Agricultural Value Chain Finance in Myanmar

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Contents

List of Tables

List of Figures

Executive Summary

Introduction

Smallholder farmers in developing countries face substantial constraints that limit their ability to reach their production potential. Two constraints—risk exposure and limited access to liquidity—pose particular challenges. Smallholders face a wide variety of risks that constrain the choices they can make and their willingness to make investments. Limited availability of affordable credit, borrowing, and saving products poorly aligned with the needs of the agricultural sector as well as prohibitive borrowing eligibility requirements all impede farmers' access to the liquidity necessary for investing in new, more profitable crops or technologies (International Finance Corporation, 2014). Observers have noted that a large share of long-term credit needs is not being met in Southeast Asia (Shakhovskoy and Wendle, 2013). The location of the region's agricultural sector near some of the world's largest consumer markets is creating new opportunities throughout Southeast Asia. While existing financial services may be suitable for some farmers, access to finance is particularly inadequate among women, low-income groups, and ethnic minorities, and risks excluding the most vulnerable groups from these emerging economic opportunities.

The Inclusive Agricultural Value Chain Finance project is working to understand potential models for improving access to agricultural value chain finance among disadvantaged groups in three countries in Southeast Asia: Indonesia, Myanmar, and Vietnam. By "agricultural value chain finance," we specifically refer to financial products or services allowing value chain participants (for example, input suppliers, farmers, traders, processors) to address and alleviate constraints to business activity (Miller and da Silva, 2007). Such arrangements can include contractual arrangements between actors within a chain (for example, farmers and traders) that provide a mix of credit and insurance, but when all actors are constrained, third-party finance providers may be necessary. While stand-alone credit programs are appropriate for some farmers, insurance programs may be necessary for others. For households that need capital, but who would be made more vulnerable to potential losses by taking on credit, products that combine credit and insurance could potentially mitigate those risks.

The aim of this report is to describe the present state of agricultural value chain finance in Myanmar and to suggest policies that could help expand its availability. In the first section of this report, we consider the features of a policy environment needed for agricultural value chain finance to flourish. Key points related to the policy environment include the following:

- Allow interest rates for formal loans to be priced by the market rather than through regulation;
- Support secure, inclusive payment systems and transaction frameworks;
- Develop a legal framework that supports both the use of movable collateral in loans and a warehouse receipts system;

- Develop a legal and/or regulatory framework that supports contract farming among smallholders;
- Allow for a more open, technology-driven financial architecture that allows for market entry among non-traditional financial service providers

These policy goals can help increase the supply of credit while reducing barriers for potential entrants, creating an environment for more accessible agricultural value chain finance. If new types of providers can enter credit markets, then current providers face competition and in general services around credit should improve. To ensure that relatively marginalized farmers are not excluded from agricultural value chain finance, it is important to ensure that systems allow for assets beyond land to be used as collateral and that policy makers do not neglect savings and insurance. In the remainder of the first section, we consider the way agricultural value chain finance products can be designed for growth and inclusion. Throughout, we try to provide examples and lessons from different value chains with the expectation that they potentially lend insights for other value chains as well.

Myanmar Country Situation

Agriculture remains a very important component of Myanmar's economy, contributing about one-third of GDP and over two-thirds of employment. However, as a rapidly growing, low-middle income country, Myanmar is experiencing many of the changes previously exhibited in countries a bit farther along in the development process. Urbanization is occurring along with rapid wage growth, and as cities grow the demands on agriculture and food systems change. Given its agricultural potential, Myanmar would seem to be approaching a paradigm shift in demand for high-value and value-added agricultural products from domestic and international markets.

To address these changes, Myanmar's agricultural sector requires a transformational change in efficiency, quality assurance, traceability, and differentiation. A key factor in meeting new domestic and international demand will be the expansion of access to finance for agriculture. At present, less than 2 percent of private commercial bank lending goes to the agricultural sector. A larger amount comes from the Myanmar Agricultural Development Bank, but primarily in the form of seasonal smallholder loans to the rice sector. The microfinance sector is also expanding rapidly, with over 150 institutions serving over 3 million clients. Yet many farmers remain unserved or underserved. Digital mobile money has just reached scale in Myanmar, providing a new potential channel to expand financial inclusion among smallholders.

Key commodities in Myanmar, in terms of gross value of production (GVP) are rice, dry beans, and pulses, oilseeds, livestock (chicken), aquaculture, and cash crops. Rice dominates Myanmar's agriculture with its $7 billion GVP, followed by dry beans at $3 billion. Both rice and dry beans are bulk commodities with minimal value added, and in terms of taste preferences are readily replaceable with more high value and nutritional products such as fruits, vegetables, meat, eggs, milk, and fish, which are all considered higher

value per kilogram, hectare, or calorie (Gulati et al., 2005). The transformation of regions such as Magway, Mandalay, Shan, and Chin to supply more higher-value commodities would deliver a significant boost to the livelihoods of smallholder farmers.

For such change to occur, new business models, product differentiation, quality-assurance regimes, and customer-centric, transparent value chains are required and must be driven by circular data and financial flows. The transformation of agriculture toward more high-value commodity production requires a significant investment in agricultural supply channels; close linkages among farmers, processors, traders, and retailers; and a customer-centric outlook. Increased adoption of suitable value chain finance models will be an important factor in this transformation.

