purchase Agreement*" farmers plant, harvest and process cassava into dried chips. A SMC's local assembler, in turn, provides them with free cassava planting materials, and guarantees to buy the cassava chips at a minimum floor price which is set prior to actual planting. The assembler delivers all of such dried chips to designated SMC factories (Partlow, 2011). Studies showed that cassava is considered as a viable field crop due to its capability to survive drastic climatic changes, especially dry spells or drought, he said.

Onion

Onions are an important vegetable crops in the Philippines. The most common grown onions in the country are the red, sweet yellow onions, shallots and garlic. Onion was one of the largest contributors in domestic vegetable earnings in the amount of PHP 2.1 billion in 2006. During off-season onion prices fetch higher around PHP 100.00 per kilo for the hybrid onion and PHP 60.00 per kilo for the traditional verities of red creole and yellow granex.

Onion production is seen as a profitable venture for farmers in Central Luzon and Northern Luzon, which are the country's major onion producers. There is considerable high demand and high market price of onion in the domestic and foreign markets. For 2005, production costs were PHP137 285/ha (bulb onion), while gross income was PHP 296 912/ha from a yield of 10 407 kg/ha at an average price of PHP 28.53/kg. Net income was PHP 159 627 per hectare. Farmers make very good earnings if prices are above PHP 30 (PCARRD, 2013).

The country imports onions in 3 forms; fresh/chilled, dried, and preserved. In 2005, the country's total imports of fresh and processed onion products were 76 273 metric tons valued at US$9.3 million. Fresh/chilled onion accounted for 98.8 percent of all onion imports. The main suppliers are China and India. (PCARRD, 2013).

Cacao

Cacao is a cash crop that can provide a good income. Kennemer Foods International, Inc. (KFI) is a company dedicated to cacao processing and exports. Under the KFI cacao contract growing program, a PHP 75 000 investment by a farmer on a one-hectare lot will yield at least PHP 204 000 in three to four years.

Companies like KFI are launching procurement programs where the support farmers to produce cacao. Farmers are provided with planting material, inputs, training, on-going supervision and consulting and a guaranteed buy-back of the harvest at a price linked to the world price. The quality of the seedlings planting material is one of the most important factors in determining the success and income of a cacao farm. Companies provides all its contract growers with high-yielding, six-month old, clonal cacao seedlings. Proper timely technical assistance is also provided.

The dominating business strategy among cacao buyers is to develop a big strong supply network of cacao farmers and cacao based cooperatives. KFI, for example, plans to integrate **35 000** smallholder famers into their value chain by 2020. By utilizing contract-growing and buy-back guarantee agreements with smallholder cacao farmers, buying companies provide training and effective technology to increase the income of rural farmers.

The main focus of KFI is to produce and export high quality fermented cocoa beans. The company is setting up a more reliable supply of cocoa beans from the Philippines through comprehensive farmer training and knowledge sharing. With ideal agronomic and climactic conditions and a large number of smallholder farmers, KFI officials feel that the Philippines is well positioned to become a stronger producer in the cocoa market.

Worldwide cacao demand is high as major processors foresee and are trying to prevent a worldwide shortage by 2020. There is a rapid increase in demand from China, India and other large countries. A large portion of the cocoa is sourced from Africa, which has been hit by a wave of pest infestation, bad weather, and the ebola virus scare.

6.4 CASE STUDY ON ASKI – "ALALAY SA KAUNLARAN, INC" – IN CENTRAL LUZON

Introduction to ASKI

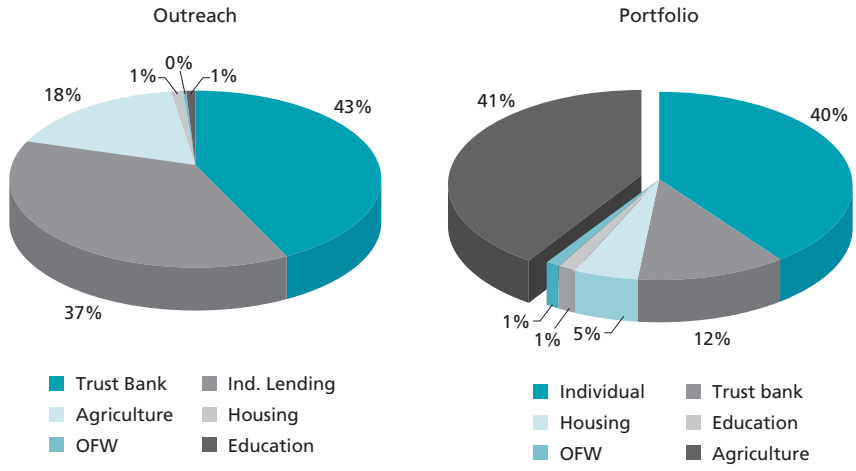
The NGO known as "Alalay Sa Kaunlaran, Incorporated" (ASKI for short) is a deposit-taking, non-profit organization based in Cabanatuan City, Nueva Ecija Province in the Central Luzon region of the Philippines. "Alalay sa Kaunlaran" is translated as "assistance towards progress".

ASKI was formed in October 1986, amidst the political turmoil in the country. Social issues like poverty and unemployment were widely felt. Its purpose was to serve the less fortunate through socio- economic development and holistic transformation. A group of business leaders in the province, out of their Christian beliefs, joined hands to form ASKI: (i) to deliver microfinance services to micro-enterprises, and (ii) to help poor women achieve self-sufficiency and self-reliance.

Since then, ASKI has grown into a large MFI serving more than 135 000 households through 70 branches spread out in 12 provinces. ASKI seeks to reach poor clients and empower them to move out of poverty. Over 73 percent of loans go to female clients. ASKI offers various loan products and services, including small business loans, housing loans, educational loans, and agricultural production loans. ASKI also operates its own insurance unit (duly licensed by the Insurance Commission) that provides life insurance services to ASKI's members. Clients can get US$225 to US$6 760 with durations ranging from 6 months to 5 years.

ASKI operates an agri-lending program called as "Alalay sa Magsasaka Program" (AMP for short), which is translated as "assistance for farmers". Around 23 700

FIGURE 24
ASKI's outreach (percentage of clients) and share of credit portfolio by type of financial product (as of December 23, 2014)



Note: OFW = for other finance work.
Source: ASKI.

small holder farmers are included in this AMP program, which account for 41 percent of total loan portfolio. Therefore, agricultural loans are particular within their portfolio, in the sense that loan amounts tend to be significantly higher than the typical urban microloan.

As of December 2014, ASKI has an outstanding loan portfolio of PHP 541 590 341(or US$12 308 871) with a portfolio-at-risk (PAR) ratio of 8 percent. That means 92 percent of all loans are current and are being paid on time according to their agreed schedule, while 8 percent of the loans have some delayed amortizations.

Various risk management techniques and tools used by ASKI

The key features of the agricultural loans under AMP are the following:

- **Loan Purpose:** Additional capital for agri-business or farming activity
- **Loan Size:** up to maximum of PHP150 000 (US$3 400)
- **Interest Rate:** 3 percent per month
- **Mode of Payment:** Lump sum payment of principal, interest and CBU/savings
- **Loan Term:** Maximum of one year (depending on the type of crops)

This good performance is attributable to the **14 techniques** and tools that constitute ASKI's overall risk management strategy, described below:

1. The ASKI Loan Officers conduct a **thorough program orientation** for all interested farmers to discuss about the loan features, the interest rate, the various processes and conditions involved, etc. to make sure that the applicant fully understands the purpose and mechanics of the loan program, thereby reducing moral hazard. Farmers who are interested in pursuing the loan are given loan application forms.
2. The ASKI Loan Officer conducts a proper **credit background check** to ensure that the farmer applicant is credit worthy. The Loan Officer asks people in the

TABLE 3
ASKI's agricultural portfolio by number of client, loan amount and commodities financed (as of October 30, 2014)

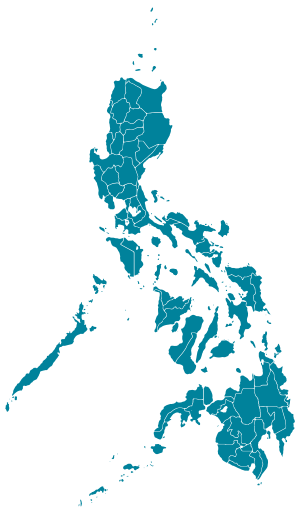
Commodities	Outreach	Loan portfolio	Product percentage on portfolio
Palay	10 826	233 281 963	42.97%
Corn	2 460	61 347 130	11.30%
Livestock	7 873	179 263 915	33.02%
Poultry	171	3 148 791	0.58%
Vegetable/onions	1 722	34 745 277	6.40%
Fruits	197	5 266 081	0.97%
Rootscrops	1 230	23 235 904	4.28%
Others (fisheries, coconuts, etc.)	123	2 605 896	0.48%
TOTAL	**24 604**	**542 894 956**	**100.00%**

Source: ASKI.

community, including the applicant's neighbours, regarding the background and reputation of the applicant. ASKI checks with the community and group leaders the reputation of the potential client. This is a common microfinance practice adapted to the underwriting of agricultural loans for smallholders.

3. Furthermore, ASKI Loan Officers secure a **certificate** from the local government unit (called "BARC" – Barangay Agrarian Reform Certificate), stating that the farmer applicant is well-known in the community and he or she is cultivating a parcel of land, being a farmer-owner or a farmer-tenant, providing further evidence of the client's character.
4. The ASKI Loan Officers conduct an **actual farm visit** to check the condition of the land, see if it is irrigated, to check on the size of the farm, if the farm is suitable for the proposed crops, and to determine the true ownership of the land. The farm is better evaluated if it counts with an effective irrigation and drainage system. This implies loan officers are recruited with basic agricultural knowledge to recognize the potential of farms relative to the activity being financed.
5. ASKI is using the "**group-context lending approach**" where loans are extended individually but under a group context. The peer pressure, mutual encouragement, and knowledge about the several income sources the client's household that the group has helps everyone to comply with their loan responsibilities. The members of the group help each other to plan and implement their farming work and also encourage each other to pay loan amortizations promptly. Members of the group act as each other's guarantor. This approach makes loan supervision and monitoring less costly, and ensures high repayment performance.

FIGURE 25
ASKI's key characteristics (as of December 23, 2014)



No. of branches	**70**
Areas of coverage	**Regions 1,2,3 (12 provinces)**
No. of staff	**1 058**
No. of active clients (borrowers and savers)	**135 084**
Total loan portfolio (pesos)	**1 300 696 099.66**

Source: ASKI.

6. **Crop insurance** coverage is obtained from PCIC to insure against crop losses due to typhoons, pest, and other natural calamities. ASKI orients the farmers about this crop insurance and assist in accomplishing the various forms required. The premium is paid for mainly by the farmer and ASKI pays for a small part of the premium.
   Due to sad experiences in the past when crop loss indemnities were rejected due to poor paper work, ASKI recently collaborated with PCIC so that it can better learn about the detailed rules and policies of PCIC. As a result of this, ASKI checks thoroughly all forms and information that are submitted to PCIC to ensure full compliance with the latter's rules and prevent claim rejection due to technicalities or poor paper work.
7. ASKI provides **life insurance** and **credit redemption insurance** to the farmer and his household to protect losses against any untimely death of the farmer or his key family members. In case of death, the beneficiaries received 120 000 pesos (US$2 720) in death benefits and furthermore, all of the remaining outstanding balance on farmer's loan is paid off by the insurer. In case the farmer-borrower has made some payments on that loan, those payments will be refunded back to his beneficiaries as well. ASKI is able to offer these services at very low costs because it operates its own insurance company called as ASKI MBA (Mutual Benefit Association). The normal processing time for an agricultural loan is 3 to 5 days assuming complete loan documentation.
8. In order to avoid possible diversion of funds, ASKI **coordinates with the irrigation authorities**, e.g. NIA – National Irrigation Authority. ASKI release the loans to coincide with the dates of water release from the irrigation systems. This ensures that water is available to the farmers to start his land preparation and planting. If the loan funds are released far ahead of the water release, then some of loan funds are diverted for other use.
9. ASKI **coordinates with technicians and agriculturists** from MAO (Municipal Agriculture Office), or sometimes, it sends farmer leaders to go to PHILRICE for technical training. This is to ensure that farmer-borrowers have access to some agricultural technical extension services. Some Loan Officers have agriculture backgrounds and they provide technical advice to farmers too. There is a plan to have more technically-equipped Loan Officers to enhance this **technical advisory service** to farmer-borrowers.
10. ASKI utilizes a "**farm input supply mechanism**" that ensures high quality farm inputs and at the same prevent cases of fund diversion. ASKI operates a trading unit called as AMPC (ASKI Multi-Purpose Cooperative), and this unit sells high quality farm inputs to farmer-borrowers. When a farmer-borrower needs farm tools and inputs [pesticides and fertilizer], he goes to the AMPC office to get those supplies, and such is considered as a tranche release of his loan. This mechanism is a new component of AMP and is on experimental basis only and, if successful, ASKI will expand it in the future.
11. ASKI **links up the farmers to available subsidies** for hybrid seeds, fertilizers, equipment, drying facilities, etc. The DA through its various agencies and projects provides various kinds of subsidies, such as high-yielding hybrid seeds, fertilizers, farm equipment, etc. While these are not always available, when it is available they are very useful to the farmers.

12. ASKI provides **free referrals** regarding sources of good or certified seeds, seedlings, farm inputs, tools, good buyers of produce, etc.
13. ASKI Loan Officers **conduct regular monthly meetings** with its farmer-borrowers, on group basis, in order to monitor status of crops, detect any problem, and determine the harvest dates. The Loan Officers also conduct **regular field visits** to the farmers to monitor and offer valuable advice.
14. ASKI set up **assured marketing arrangements** for farmers growing onions and cassava. Through its marketing arrangements with SMC (San Miguel Corporation) and JFC (Jollibee Food Corporation), ASKI is able to purchase the bulk of all of its farmers' production of onions and cassava. For rice, ASKI is experimenting now with buying directly the rice produce of its farmer-borrowers through its tie up with traders and rice millers. If successful, ASKI will expand this arrangement so it can purchase large volumes of rice produced by its farmer-borrowers.