Myanmar Policy toward Agricultural Value Chains

Myanmar has experienced a series of free market reforms in the past decade, coinciding with increasing international political engagement. Important shifts are continuing to take place in areas including banking, market institutions, microfinance, insurance, and digital financial services. From the perspective of agricultural value chain financing, particularly important shifts have included:

- Liberalizing loan collateral requirements for banks, and a significant step toward encouraging risk-based pricing of credit with an increase of the interest rate ceiling to 16 percent for uncollateralized bank loans
- Ongoing liberalization and corresponding expansion of microfinance in urban and rural areas
- Institutional developments including increased Central Bank independence, new laws and more efficient processes around areas ranging from foreign ownership to company registration, and the emergence of a credit bureau
- Significant insurance market liberalization

However, to maximize the potential of agricultural value chain finance in Myanmar, more needs to be done to manage market risks, support financial institutions in crafting financial products to properly price risks (and for regulators to have the capacity to assess these capabilities), and to develop information and data systems to enable credit and insurance risk assessment. Lenders will be hesitant to lend for agricultural commodities that are heavily exposed to a small number of unreliable export markets, and will be hesitant to make loans to agricultural projects that are currently too risky to justify even a 16 percent interest rate. Lenders will also be hesitant to lend to agricultural value chains when it is prohibitively costly to understand the timing, volumes, costs, and other parameters of investments in the sector. These factors depend on financial-sector policy, but they also critically depend on other policy areas, particularly agriculture and commerce. In addition, banks must be willing to invest in capacity to understand the financial needs of the agricultural sector and to develop the skills to properly structure and underwrite commercial agricultural loans.

The government is still heavily involved in providing subsidized financing to the agricultural sector, arguably focused on areas where the rapidly growing microfinance institution (MFI) and banking sectors are now well-placed to meet credit demand at market rates. State intervention could be better focused on addressing the gaps that markets do not currently fill, by extending financial services in areas with high social and economic potential that might be marginally commercially viable today. Further, the government could invest in public goods such as information systems, commercially viable farmer organizations, and stronger market institutions. While it is tempting to address the most obvious needs through direct intervention, Myanmar can best leverage its available resources to create a vibrant rural economy and reduce poverty through policy interventions that leverage synergistic private sector and foreign investments and stimulate continued expansion of financial services.

Opportunities for Agricultural Value Chain Finance in Myanmar

Three key trends are significantly influencing agriculture in emerging economies: value addition in agriculture, the emergence of new retail outlets and supermarkets, and the increased demand for processing and packaging of food as an important income source for semi-skilled labor (Zander, 2015). For Myanmar to be competitive and relevant there is a need for transformational change in Myanmar's agricultural value chains to bring about efficiency, quality assurance, higher value products, and a more even distribution of income throughout the value chains. To transform the industry, one needs to examine whole value chains, not just the parts (Sandoval et al., 2019).

With increasing digitization in the agricultural value chain, the financial flows can be matched with data flows in a process of value co-creation for all actors along the value chain. Data can feasibly be captured from all actors in the value chain to not only streamline and create efficiencies but to create opportunities for enhanced financial flows and a shared understanding of production, processing, distribution, and consumption.

The main findings from this report in relation to value chains and their financing needs in Myanmar are as follows:

1. The potential for the development of agricultural value chains in Myanmar is substantial and promising, both from the supply and demand perspective.
2. The sheer number of smallholders, quality of natural resources, access to large markets, and relatively small number of quality processors mean the foundations for value chain success exist; however, they are missing key ingredients such as finance, extension services, and quality assurance systems.
3. The types of finance currently provided by financial institutions are insufficient to meet the needs of the entire value chain, particularly the needs of smallholders.

4. Myanmar has the capacity to produce large quantities of staple agricultural products: rice, beans and pulses, and oilseeds. However, Myanmar's agricultural products are often deemed inferior in terms of quality and therefore sell at a discount.

5. The financial needs of farmers are particularly acute as they can rarely access sufficient finance to meet their needs; lack of finance promotes the use of low-value inputs, producing low-yielding and poor-quality crops.

6. The financial needs of actors along the value chain are varied; however, the needs can all be met through traditional financial products if those products are structured and underwritten appropriately. Doing so in collaboration with other chain actors will create opportunities to support smallholder farmers and enhance their livelihoods.

7. The digitization of agriculture will play a key role in lifting agricultural productivity and performance and should facilitate the flow of finance between actors in the value chain.

Key Policy Recommendations for Myanmar

Our key recommendations are as follows:

- Encourage commercial banks and MFIs to engage in value chain financing (VCF) by helping them to deepen their understanding of VCF and VCF concepts. Regulators should develop an appreciation of VCF as a risk-reduction strategy.
- Explicitly consider the implications of agricultural financing policies for women and other underserved groups.
- While promoting the emerging insurance industry for important commercial applications such as trade and large-scale agriculture, consider carefully the commercial viability of microinsurance schemes marketed to individual farmers. Consider piloting alternative models such as group microinsurance.
- Focus on government intervention to address credit market failures, moving line ministries away from direct delivery of financing programs, and removing distortionary subsidies provided by state-owned financial institutions.
- Continue to heavily encourage capacity building for lending institutions in areas such as risk assessment and underwriting, and the capacity of regulators to assess these capacities in the lending institutions, so that artificial limits on interest rates can continue to be gradually removed.