    ASKI has its own marketing and trading cooperative called as AMPC (ASKI Multi-Purpose Cooperative), which has secured accreditation with the San Miguel Corporation (SMC) as a "registered supplier". AMPC buys all of the cassava produce of its farmer-borrowers and then delivers them to the SMC factories where it is converted into ingredients for animal feeds. AMPC deducts the outstanding loan balance from the sales proceeds and pays the balance to the farmer. There is excellent loan repayment due to this mechanism. SMC is a major producer of animal feed products. There is a big shortage of locally produced cassava and the country imports cassava meal to meet the growing demand for animal feeds. SMC agricultural technicians provide technical training to cassava farmers. This cassava sub-project builds the capacity of farmers to increase cassava production and generate sustainable source of income.

    ASKI is helping the indigenous people plant cassava in Nueva Ecija and Aurora through of financing and market linkages. In the last harvest season, the farmers harvested almost 43 000 kilos of cassava amounting to around PHP390 000 (US$8 860). There is a plan to expand this cassava production sub-project to serve more areas and more borrowers.

    ASKI has been supporting onion-producing farmers as well. It is supporting two onion farmers' cooperatives known as "KALASAG" and "OVEMPCO". ASKI empowered and linked these onion farmers cooperatives to Jollibee Food Corporation (JFC) which is huge fast food chain, selling burgers, chicken, pizza and various other meals. JFC provides a specific quota or volume of onions to deliver at a specified dates at attractive prices. This assured marketing arrangement has resulted to (a) good incomes earned by the onion farmers, and (b) good loan repayment performance.
15. ASKI requires that all farmer-borrowers, besides paying in full the loan, put in **savings amounting to 15 percent of the loan**. This goes to the savings account of the farmer, serving as a buffer account to handle family emergencies. This is useful because in days when a farmer cannot make a loan payment or when he has some family emergencies, he can withdraw funds from this savings account in order to pay the loan amortization due or to meet such family needs. In times of hospitalization, accidents or sickness, the farm household has some savings to draw upon.

16. ASKI promises honest and prompt service to its farmer-borrowers. In order to minimize cases of staff fraud, ASKI installed a **SMS-based client feedback system** where a farmer can send SMS messages to the ASKI head office in case he or she has a complaint or is unhappy about a certain service or Loan Officer, or has some suggestion. All complaints are handled quickly and professionally by top management people. Coupled with **strong internal control** and internal checks-and-balances, ASKI is able to minimize cases of fraud, dishonesty and irregularities, and at the same time keep its clientele happy.
17. ASKI offers **various other financial and non-financial services** that encourage famer-borrowers to keep good accounts with ASKI. Some of these services are: funeral benefits, loans for microenterprises, loans for housing, loans for tuition education, farmer school, medical missions, scholarships, etc. These complements well with agricultural loans, given the diversification of livelihoods in rural households, and the unsatisfied demand for a wide set of general and specialized financial services.

6.5 CASE STUDY ON PMPC – PAGLAUM MULTI-PURPOSE COOPERATIVE IN MINDANAO

Short description of PMPC

The PMPC was formed by 35 indigent parents and staff from Paglaum Community Development Foundation in 1992 with an initial capital of 2 000 pesos (US$50). It did not start with a financial service focus although it now became a finance cooperative. The word "Paglaum" means "hope" in the local dialect. PMPC was envisioned to be the livelihood arm of the Foundation. Its first business was rice trading. PMPC has grown very substantially over the past 22 years; its total assets is now 729 million pesos (US$16.5 million). Its main business now is savings and credit. It is a well-respected multi-awarded **microfinance institution** (MFI). Its head office is located in Plaridel, Misamis Occidental in Mindanao.

PMPC is serving poor rural and urban communities in northwest Mindanao and the Island Province of Siquijor. It operates **20** branches (including offices of its allied and subsidiary units). It has a total of **56 683** members. PMPC has **391** full-time employees (including employees working in FLGC and other subsidiary or business units of the cooperative).

The **Vision** of PMPC is to be a strong, progressive and trusted cooperative; a resource for economic, political and social development of the members, anchored in its concern for community development, environment and human equality. The **Mission** of PMPC is to contribute to the empowerment of the members in improving their lives through the provision of quality cooperative services and programs.

TABLE 4
PMPC area of operation

No. of microfinance branches	13	No. of villages covered	695
No. of satellite offices	1	No. of municipalities covered	53
No. of microfinance centers	740	No. of cities covered	6

Source: authors' elaboration.

TABLE 5
Performance highlights (as of December 31, 2014)

Key indicators	Actual	US$
Membership	56 228 persons	
Releases	516 195 187 pesos	11 731 708
Loans receivable	406 727 555 pesos	9 243 808
PAR (Portfolio at Risk)	47 712 956 pesos	1 084 385
PAR rate	11.73 %	
Share capital	162 310 304 pesos	3 688 870
Savings	212 371 756 pesos	4 826 630
Asset	729 353 978 pesos	16 576 226
Net income	9 768 122	222 002

Source: authors' elaboration.

Various risk management techniques and tools used by PMPC

PMPC operates an agriculture lending program called PULP – short for "Pang Uma Loan Product". The word "pang uma" means agriculture in the local dialect. PULP is an affordable, convenient and quick release agri-microloan program that provides a package of financial, technical and marketing support services for smallholder farmers.

PULP is relatively a new loan program, but has notched good overall performance, with a PAR (Portfolio-at Risk ratio) of **1.86** percent only**.** This rate is below the current PAR of the total credit portfolio as shown in Table 5. That means more than 98.2 percent of all loans are being paid back on time. As of December 31, 2014, there are 638 smallholder farmers with rice production loans under PULP, representing a loan portfolio of PHP 21 589 000 (US$490 660).

The PULP program mainly finances **rice production** of smallholder farmers, but it has lately created a new loan window for cacao production. The PULP loan program utilizes 16 tools that constitute its risk management strategy for its agriculture credit portfolio. These 16 risk-management tools are as briefly described in the next section.

Rice production loans

For **credit selection**, PMPC employs simple but powerful means to seek credit clients. It searches for new potential clients among village-level informal farmer associations. It gets referrals from Local Government Units (LGUs), informal leaders and farmer associations on who are good and reliable farmers in the village. The Loan Officers of PMPC ask the community leaders who are the reliable and creditworthy farmers in the village who have been using informal loans and they approach the identified farmers to personally invite them to attend a free program orientation session, explaining the benefits over the informal sources of finance. That is, PMPC takes as potentitial creditworthy clients those farming households who are already using credit from informal sources, confident they can provide a better service, or complement such informal services with their own.

The cooperative conducts a **complete detailed orientation** for all interested farmers or applicants regarding the program. This includes orientating them how the cooperatives work, on what are the rights and privileges of a cooperative member and the detailed features of the loan product. The cooperative uses the standard PMES (pre-membership education seminar) training module to orient the incoming farmer-members.

The cooperative then conducts a **complete credit investigation** in the community to check on the character, past dealings and background of the applicant. This step eliminates those with bad character or with problematic cases of borrowings or with huge unpaid loans in the past. This credit background check involves asking the nearby partner cooperatives or MFIs if this applicant farmer has an existing unpaid loan with them. This step avoids cases of multiple borrowing and one way to avoid "credit pollution".

The cooperative then secures a **written certification from the Local Government Unit** (from the barangay or community) to get confirmation that (a) this applicant has been a resident of the village for at least one year, (b) is known to be currently tilling parcel of land, either as a tenant or a landowner-farmer;

Afterwards the Loan Officer of the cooperative **conducts an actual farm visit**, to assess the size, elevation, slope, topography, soil condition of the farm, and to check if some crops are already present; the boundaries of the lot is also determined. For rice farming, it is important that the land is well irrigated, either served by the NIA (National Irrigation Authority) or by small communal irrigation systems.

The Loan Officer then assists the farm applicant in compiling a **detailed "farm planning"**, so that the farmer can lay out a detailed plan and budget, pinpointing expenses for land preparation, planting, fertilization, various inputs, harvesting, etc. including the specific dates, the final and labour costs for each step. A written "*Farm Plan and Budget*" is produced by the farmer with PMPC guidance. PMPC can provide such guidance directly, since as a cooperative of producers, it has acquired significant knowledge on production practices. However, it is made clear that the decisions about the farm plan are taken by the farmer, and therefore he or she is responsible for the outcomes.

The cooperative makes a **detailed cash flow analysis**, and it also conducts a "capacity to pay" analysis to determine the cash flows and capacity to pay back the loan. The analysis considers cash inflows and outflows not only from the rice activity but all other economic activity conducted by the client's family. The past loan repayment history of the applicant is also reviewed. This is an important innovation merging agricultural finance and traditional microfinance credit assessment methods. Then, PMPC approves and release the loan to the farmer, restricting the loan to 30 000 pesos (US$681) per hectare and up to 3 hectares only but not exceeding 150 000 pesos (US$3 400), to control risk exposure.

The loan is **released in tranches** depending on the actual need of the farmer, as per approved Farm Plan and Budget. For rice, the loan is released in four tranches, as follows: (a) 1st tranche, for land preparation, released in the form of cash; (b) 2nd tranche is for farm inputs; (c) 3rd tranche is for care & maintenance, and (d) 4th tranche is harvesting expenses. This controlled staggered release of the funds is necessary to avoid fund diversion. PMPC first releases about 20 percent of the loan proceeds in cash for land preparation and to purchase seeds. The rest of the

loan is not released in cash to farmer, to avoid fund diversion, but instead they are released in-kind, through the provision of farm tools and inputs e.g. fertilizer, tools, and pesticides as per approved Farm Plan.

PMPC utilizes a "**farm input supply**" mechanism that ensures high quality farm inputs and at the same prevent cases of fund diversion. PMPC partners with selected "Agri-Vet Supply Stores" in the towns where it operates. These stores provide high quality farm inputs to the farmer clients. When a farmer needs the tools and inputs, she goes to the PMPC branch office to get a purchase order form; then she goes to the accredited Agri-Vet Supply Store to claim the quantities and brand of the fertilizer or pesticide. PMPC pays the Agri-vet store directly afterwards. This payment represents a tranche release of the loan.

Partial payment rule. If the farmer has some cash flows (sources of monthly income not coming from the rice crop), then PMPC requires that the farmer-client to repay in monthly or weekly amortization the 20 percent cash portion (first tranche) of the loan. But if the farmer has no other sources of income besides the rice crop, then a payment after harvest time is requested. This rule further minimizes the loan exposure of the cooperative because it is able to recover part of the loan even before harvest time.

For easier **monthly monitoring**, PMPC organizes the farmers in a village into small groups or clusters. The farmers in those clusters meet every month, and the Loan Officer attends such meetings in order to monitor the progress of the growing rice crops, to gather feedback about the group and its member farmers; and to detect any abnormal or unusual issues such as rat infestation.

The Loan Officer also takes note of the schedules of crop harvests. The farmers are expected to provide the expected date of harvest to the Loan Officer in order to establish market linkages or arrangement, e.g. the buyer of the product is available to purchase and take all of the harvested products. This is crucial in assuring high loan recovery.

PMPC points the farmers to the **agricultural extension services** of the MAO (Municipal Agriculture Offices). The Agri-vet stores also provide, on occasional basis, free services of agriculture technicians on proper rice cropping, and proper application of fertilizers and pesticides. This provides basic knowledge on proper cropping techniques and also minimizes health risk due to input misuse.

PMPC provides **assured marketing** of rice produce. PMPC, given its agricultural cooperative nature, owns and operates a rice-mill and warehouse unit known as FLGC (farmer-level grain centre) which buys and hauls away all of the rice produced by farmer-borrowers. Through good close monitoring and coordination, the FLGC truck is present on the scheduled day of rice harvest of a farmer; hence collecting of all the rice produced. Then the outstanding loan balance is deducted in full from the sales proceeds of the rice crop, and all excess money is paid in cash promptly to the farmer-borrower. This marketing mechanism assures almost **100 percent repayment** of the loan.

The farmer-client has the option to sell his whole produce to FLGC or to sell partial only, up to a quantity equivalent to the outstanding loan balance. In rare cases, where the farm is very far from FLGC, the cooperative makes arrangement to buy the rice produce through a partner cooperative or private company that operates warehouses, dryers and rice mills.

PMPC insures the rice crop under the **crop insurance program** of the PCIC. The PCIC pays indemnities to farmers in cases of major crop losses due to typhoons, infestation, etc. So far, this mechanism has been beneficial to farmers. In case of crop losses, the farmers get to collect some money to recoup his investments and also to pay back the cooperative.

To further manage its risk, PMPC makes use of **loan guarantees** provided by the AGFP, which is a special project of DA. PMPC insures its agriculture loan portfolio under AGFP which guarantees up to 85 percent of the agri-loan, and the AGFP compensates the cooperative in case the farmer defaults on the loan for any reason. PMPC is happy with this service and plans to continue coverage in the future.

PMPC also provides **life insurance** to farmer-borrowers, through its tie-up with CLIMBS, a licensed insurance provider. This insurance package includes mortuary or death benefits to the farmer in case of sudden death. These insurance makes participation in PMPC loan program as very attractive because the insurance coverage comes at cheap, affordable rates, and helps satisfy some of the many financial needs farmers have in addition to agricultural credit.

Cacao Contract Growing Program

While focusing mainly on rice, the PULP has created a new loan window known as "Cacao Contract Growing Program". PMPC offers loans to smallholders for producing wet **cacao beans.**

Almost all of the risk-management tools used in rice production loans is used for **Cacao Loans**, but there are some differences, described below:

- PMPC also use an **assured marketing arrangement** in cacao contract growing. PMPC entered into a ten-year partnership arrangement with **Kennemer Foods International, Inc**. (**KFI**), where the latter buys all of the wet cocoa beans produced and at the same provides technology and technical training and assistance to farmers. PMPC will provide the needed financing for the farmers to grow the crops.
- KFI is a producer and marketer of food and agricultural products and it specializes in trading fermented cacao beans. KFI has partnered with several large cooperatives in the Philippines to promote cacao growing. KFI provides modular technical trainings to farmers, e.g. land preparation and planting, shedding, pruning, fertilization and weeding, etc. This element is very important because the technical guidance is absolutely necessary to produce cocoa beans successfully.
- The FLGC (which is focused on rice trading, warehousing and milling) is not involved in purchase of cacao crops. Instead PMPC directly buys all of the wet cocoa beans produced by the farmers, and then sells it to KFI which is a large aggregator and exporter of cocoa beans. KFI sells it to local chocolate makers or to the international market. This assures a ready market for the farmers' cocoa beans, and the price of the cocoa beans is already set ahead of time.
- Part of the loan proceeds are used to purchase **high quality cacao seedlings**, which is supplied by KFI or its accredited nurseries. This is important to ensure high quality, high yielding varieties of cacao are grown by the farmers.
- KFI provides the **cacao growing technology**; it conducts modular seminars for farmers; it also trains barefoot technicians in the villages called as "cacao doctors", which makes regular monthly inspections of all the farms within the

TABLE 6
Cacao contract growing loans under PMPC PULP (as of December 31, 2014)

Number of borrowers	Loan disbursed (pesos)	Loan portfolio (pesos)	Area planted	No. of seedlings planted
32	4 067 040	4 067 040	46.8 hectares	41 800

Source: authors' elaboration.

cluster, and makes advice to the farmers. These barefoot technicians provide monthly feedback and inputs to KFI and to PMPC.