Chapter 1

Inclusive Financing for Agricultural Value Chains

This chapter was written by Tom Moyes (Independent Consultant), Russell Toth (University of Sydney and Myanmar Economic Association), and Alan de Brauw (International Food Policy Research Institute).

Smallholder farmers in developing countries face substantial constraints that limit their ability to reach their production potential. Two constraints—risk exposure and limited access to liquidity—pose particular challenges. A wide variety of risks limit both the choices smallholders can make and their willingness to make investments. Limited availability of affordable credit, borrowing and saving products poorly aligned with the needs of the agriculture sector, and prohibitive borrowing eligibility requirements all impede farmers' access to the liquidity necessary for investing in new, more profitable crops and technologies (e.g., IFC, 2014). Observers have noted that a large share of long-term credit needs is not being met in Southeast Asia (e.g., Shakhovskoy and Wendle, 2013; Bronkhorst et al., 2017), despite its location near some of the world's largest consumer markets. While existing financial services may be suitable for some farmers, access to finance is particularly inadequate for women, low-income groups, and ethnic minorities, which risks excluding the most vulnerable groups from these emerging economic opportunities.

Smallholders have trouble overcoming risk and liquidity constraints for several reasons. First, transaction costs for potential lenders or insurers are high relative to working with larger farmers. Second, monitoring costs in agriculture in general are high, due to its spatially disperse nature, relative to urban industries. Understanding whether farmers are actually exposed to specific weather events can also be more difficult, which has led to the development of products such as index insurance that address verifiability issues but face significant challenges in practice (e.g., Carter et al., 2017). Third, collateral requirements for loans can be difficult to satisfy for both farmers and other value chain actors, particularly when property rights over land are ambiguous or incomplete (e.g. Besley, 1995). Finally, and perhaps most subtly, financial institutions may lack knowledge about agriculture and its specific needs, which can exacerbate the lack of financial services for agricultural or agricultural value chain lending. Government policies related to the agricultural or financial sector may interact with any of these constraints, potentially reducing them but also potentially tightening constraints.

The Inclusive Financing for Agricultural Value Chains (IFS4Ag) project is working to understand potential models for improving access to agricultural value chain finance, particularly among disadvantaged groups in three countries in Southeast Asia: Indonesia, Myanmar, and Viet Nam. Agricultural value chain financing refers to formal financing that affects at least three value chain participants: a financial institution, an end borrower, and at least one additional facilitator or beneficiary. This third party is also a value chain participant, and can be either directly or indirectly involved in providing finance to the end borrower. Examples of direct involvement include taking on formal loans to provide informal trade credit financing upstream or downstream in the value chain, or purchasing a wholesale insurance product. Examples of indirect involvement include providing information, a guarantee, facilitation of loan collection,

in-kind distribution of inputs, or some other support that reduces the risk of lending to specific end borrowers.

New technologies and institutional innovations suggest new opportunities are emerging to overcome long-standing challenges to expanding agricultural finance. In all three countries, increasing access to information and communications technology (ICT) through expanding mobile telephone networks and smartphone technology create potential for new distribution channels for lower-cost financial products that address the unique needs of agriculture (Nakasone et al., 2014). Such products create data and communication channels that can help reduce monitoring costs and lower downside risk among financial providers. However, these technologies cannot fully eliminate barriers to increased production nor improved resilience against shocks, lack of market access, or information constraints for financial providers to assess potential clients, supervise loans, and address risks. As such, incorporating digital technologies into existing models of whole-of-value chain agricultural finance is an attractive approach to increasing smallholder production, but must be part of a larger package. By working throughout the value chain, information, relationships, institutions, and market connections can be leveraged to maximize the efficiency and impact of financial services, while potentially minimizing risks to individual smallholders and small and medium-sized enterprises (SMEs). This approach dovetails with renewed government commitments to implementing regulatory frameworks and creating incentives to expand access to financial services in order to promote financial inclusion and reduce poverty.

In this report, we describe the current context of agricultural value chain finance in Myanmar, particularly as it relates to smallholders. Before we discuss Myanmar in detail, we discuss what can be considered "good" agricultural value chain practices. The second chapter then places agriculture and crops for which value chains exist within the context of Myanmar's economy and describes the current state of agricultural financing. The third chapter describes historical and current policy in Myanmar as it relates to agricultural value chain finance. The fourth chapter highlights promising opportunities for expansion of agricultural value chain finance in Myanmar. The final chapter provides policy recommendations, highlighting potential "quick wins"—policies that could be changed in the short to medium term and which evidence suggests would lead to more value chain finance availability.

Good Practices in Agricultural Value Chain Finance

For agricultural value chain finance (AVCF) to be effective, it needs a stable policy environment underpinning the agricultural and financial sectors, and it requires finance practitioners knowledgeable about agriculture and the specific needs of agricultural value chains participants. In this chapter, we describe core policies that can help foster AVCF, and then discuss practices, that can help financial service providers conduct AVCF; in the latter section, we include examples of potential AVCF models. But before we turn to policy, it is worthwhile placing AVCF within the context of both rural finance and agricultural finance more generally.