- PMPC employs a rule that ensures **rapid recovery of the loan** when the cacao trees start bearing fruits. No repayment or amortization is made during the first two years when the cacao trees are growing and establishing. Cacao trees start bearing fruits at the end of 24 months. On the 25th month onwards, at the onset of the first harvest of the crops, the farmer starts repaying back the loan. The rule is that 90 percent of the sales proceeds from cocoa beans shall be applied against the outstanding loan of the farmer and the rest paid out to the farmer. If there is still a remaining balance, the same deduction is done for the second and third harvests of the farmer until the loan is fully paid.
- **Crop insurance**: The cacao trees are insured under PCIC, which provides compensation in case of natural disasters or infestation.

This cacao contract growing program is a new addition to PULP and only a few farmers have joined it at the time of the researchers' visit. PMPC is still perfecting the formula in delivering this kind of loan, which is quite unique in the Philippine context. It is also obtaining a long-term loan from the Land Bank of the Philippines (LBP) in order to finance the expansion of this new sub-program.

6.6 ORGANIZATIONS INVOLVED IN RISK MANAGEMENT ARRANGEMENTS

Agencies Tapped Both by ASKI and PMPC

In addition to the PCIC and the AGFP, described in previous sections, both ASKI and PMPC partner with other national and local government agencies, in addition to private agribusiness companies that help mitigate risks related to clients' agricultural production and marketing capacities. In a way, both ASKI and PMPC delegate some of these risk management interventions to these partners, facilitating the viability of financial services offered.

National Irrigation Authority (NIA): The rice crops will not be successful if there is a delay in the arrival of irrigation water, or if the water is not sufficient. Hence, it is absolutely essential that the MFI coordinates with the NIA regarding the timing of release of loans. The loans should be released at the same time when the irrigation water comes into the rice paddies.

Land Bank of the Philippines (LBP); This is a large commercial bank owned by the government and it has a large portfolio devoted to agricultural lending through conduits such as rural banks, cooperatives and MFIs. PMPC has an existing credit line with LBP and it is one of the sources of credit funds by PMPC. Currently, PMPC is negotiating for longer term loans to finance the cacao contract growing sub-project under PULP. ASKI also taps the LBP.

Department of Agriculture (DA) and Municipal Agriculture Offices (MAO): PMPC tapped the DA to set up its rice warehouse, drying and rice mill facility. PMPC is now negotiating to get a tractor from the DA. ASKI access the subsidies offered by DA such as fertilizers, seeds and free agricultural extension services. ASKI also taps PHILRICE, which is a research arm of the DA.

Local Government Units (LGUs). There are some LGUs that are quite active in providing support to farmers. Some of the assistance and services they deliver are: farm-to-market roads, construction of small water impounding projects (SWIP), delivery of free agricultural extension, cheap rentals for use tractors, subsidies on seeds, and organizational assistance to farmers' associations and cooperatives. Whenever such services are available in a given town or area, ASKI makes use of them or assists the farmers to access these services or subsidies.

Philippine Rice Research Institute (PHILRICE), a research arm of the DA, provides some technical training for farmer leaders. ASKI sends some of its farmer leaders to seminars organized by PHILRICE.

San Miguel Corporation (SMC) is a privately owned business conglomerate, with one of its main businesses is production of animal feeds. There is a great local demand for cassava since it is one of the main ingredients for animal feeds. The country imports large quantities of cassava chips each year and SMC wants to lessen imports and instead buy from local farmers. The SMC has a unit – the "SMFI FEEDS Agribusiness Development Group" – which is implementing a sustainable sourcing program for its agri-based raw materials requirements.

While securing its ingredients, SMC is at the same time helping to develop the countryside by providing livelihood opportunities in rural communities with the introduction of alternative crops and the improvement of farm technologies and income. SMC works in partnerships with NGOs, cooperatives, farmer associations, and small agri-business firms, for the domestic production of cassava, grain sorghum, sweet potato and other crops for its feed mill facilities nationwide under SMC's *Assembler Program*. For its flagship cassava program, SMFI FEEDS Agribusiness provides: (a) guaranteed market with a marketing agreement according to mutually agreed product quality, volume and delivery schedule; (b) guaranteed floor price; (c) start-up technical assistance in production, post-harvest and logistics operations.

The SMFI Feeds Agribusiness Group is working with assemblers or consolidators which can: (a) produce cassava on large-scale basis, directly or through its farmer-beneficiaries; (b) can provide technical and financial assistance to their farmer beneficiaries; (c) has post-harvest facility and preferably with access to logistics services / trucking; (d) Can consolidate volumes from farmers and ensure delivery to SMC. An assembler can be an individual entrepreneur, or a corporation or farmers' cooperative or an NGO that has the capacity to consolidate at least 20 hectares for cassava production. SMC works with these consolidators on long term business partnership arrangements.

SMC has accredited AMPC which serves as a registered supplier. AMPC buys all the cassava produced by farmer-borrowers and delivers them to SMC.

Jollibee Food Corporation (JFC) and FEP: ASKI has been supporting and financing farmers belonging to two onion producers' cooperatives, known as "KALASAG" and "OVEMPCO". ASKI facilitated the link up of these two farmer cooperatives to Jollibee Food Corporation (JFC) which is a huge fast food chain, selling burgers, chicken, pizza and various other meals.

JFC operates a program known as "*Farmer Entrepreneurship Program*" (FEP) and under such a program, JFC provided the two onion-based cooperatives specific quotas or volumes of onions to deliver at specified dates. JFC offers the farmers attractive prices, which is much higher than what the local wholesale markets offer. This assured marketing setup leads to: (a) good incomes earned by the onion farmers, and (b) good loan repayment performance.

JFC, through its Jollibee Group Foundation, operates this FEP for the purpose of improving the business skills of smallholder farmers. The FEP program is a partnership between Jollibee, Catholic Relief Services (CRS) and National Livelihood Development Corporation (NLDC).

Through FEP, opportunities are opened up to small-scale farmer groups or cooperatives for them to supply and deliver their produce like chili peppers and onions directly to institutional buyers, such as fast food restaurants, supermarkets and food processors. Currently, JFC sources white onions from KALASAG and OVEMPCO (two farmer cooperatives assisted by ASKI) for the burger patties of Jollibee. Chowking, a subsidiary of JFC serving Chinese fast food, has sourced chili peppers from the KALASAG since 2011 for use in their chili oil. Splash Foods Corporation (SFC), which manufactures food products like sauces, preserves, ready-to-eat canned meals and other condiments also sources onions, chilli pepper, garlic and gabi leaves from FEP farmers.

JFC, supermarkets and other food processors participating under the FEP benefits also because they can have steady sources of food ingredients they need such as onions, tomatoes, bell peppers, calamansi (lemons), and chili peppers from smallholder farms from various provinces (Ilocos Sur, Nueva Ecija, Quezon, and Pangasinan).

FEP's local partners – which include LGUs and MFIs – choose farmer participants according to the crops they produce, land area, geographic location, the farmers' willingness, and their commitment to the program. Agri-lenders such as ASKI benefit too since the farmers have secured supply contracts with good prices, assuring good repayment of the loans that it extends to farmers.

Kennemer Foods International (KFI). KFI is the privately-owned cocoa bean buyer and exporter that works with PMPC. KFI provides the technology to farmers and also trains and supervises barefoot technicians (called as "cacao doctors") that provide close monitoring and extension services to cacao farmers. KFI specializes in growing and trading of high-quality agricultural crops, especially fermented cacao beans. As part of its business strategy of developing strong supply of cacao beans, KFI is collaborating with various MFIs and cooperatives in Visayas and Mindanao.

CLIMBS Insurance Cooperative. PMPC taps the insurance service provided by this large and well-known insurance cooperative.

Cooperative rice mills and traders: PMPC collaborates with other cooperatives in the various towns where it operates, especially if its FLGC cannot service the hauling and processing of rice.

6.7 CONCLUDING ANALYSIS OF EFFECTIVE RISK MANAGEMENT TOOLS

The two case studies described above show that there are common risk management techniques being used by ASKI and PMPC. Both experiences suggest that in order to have a successful agriculture lending program financial institutions need to carefully examine the various challenges that the farmer faces and then devise some tools or mechanisms to address those challenges.

It does not mean, however, that the lender will need to invent those tools or services from nothing because there are existing services now provided by private value chain actors and government agencies. The lender needs to understand these dynamics and negotiate partnerships that show how the financial service provided benefits clients and all other value chain actors involved.

Indicators of Developmental Impact

The agri-lending program of ASKI and PMPC has provided many benefits for the farmers, their households and their communities. Some of these are as follows:

High yields in rice production. The complete package of services results in higher yields for the farmers, which is due to a combination of factors, including: the use of hybrid seeds or of certified seeds, presence of irrigation, the timely application of right kinds of fertilizers and pesticides, and good farming practices. All of this is facilitated by the use of credit. For example, the average yield for rice per season in Nueva Ecija (where ASKI operates) is now at 6.37 metric tons per hectare. This is much higher than the national average yield of 4 metric tons per hectare. Direct feedback from PMPC farmer-borrowers show that they realize good harvests.

Farmer-borrowers appreciate the referrals or access to good, high quality farm inputs, subsidies, linkage with good buyers, advice and technical trainings provided by technicians.

Higher incomes. The high yields result to higher income for the farmer-borrowers. Farmers use the additional income to improve their housing, send children to school, purchase farm tools and equipment and increase their savings. Farmers in Nueva Ecija (where ASKI operates) usually earn net incomes ranging from 70 000 to 120 000 pesos (US$1 600 to US$2 700) per rice cropping season, if there is no serious typhoon or pest damage. The farmers attest that they earn quite well during the past few years, due to the innovative agri-lending programs of ASKI and PMPC.

Through the marketing arrangements facilitated by PMPC and ASKI, the farmers get better prices for their produce and this creates tremendous impact on farming communities. For example, under the JFC FEP program where JFC buys the onions of farmer cooperatives, data shows that farmers could earn up to as much as **five times more** when they sell to institutional markets compared to local markets.

Based on direct feedback, farmers reported increased incomes due to better harvest and good prices realized. Most farmer borrowers appreciate the relatively **lower interest** on loans offered by ASKI and PMPC (when compared with informal lenders). Farmers also appreciate the prompt, honest and responsive loan administration of these two MFIs. Farmer-borrowers appreciate the constant consultations and direct feedback system.

Better business skills. JFC is implementing this through its Jollibee Foundation, which has established a unique program known as "Farmer Entrepreneurship Program" (FEP) in cooperation with various key actors. The FEP program is actually a partnership program between Jollibee, Catholic Relief Services (CRS) and National

Livelihood Development Corporation (NLDC). Initiated in 2008, FEP aims to help increase the income of smallholder farmers by linking them to institutional markets such as JFC, large food chains and supermarket chains in large urban areas. Since its launch, the program has assisted more than 900 farmers from across the country. FEP collaborates with LGUs and some business partners. An important part of the FEP is the *Farmer Leaders' Training Series* where, every year, selected 50 farmers from different farmer groups undergo training on agro-enterprise clustering and leadership values to strengthen their skills in organizational management. Farmers are trained in agro-enterprise management and how to make a proper supply plan to ensure that they could meet their delivery targets. Farmers learn how to do business the right way. The training equips the farmers with the right attitude and know-how to defy the odds that they face. Farmers are learn how to plant and nurture crops that are of high quality standards, which they can sell to institutional markets.

Boost to Local Farm Employment. Based on feedback obtained from the various communities, there is a boost in local employment. The whole community benefits from this agri-lending program because the farmer-borrowers employ large numbers of seasonal farm labourers. The LGU officials confirmed that seasonal employment is generated for many households especially for those who are landless farmers. Furthermore the increased incomes of the farmer-borrowers result to increased purchasing power by the household, which trickles down to the whole community in terms of purchases of food, services, construction materials, etc.

Enabling and limiting factors in the risk management strategies described

Scale is limited due to financing constraints faced by ASKI and PMPC. These two MFIs do not have plenty of financial resources to expand their agricultural lending programs. They will need grants and loan capital in order to expand to more towns and provinces and to reach out to more smallholder farmers. PMPC will need longer term loan capital in order to finance its cacao contract growing sub-program, where loans are for 3 or 4 years, and where there is a grace period of 2 years on the principal. PMPC is currently negotiating with the LBP for such long-term loan capital.

Issues with PCIC. The rules and policies of PCIC are very complex and not easy to understand. Both MFIs have had problems of farmers' claims rejected by PCIC because the information provided was inaccurate due to weak paper work and poor understanding of PCIC's complex rules. The two MFIs remedied this problem by working closely with PCIC so they can fully understand those complex rules and then assisting the farmer-borrowers to accomplish the right paper work. Currently, overall in the farm sector, there are still some dissatisfaction on the speed by which claims are processed by PCIC.

Issues with AGFP. The subrogation rule of AGFP makes it very difficult and onerous for ASKI to continue participating in the guarantee program; hence, ASKI exited from the program. It may be necessary for AGFP to review this rule.

Access to post-harvest facilities. Both MFIs need access to more facilities such as rice mills, warehouse facilities, dryers and machineries. PMPC obtained its FLGC facility through the DA and it is currently negotiating for a tractor. The DA is providing grants and subsidies to farmers' cooperatives, including post-harvest

facilities. PMPC will need more of these facilities in order to expand to other towns. ASKI will need to have grains facilities too in order to directly purchase the rice produced by its farmer-borrowers. To increase scale, both institutions will need to partner with further agribusinesses who have greater capacity.