Agricultural Finance and Agricultural Value Chain Finance: Useful Concepts and Definitions

For the purposes of this report, we define rural and agricultural finance as follows:

- **Rural finance**: Rural finance is the provision of financial services outside of urban areas. It includes payment products, savings and deposit products, credit (loans), insurance, etc. Rural financial services are offered by both formal and informal providers. Most important, not all rural financial services are directly related to, or support, agriculture or agricultural production.

- **Agricultural finance**: In contrast to rural finance—which relates to where the finance is provided—agricultural finance refers generally to the provision of loans or credit to farming and/or agribusiness enterprises, where the risk of the loan is agricultural risk, and the purpose of the loan is to support agriculture or agriculture-related activity.

- **Agricultural value chain finance (AVCF)**: We define AVCF in the introduction as formal financing that affects at least three value chain participants: a financial institution, an end borrower, and at least one other facilitator or beneficiary. This third party is also a value chain participant and can be either directly or indirectly involved in providing finance to the end borrower. Therefore, it is a specific type of agricultural finance.

With these definitions in mind, we turn to explore good practices both in policy and among practitioners of AVCF in more detail below.

Getting the Policy Environment Right for Agricultural Finance

In thinking comprehensively about agricultural financing techniques and approaches, it is first important to consider the policy, legal and regulatory environment that would be most supportive of commercial agricultural finance. Agricultural financing systems are largely a national phenomenon. In most instances, they are the product of national policymaking in support of public policy goals pertaining to the agricultural sector. In other instances, national agricultural financing systems have developed without any consistent guiding policy and regulation. Some countries have no discernable "system" for financing agriculture—yet continue to have sizeable and thriving agricultural sectors.

A few studies published in the past decade examine the policy environment for agricultural finance; most notable studies have been undertaken by the International Finance Corporation (IFC).[1] This work provides useful general policy advice on topics such as the importance of taking a value chain approach and avoiding wasteful directed credit programs for smallholders. However, there do not appear to have been any recent, comprehensive multi-country analyses of agricultural financing systems.

That said, underlying conditions have been changing rapidly, as a result of changes in food systems, accelerating evolution in technology, rising demand for healthier, certified and traceable food, and climate-related considerations for agricultural production. Therefore, a comprehensive examination and analysis of national agricultural financing systems would be both timely and welcome, but is beyond the scope of this report. However, we do offer a higher-level overview on the appropriate policy environment that is supportive of commercial agriculture, while considering the needs of smallholders—an important stakeholder group that this project is keen to support.

The Key Players in an Agricultural Financing System

Commercial agriculture and agribusiness are driven by market forces and for the most part run by private enterprises. The financing for agriculture and agribusiness comes from financial services providers who are primarily—but not always—guided by commercial considerations. That is, they engage in finance to earn a profit, and price the financing service appropriately after calculating their risks and operational costs.

1 A short list of valuable recent sources on agricultural financing policy would include Teima et al. (2011), Varangis et al. (2012), and Miller (2015).

National financial sectors are dominated by commercial banks, and central banks serve as the key regulator, implementing and enforcing national financial sector rules. Policies and regulations that emanate from the central banks have a big impact on agricultural financing systems—as well as the financing of all other activities.

When it comes to agricultural financing, ministries related to agriculture are often directly involved through channels such as an agricultural development bank that receives government funding, or other similar means. Many governments go beyond their essential role in setting and enforcing rules and become active market participants promoting agricultural finance via subsidized interest rates and other preferential programs.

As the IFS4Ag project focuses on developing efficient AVCF, as well as promoting those AVCF arrangements that assist excluded smallholders, our agricultural finance policy analyses will highlight issues most relevant to the development of national agricultural financial systems that are pro-AVCF, and pro-smallholder. The following list overviews important financial-sector-related policies that support commercial agricultural finance and financial inclusion for smallholders:

Allowance for Pricing of Risk within a Liberalized Interest Rate Environment

In many countries, complaints about high interest rates for farmers and others to finance their businesses are common. Because these grievances are not subject to a proper troubleshooting mechanism or any systematic investigation, policymakers may feel the need to protect farmers and businessmen from what they consider to be unfair borrowing expenses. Such an approach can be politically popular, but vilifies financial service providers as rapacious moneylenders focused only on profit, rather than recognizing the multiple objectives, including smallholder welfare, that might be beneficial to lenders in the long term.

Keeping interest rates low to benefit one specific group or sector, such as smallholders or the agricultural sector in general, has been tried time and again around the world. There is no evidence that this policy approach results in better performance by the agricultural sector or farmers, and often the larger farmers and agribusinesses benefit most from the inevitable credit rationing that results, ironically crowding out smallholders. Good practice is to let financial service providers themselves determine interest rates for loans to agribusiness and farmers based on their own client analysis and their internal models for risk pricing. Government intervention in the setting of interest rates can push financial service providers out of the business of financing agricultural producers and agribusinesses. Therefore,

agriculture gets financed, either by the formal financial sector or by informal providers of finance, often within supplier/ value chains. From a sustainability perspective, it is better to let financial service providers decide whether or not to serve the agricultural sector based upon commercial criteria, without clouding that decision-making process with government-imposed interest rate pricing distortions.

Strong and Flexible Secured Transaction Frameworks

It is important that creditors, particularly commercial banks as public depositary institutions, have an enforceable claim over collateral that is provided by borrowers. Such an enforceable security interest is applicable for all kinds of lending and to all sectors, including agricultural lending and agribusinesses. Collateral eligible to be serve as security for loans should include both movable property (e.g., inventory, receivables, equipment) and immovable property (e.g., housing, land). Movable collateral registries are a defining feature of strong, secured transactions frameworks that help facilitate and encourage secured equipment financing.[2] As the agricultural sector is chronically underinvested in developing economies, it is essential that the policy environment bolster such long-term capital investment (FAO, 2017b).

Land Titling

Strong land rights—the right to own land free and clear and the right to sell ownership in immovable property—are a key element in an enabling environment that supports commercial agricultural finance, particularly for longer-term investments. For example, if an agribusiness wants to build and operate an agricultural processing plant, the investment makes greater sense if the business owns the property underneath that plant. By dint of land ownership, that agribusiness can borrow against its real property to finance the plant on a long-term basis, an economically efficient financial arrangement. For farmers, having a secure land title is also economically advantageous.[3] From a financial perspective, however, having a secure land title provides more financial options, including the option to borrow against that land, particularly for long-term land improvements. The financing of primary production

2 The legal framework should provide for the use of personal guarantees as an intangible form of collateral particularly for smaller loans. Although this concept would seem to be unenforceable, if a lack of repayment implied the borrower could no longer borrow, their reputation as a borrower would serve as the security interest. This type of legal framework can support situations such as agricultural off-takers guaranteeing loans from agribusiness or primary producer suppliers.

3 In fact, the study of land titling impacts on investment in developing countries is well known in the agricultural economics literature. In an early paper in this literature, Besley (1995) found that more secure rights led to investment in Ghana, and similarly Jacoby, Li, and Rozelle (1998) associate better land use rights with additional fertilizer investments on plots in northeast China. In Viet Nam, Do and Iyer (2008) find improved rights with the 1993 Land Law lead to higher investments in long-term crops, but the effect is small in magnitude. Rather than summarizing each paper thereafter, we note that Lawry et al. (2016) conducted a systematic review of the impact of what they call land tenure recognition on farmer productivity, income, and investment; they find positive impacts on productivity and income and believe these gains come through improved tenure directly rather than improved access to credit.

of agricultural commodities—the most common form of AVCF—does not generally depend upon or require pledging real property. Short-term production financing, for example, of annual crops, can potentially be financed through short-term loans secured by movable collateral, or else supported by a contract and/or guarantee where such mechanisms are legally available.

Framework to Support Hire-Purchase and Leasing

A modernizing agricultural sector requires investments in equipment; thus, policies and regulations should ensure the financing of such investments is possible through hire-purchase and/or leasing arrangements. The equipment financing business calls for specialized skills, particularly in the case of financing larger, high-priced machinery such as combines, milling equipment, and sorters. Financial sector policies and regulations that allow for special-purpose equipment financing companies and/or leasing companies to be licensed are a boon to agricultural finance; these necessitate up-to-date leasing laws and implementing regulations.

Warehouse Receipts System

A warehouse receipts (WHR) system allows agribusinesses to safely store crops and borrow against the crops in storage. Such a system is legally separate from movable collateral registries; it is normally based on specific laws with their own implementing regulations ensuring the legal validity of WHR as financial instruments. A robust WHR system is advantageous for agricultural finance to support AVCF, though such a system is less directly relevant for smallholders. Note, however, that developing a WHR system involves a multi-year process comprising and requiring the passage of new law(s), and substantial investment in both hard assets (warehouses) and skills (testing laboratories, capacity to value agricultural crop inventories) required to make such a system convenient and attractive to use.

Low-Cost, Inclusive Payment Systems

Although not usually linked to the discussion of inclusive agricultural financing systems, efficient, low-cost, digital payment systems are increasingly recognized as drivers of inclusive finance. Smallholders and low-income communities in rural areas benefit significantly with the ability to send and receive money promptly and efficiently via digital means with low transaction costs. Furthermore, financial service providers and financial technology companies (fintechs) are discovering the "data value" of the digital transaction records generated by formerly unbanked people. These transaction records create a digital footprint

to support credit scoring and ultimately help smallholders qualify for small loans. Developing convenient, low-cost, inclusive payment systems creates a gateway to financial inclusion for smallholders, low-income households and other rural residents. Having such structures in place sustains efficient transactions between value chain actors, further facilitating AVCF arrangements.

Standards and Guidelines for Contract Farming

As agricultural value chains reorganize for greater efficiency and productivity in response to consumer demand for safer and more sustainably produced food, contract farming is emerging as a critical tool for developing value chain cohesion. Value chains that include smallholders as important actors need to adopt additional formal methods of contracting—based on guidelines and standards that are fair and flexible. Policymakers are well-advised to pay attention to the development of contract farming to ensure that the instruments and techniques used do not discriminate against smallholders. For example, any regulatory bodies or enforcement mechanisms should not exclude smallholder bodies, and they should work to reduce the probability of elite capture.