Accreditation as a Rural Financial Institution (RFIs). The Agri-Agra Law allows a new alternative mode of compliance where banks can lend through Rural Financial Institutions (RFIs). RFIs are banks, cooperatives or NGOs that are lending directly to smallholder farmers and ARBs, and which are allowed to get wholesale loans or investments from big commercial banks. But in practice the guidelines on accreditation of non-bank RFIs, such as cooperatives and MFIs, have not been approved by the ACPC, which is the ag-credit policy making arm of DA. The DA must act on it or turn over the task to the BSP which is more technically equipped in assessing financial institutions. MFIs, such as ASKI and PMPC, can register as accredited RFIs and thereby gain access to wholesale funds or investments from big banks.

Provision of agri-extension services. The Department of Agriculture, through its network of Municipal Agriculturists, is providing extension services to smallholder farmers. But the services are uneven, with some towns having no such service. There are many towns where these MFIs could not find any agricultural extension services at the municipality level. There are few cases where LGUs are active in this work, like the LGU of San Jose City which provides solid support to the onion planters and cooperatives who are clients of ASKI.

Taxation on farmer loans. The Bureau of Internal Revenue (BIR) recently issued ruling requiring all microfinance NGOs to start charging 12 percent Value Added Tax on the loans that it extends to poor households, including to smallholder farmers. This is regardless of whether the NGO is a non-stock, non-profit corporation. Such NGOs are also required to pay the 30 percent corporate income tax based on their net incomes. This has not been the case in the past; hence all microfinance NGOs, including ASKI, are struggling with this issue. This ruling will increase the cost of borrowing for smallholder farmers.

Chapter 7

General conclusions – public policies that promote more inclusive rural financial and agricultural markets

Emilio Hernández

The issues related to rural and agricultural finance in the Asian region, and the analysis of the case studies illustrated in the previous sections, present relevant implications for policy makers that aim at fostering more inclusive rural and agricultural development in general, and the development of rural financial systems in particular. In this section, some of the implications deemed relevant for the design of more effective public policies will be discussed.

7.1 PROMOTING THE COMBINATION OF KEY CAPACITIES AIMED AT FOSTERING RURAL AND AGRICULTURAL FINANCE IN A VIABLE AND INCLUSIVE MANNER

The regional trends presented on the performance of rural and agricultural financial markets, together with the experiences documented in the case studies, suggest the prevalence of a sub-optimal equilibrium, where an important part of the rural population – composed mainly by poor rural households and the small and medium agribusinesses they participate in – sees its demand for many general and specialized financial services either partially or totally unmet, resulting in unexploited agribusiness opportunities that are present for this population segment.

The capacity of this heterogeneous group of formal and informal rural financial service providers to serve this marginalized segment of the rural population is dependent on two key aspects: one is their capacity as financial intermediaries of accessing capital in adequate quantity and terms to subsequently manage the distribution of different (general and specialized) financial products; the other is the knowledge that these providers possess about their clients' financial needs, the nature of the different economic activities these clients and their families engage in, and the dynamics and risks in the commercial relations said clients have with other actors in the rural economy. How well financial service providers are able to cover these aspects will determine how much they are able to satisfy this clientele segment composed of poorer rural households dependent on agriculture, who constitute a significant share of the financially excluded or underserved.

The suboptimal equilibrium in rural financial markets in developing countries results from the fact that no single formal or informal financial service provider can properly cover the two aspects mentioned above. The formal financial sector has shown very little penetration in rural areas—and little exposure to the agricultural

sector if compared to its importance within the national economy. This is because it may have a comparative advantage accessing capital and being able to offer a wide set of financial products that the target clientele has shown to need. However, formal financial institutions tend to lack knowledge about the target clients' financial needs, the nature of their different economic activities and the dynamics and risks in their commercial relations. This is in comparison to those informal service providers who have informational advantages given their proximity and history of transactions with these target rural clients.

The experiences documented in the case studies show how formal financial institutions have been able to collaborate and learn from informal rural actors to develop growing and healthy rural portfolios that are inclusive of agriculture. They also illustrate the important role played by public policies in fostering a collaborative process between these actors, which represents the union of those capacities and knowledge that are key for providing rural and agricultural financial services in a more inclusive and viable manner.

In the case studies presented, a collaboration was achieved between different agricultural value chain actors and formal financial institutions, to offer financial services adapted to the needs of a previously underserved or excluded group of rural clients. In the example from China, the approach showed how private actors like Alibaba partnered with a network of local public and private agents at village level (the Taobao partners) delivered a much need credit service, the Ant Agricultural MicroLoan. With this approach, Alibaba filled the information gap derived from its scarce outreach in rural areas. And by combining online and offline data on rural households' activities it can properly assess their creditworthiness with no need for collateral requirements. A similar merger of capacities and knowledge is implied for the cases in Viet Nam, Philippines and India.

In general, public policies can contribute towards fostering the development of more inclusive rural financial markets, by focusing on promoting in an extensive and systematic way the combination of capacities and knowledge belonging to different actors, which can jointly provide services that satisfy the target clients' necessities, while at the same time managing in an effective manner financial, climatic, production, commercialization and processing risks, intrinsic to rural areas and to the agricultural sector. It's precisely the fragmentation of these capacities and knowledge between various formal and informal financial services providers – which tend to be detached from each other – that has contributed to the low exposition of the formal financial market to rural contexts and the agricultural sector

An analysis of the cases presented in this document underline how these policies could be shaped, as mentioned below.

7.2 GENERAL POLICY GOAL AND SPECIFIC RECOMMENDED POLICY DERIVED FROM THE ANALYSIS

This merger of knowledge and capacities between financial institutions and rural economic actors is achieved when there is coordination between public programs implemented by government bodies and international agencies supporting the agriculture and finance sectors to leverage resources that reduce supply and demand constraints faced by rural financial markets. This means, for example, demand-promoting public programs that aim to enhance producer organization, productiv-

ity and more inclusive market linkages should coordinate with supply-promoting programs that aim to develop capacities, products and processes within the financial sector to service rural areas.

Coordination between key regulators influencing the agriculture and finance sectors is also required to further facilitate those innovations in rural and agricultural finance. For example, those government agencies defining regulatory frameworks for agriculture trade and subsidies need to be able to identify the implications that unpredictable and distorting changes in these policies have on financial institutions' ability to serve agriculture given their negative impact in the feasibility of rural livelihoods and agricultural ventures. Similarly, those government agencies defining regulatory frameworks for the financial sector, especially in terms of acceptable forms of collateral, portfolio risk assessment criteria and the formation of credit bureaus, are enabled to identify the implications they have on the ability of financial institutions to properly assess rural client needs and risks in rural and agricultural portfolios based on a proper understanding of agribusiness dynamics.

The achievement of the above policy objectives would enforce three key principles in the process of innovation encouraged by public programs within the financial sector:

Enable financial institutions (FIs) to define their best entry point to servicing the rural clientele. There are several entry points to begin servicing new rural clients, given their many unmet financial needs. Depending on the FI's comparative advantages, it can provide some type of general or agricultural financial service. This implies shaping a market strategy to identify the niche clientele, tailor services to client needs and set partnership strategies with rural actors.

Diversify the menu of financial services offered. Once the service or services are being delivered to a new rural clientele it marks the start of a learning process by the FI in order to identify additional client needs and capacities, and opportunities to offer additional services. This requires a well-defined knowledge management strategy within the FI. The learning process also implies identifying other local actors in proximity with whom to partner, and better and cheaper ways to deliver a growing number of services. This is something that informal financial service providers have experience doing, as this has been the main channel through which these providers have diversified their rural services portfolio over time (Miller and Jones, 2010). Each additional financial service provided to the rural client enhances the value proposition of the other services offered.