Promotion of Innovation Ecosystems, Including for Financial Services

A policy environment that promotes innovation is essential for the agricultural sector, for example, improved seed varieties and new technology solutions (agtech) that promote increasingly efficient and sustainable agricultural production. For financial innovation, new fintech business models show substantial promise in improving financial services for the agricultural sector and smallholders, as well as for other sectors of the economy. Fintech innovation, along with agtech innovation and other forms of technology-driven entrepreneurship, requires investors willing to support early-stage startups and small, growing businesses. Governments have a growing role to play in building an enabling policy environment to facilitate startups and investment in new businesses—including agribusinesses and fintechs that can serve agricultural clients—beginning with promotion of innovation ecosystems (incubators, accelerators, angel investment networks, private equity). To create innovation ecosystems, both a policy response and a mind-set change on the part of policymakers is required, who must work in closer partnership with the private sector.

Open Financial Architecture

Until recently, financial sectors were comprised of structured sets of financial providers with familiar, well-defined products and services that fit somewhat neatly into standard regulatory

frameworks, and discussion about AVCF and smallholder financing was confined to the standard set of regulated financial institutions (FIs). Today, the familiar boundaries around FIs are becoming less restrictive as technology emboldens new market entrants (telecommunication companies, transportation companies, fintechs) to provide financial products outside traditional legal and regulatory authority. Using the term "financial services provider" ("FSP"), which encompasses FIs *and* the broader set of firms that offer financial services (usually digitally) alongside non-financial services, reflects this opening of the sector. From a policy perspective, it is important to allow for an increasingly open financial system architecture to encourage innovation and be more "customer-centric and technology-driven" than the traditional "regulatory-driven, product-focused" approach.

A Robust Institutional Framework for Agricultural Insurance

The first step toward expanding agricultural insurance is to have a strong legal and regulatory framework to govern the sector, which sets constraints such as who can underwrite insurance contracts and market insurance. Regulators must have sufficient knowledge of the sector to be able to supervise how insurance contracts are developed and insurance products marketed, and to ensure that safeguards are in place to allow consumers to make informed choices about purchasing insurance products. The sector should have enough information infrastructure and credibility to allow local insurance companies to take advantage of international reinsurance opportunities. In practice, the commercial market for agriculture-related insurance products is likely to be focused on large commercial entities and agribusinesses, such a wholesalers, exporters, and processors, so initial regulatory efforts should focus on these large-scale commercial applications, where issues such as innovation in product design may take relatively higher priority than consumer protection. More details are provided in Box 1.

Box 1: Microinsurance Is Social Protection, But There are Other Commercial Paths to Reach Smallholders with Risk Protection

Among farmers, smallholders are perhaps the most vulnerable to shocks from weather, disease, and market availability, and hence would benefit most from insurance. Indemnity-based insurance--which makes directly verified payments to policy holders when losses can be directly verified—is typically prohibitively expensive for smallholders. To address the high costs of direct verification, either by agents or third parties, innovative "microinsurance" models have been developed in the last 20 years that condition payouts on an aggregated index constructed from more easily collected information such as weather or remote sensing, rather than direct verification. However, a large literature has shown that it is very difficult to sell these products to smallholders at market prices (see Carter et al, 2017). Because marketing insurance to smallholders carries significant unit costs for distribution, education, etc., commercial microinsurance prices must be well above the actuarially fair price (meaning the price that equals the expected value of losses). In practice, smallholder demand for microinsurance is reasonably price sensitive, so demand for microinsurance can be quite small even at the actuarially fair price. Hence individually marketed microinsurance can only reach scale with significant subsidization. Governments or donors might want to support subsidized insurance approaches to address systemic risks to agricultural production; however, doing so carries fiscal and social protection policy implications well beyond pure commercial financial sector policy.

Good AVCF Practices for Financial Service Providers

In the present environment, digitalization of many agricultural value chain processes is increasingly common in some countries. Current best business practices may soon be considered inadequate, as business models become obsolete with changing technology. New technological applications are as important for agricultural lending and AVCF as they are for other kinds of financing. We have not carried out any systematic analysis of emerging agri-fintech models, as doing so is beyond the scope of this report, but we should not discount the potential for disruption of agricultural lending by fintech firms, agtech firms, or other, hitherto unforeseen market players. At present, agri-fintechs show significant promise, but have not yet been taken to scale. Furthermore, it is likely that incumbent FIs may be able to collaborate with the more promising emerging fintechs—or else replicate their business models. For the foreseeable future, incumbent FIs will remain the predominant set of FSPs serving agriculture.

For the purposes of this discussion, therefore, we will adopt the point of view of traditional formal, licensed FIs (e.g., finance companies, microfinance institutions, commercial banks). The incumbent FI point of view is still relevant and helps to highlight an essential theme, namely, commercial viability. More simply, it is important to focus on efficiency and profitability in the provision of agricultural finance and AVCF.

With that brief introduction, here are the most important good practices in AVCF, listed roughly in order of importance:

Build a strong team with capacity to analyze agricultural markets and value chains

Agriculture is a broad term, encompassing annual and perennial crop production, livestock rearing, and even fish rearing. When successful agricultural lenders speak of lending to agriculture, they often refer to a limited set of crops and other agricultural commodities that are produced commercially, with cash flows that can support commercial financing. Lending to agriculture is like lending to any other industry where a unique set of characteristics needs to be considered when developing financial products and services—particularly credit products—appropriate for that industry.[4] Agriculture has unique risks, most notably natural risks like pervasive climate hazards and pest infestation or disease, but also more standard business-related risks like price and production risks, all of which can pose a threat to the crops or other agricultural commodities, such as livestock, that are being financed.