This vision of increasing the diversity of financial services provided to rural clients has important implications for satisfying the demand, but also to ensuring profitability and sustainability. From the supply side, the very low population density, remoteness and limited communication channels in rural areas implies the rural financial portfolio should exploit as much as possible economies of scope. Each additional financial service offered in rural areas can bring increasing returns, facilitating the profitability of the rural portfolio.

Diversify the rural client base served. FIs also need to diversify the types of rural clients reached to achieve economies of scale and manage risks by broadening

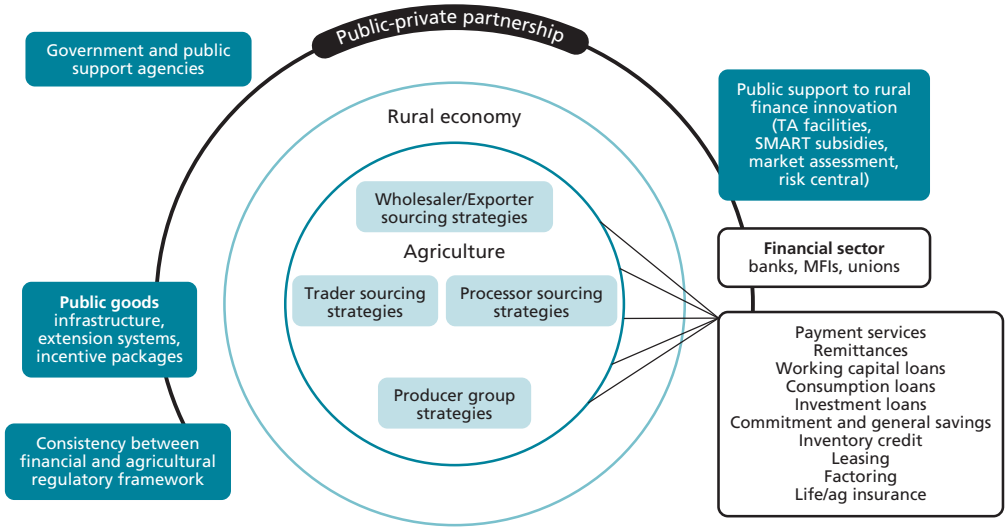
the clientele base in the context of a scattered rural population. This means serving clients within as many value chain segments as possible, both in the rural agricultural and non-agricultural economies. This client diversification not only increases the scale of the portfolio but also allows FIs to have a finger on the pulse of the rural economy overall, where economic opportunities and business cycles are known to be highly covariant. Client diversification would therefore help foresee upturns and downturns in the rural economy, thereby managing better the associated risks.

The growing international experience shows how those formal financial institutions that have been following these principles, each one exploiting their unique comparative advantages, are achieving large and profitable rural portfolios.

7.3 THE ENABLING ENVIRONMENT FOSTERED BY THE RECOMMENDED POLICY

Based on the principles derived from the country case studies shown, the policy presented above will facilitate a favourable enabling environment for the development of inclusive rural and agricultural financial markets. This environment would be reflected by the implementation of a mix of public programs that consistently relax binding constraints on the supply and demand sides of rural financial markets, as illustrated in Figure 26.

FIGURE 26
Illustration of public programs that are implemented in collaboration with the private sector aimed to relax binding constraints faced by rural economic actors and the formal financial sector, jointly contributing to rural financial inclusion



Source: author's elaboration.

Interventions made by these public programs are done in partnership with the private sector to ensure understanding of their needs and constraints as well as to leverage their capacities in facilitating the delivery of financial services to rural clients. On the one hand, interventions aimed at relaxing constraints on the demand side of rural financial markets would aim to enhance producer organization, productivity, ability to manage risks, and more inclusive market linkages through, for example, extension systems, incentive packages, cash transfer programs or other social protection programs, and public infrastructure. From the perspective of financial markets, these interventions increase the demand for formal financial services as they develop opportunities for clients to benefit from using and paying for these services. Formal financial services can replace or complement informal services already being used by rural clients.

On the other hand, interventions that relax constraints on the supply side of rural financial markets would focus on developing capacities within formal financial institutions and enable them to generate innovations, develop a diverse portfolio of products, and tailor services to better fit the unique and currently not-well-understood financial needs of rural clients. Rural clients typically need a diversity of financial products, which include different types of credit, savings, insurance, payments and remittances. These innovations should also transform FI's internal processes to make them more efficient and to reinforce analytical skills to manage risks in their rural portfolio.

In order to ensure sustainability, supply-side interventions should support improvement of FIs' capacities rather than subsidizing their operation costs (which includes interest rates). It is also indispensable that implementing agencies and private actors involved are fully aware of the changing capacities of rural clients fostered by demand-side interventions and understand how they improve these clients' risk profiles using data and knowledge generated by these demand-side interventions. This coordination between the two types of programs – demand and supply-side oriented – is critical.

In addition, agricultural and financial regulatory frameworks should recognize the risk of jointly discouraging the above mentioned reduction in demand and supply side constraints given certain rigidities. For example, efforts should be made to revise the financial regulatory framework to ensure the acceptance of relevant alternative forms of collateral like sale contracts, movable assets, livestock, and agricultural inventories, as a way to mitigate risks in outstanding loans. Also, if there were increases in reserve requirements imposed on FIs when there is a lack of traditional collateral, thereby ignoring alternative forms, this would discourage rural finance portfolios. Ensuring that there is a clear framework for the establishment and development of credit bureaus is another important way to promote rural financial markets, as FI's movement into rural areas can lead to clients accumulating too many loans and pledging the same collateral to various lenders in some geographical pockets.

Similarly, regulatory frameworks for agriculture trade and subsidies need to be stable over time to foster predictability among rural economic actors and financial institutions. They should avoid sudden changes in import or exports rules, over-appreciation of the domestic currency that can hurt agricultural exports, and crowding out goods and service markets with unsustainable subsidy interventions. Subsi-

dies are more effective when focused on changing capacities among rural actors, are time-bound and effectively targeted to intended beneficiaries (ODI, 2008; Baltzer, 2011). Stability in agricultural trade and subsidy regulatory frameworks enable the feasibility of rural and agricultural investments thereby favouring financial institutions' ability to serve agriculture and smallholder families.

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INNOVATIVE RISK MANAGEMENT STRATEGIES IN RURAL AND AGRICULTURE FINANCE

THE ASIAN EXPERIENCE

The present study reviews recent trends in rural finance and investment in general, and in the agricultural sector in particular, within the Asian region. The analysis of these trends aims to offer a critical perspective on some of the main constraints to achieving more inclusive rural financial systems in developing countries in the region, and to propose areas of public and private intervention that could advance this objective, based on evidence compiled from important innovations led by local rural actors in various countries like China, India, Philippines and Viet Nam.

These reflections highlight the importance of analysing those strategies, investment processes and financial products that these rural actors have designed, in order to identify how the public sector can reduce knowledge gaps that the formal financial sector has about rural clients and their livelihoods. This would put the public sector in a position to create an enabling environment for greater rural financial inclusion.

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