Smallholders present unique challenges for financial service providers. First, their financial needs tend to be small relative to larger operations, increasing the share of transaction costs for any specific loan or insurance contract made to a farmer. Second, smallholders are spatially disperse, so such services also become more costly to monitor (e.g., Binswanger and Rosenzweig, 1986). Along with standard agricultural risks, these factors combine to make the provision of services to smallholders challenging even under normal market conditions.

Moreover, agricultural crop/commodity value chains (VCs) are not often integrated into a single vertical company structure. The agricultural economy has many different layers and economic actors that combine in multiple ways—depending on the crop or commodity—to produce, aggregate, and transport, and in some cases transform and market different kinds of agriculture-based products. Further, the cash flow characteristics of each VC are unique to that VC and may be highly seasonal, with seasonality dependent in many cases on specific geographies and climatic zones. Therefore, good agricultural lenders, when considering whether to finance a

4 Lending is not the only type of AVCF; insurance can play a role as well. For simplicity, we primarily focus on lending in the chapter.

particular VC, start by looking at the crop calendar as a basis for determining the cash flow of that VC and the various actors within it.

To understand and manage the risk of lending to agriculture, successful agricultural lenders must have staff highly knowledgeable and experienced in agriculture. Generally, experienced agricultural lenders prefer staff with a deep background in agriculture, such as having worked in agriculture or grown up on a farm. Successful agricultural lenders believe that it is easier to train an agricultural expert in banking than to train a banker in agriculture.

Agricultural lending, and specifically the practice of AVCF, is a skill requiring focus, training, and specialized know-how. It is not enough to have an expert or two. To do AVCF properly, a financial institution needs a team of expert agricultural finance practitioners with the capacity to identify and analyze the risks of lending to agriculture, and also able to structure AVCF arrangements and monitor and manage the associated risks. This team can be organized in different ways (unit, division, department), but it should be focused on financing agriculture and agribusiness.

Match the value chain entry point with the comfort zone and competence of the FI

FIs are not NGOs or charitable organizations, and they have an obligation to lend money—particularly depositors' money if they are a depositary institution like a bank—in a prudent manner that ensures borrowers' repayment. FIs have different strengths, and often choose to engage in areas of lending in which they have some degree of competence and have arrived at a level of comfort with certain industries and types of borrowers.

FIs that have successfully built an agricultural lending business and/or developed skills in AVCF usually have a clear idea of where in an agricultural value chain they feel comfortable entering—they are good at identifying an appropriate "entry point." It is a good practice when developing an agricultural credit operation—or engaging in AVCF—to focus on the most sensible, lowest risk entry point into a crop/commodity value chain.

In a recent example from Myanmar, Yoma Bank analyzed the corn value chain and identified the larger aggregators and traders as the key entry point into that VC. Many of these traders were already Yoma customers who had not previously been offered loans, though they were among the largest depositors of Yoma branches in the corn-growing region (Shan and Northern Shan provinces). Yoma chose to loan to existing deposit customers who were corn traders and who

had long-standing track records of maintaining large deposits—from the bank';s perspective this was a very low-risk entry point.[5]

The determination of an appropriate entry point is conditioned by the FIs' physical footprint or branch network, the kinds of clients they are used to dealing with, as their standard product set and underwriting criteria, as well as other related factors. Discipline and focus are needed to select the right entry point in a crop/commodity value chain; the more an FI engages in agricultural lending, the easier it is for that institution to identify good VC entry points.

Expand slowly and deliberately up and down the VC, and then on to other VCs

Once an FI has selected an appropriate entry point for a given VC, the FI will often begin its credit operations by focusing on one kind of client for one or two seasons before expanding credit operations further up or down that value chain. For example, a commercial bank looking to enter the maize VC might decide that the most sensible entry point is at the level of the "apex buyers" —large aggregators—with whom that bank may already have an ongoing relationship as depositors. That bank might decide to lend to these agribusinesses for one or two seasons before considering expansion of operations up or down the maize value chain.

For FIs unaccustomed to lending to clients engaged in agriculture, it is good practice to start slowly and take a step-by-step approach, working first with the kinds of clients they already know and have some understanding of, and then moving ahead deliberately to expand credit operations further into the VC, perhaps ultimately culminating in adopting AVCF approaches to banking the VC. It is also advisable for an FI to take a simple approach to products and services as it starts lending to the sector. As most FIs are accustomed to giving short-term working capital type loans to non-farm businesses, it makes sense to start lending to agricultural VC firms in the same way, provided that type of product suits the agricultural borrower.

Design products that solve problems/challenges for the VC

It is important to understand the VC, and all the commercial relationships that exist up and down the VC between various actors. It is almost always the case that an FI will find existing financial relationships and financial transactions and flows occurring between and among different VC actors. The extent of those financial flows and the nature of those relationships need to be

5 One of the authors (Tom Moyes) was part of a team of consultants who advised Yoma Bank in 2016 on how to analyze and strategize about banking the corn value chain, under the Mekong Business Initiative of the Asian Development Bank.

understood fully by the FI prior to selecting the entry point into the VC or developing any AVCF arrangement.

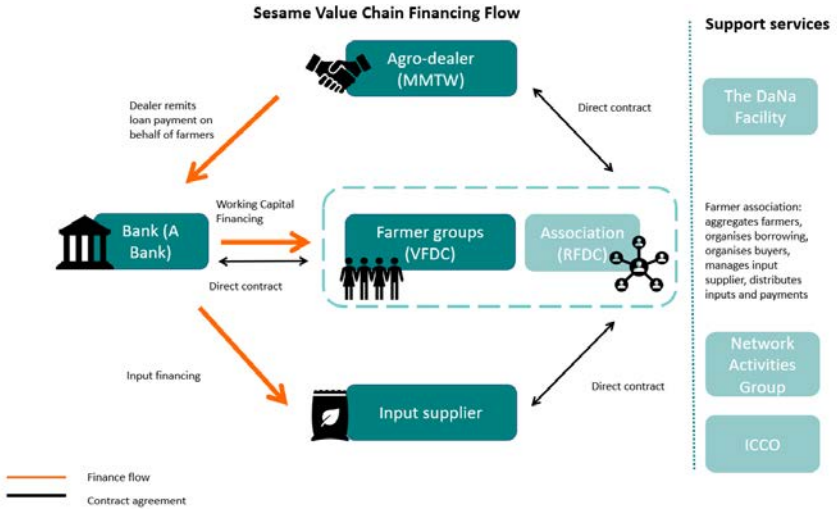
It should not be the primary objective of an FI to organize the VC nor to seek to substitute their own financing for the existing internal VC financing. What the well-prepared FI is likely to find in any given VC, however, are opportunities to efficiently introduce formal financial products and services into that VC that offer a clear value proposition for one or more existing VC actors. For example, a finance company might decide to provide a working capital line of credit to a large aggregator during the harvest season. That credit line would provide the aggregator with ready funds allowing her/him to purchase a commodity, for instance, cotton, when there is an opportunity to sell large quantities onward at attractive prices, and when the aggregator's own resources might otherwise constrain their capacity to purchase the harvested crop at the opportune time.

The FI in this example is injecting liquidity into the cotton VC, with that liquidity directly benefiting the aggregator, but also likely benefiting other actors in the VC, including primary producers who can receive a cash payment from the aggregator. By using commercial financing, the aggregator firm can conserve its own cash and leverage higher financial returns from the purchase and sale of cotton. In this case, the FI helps solve the aggregator's problem (or potential problem) of being short of funding when VC business opportunities appear, or the problem of having recourse only to more expensive forms of financing from non-formal sources of finance, such as other value chain actors or money lenders. We present a real example from Myanmar in Box 2.

Box 2: An inclusive AVCF model in the sesame value chain

The DaNa Facility in Myanmar helped to introduce a financing model that inserted a formal credit provider into the sesame value chain, the Ayeyawaddy Farmers Development Bank (the "A Bank"), a commercial bank. The A Bank is interested in expanding its agri-finance portfolio and agreed to provide credit to 3,405 farmers in 59 Village Farmers Development Committees (VFDCs) at an interest rate of 1.47% per month over 6 months. This is lower than the 2% per month interest rate currently offered to farmers by dealers and is an important step in connecting largely unbanked smallholder farmers to a commercial bank. The value chain financing proceeds through three steps:

1) At the beginning of the sesame planting season in May, the A Bank pays the input supplier (the Myat Taw Win Company, or MMTW) directly; the contract and price for inputs is negotiated by the Regional Farmers Development Committee (RFDC), an apex agency of which the VFDCs are members. Farmers' loan accounts are credited to reflect the value of inputs they receive from the input supplier, with input amounts received based on farmers' acreage and a standard amount per acre (otherwise known as a "parametric" approach).
2) Each VFDC opens a bank account with the A Bank. Halfway through the planting season, the A Bank issues the second tranche of financing to the VFDCs. The VFDCs distribute loan proceeds in cash to individual farmers to allow them to hire laborers to tend and harvest the sesame crop.
3) After the harvest, farmers take their sesame to the agro-dealer's warehouses. The agro-dealer pays the RFDA, minus the cost of the farmers' loans, which is directly paid by the agro dealer to the A Bank. The RFDA distributes to the farmers the revenue they have made from the growing season, minus the value of their respective loan repayments.



It is important to note that in many cases large aggregators have access to other sources of cash, including their own, and do not necessarily need to borrow from a bank or finance company. The point is that a judicious application of financial leverage provided by the FI can help to optimize financial returns, which is particularly true for short-term buying and selling. Financing offered by formal FIs is often the lowest cost form of financing, so it is sensible for the FI to look for opportunities in different VCs to offer financial products that solve the problems of VC actors such as access to short-term liquidity.

In any given emerging market country, there are often very few skilled commercial agricultural lenders capable of identifying, analyzing, and solving VC actors' financial problems and challenges. For this reason, many VCs have developed alternative financing mechanisms, including internal VC and supplier financing arrangements, which are sometimes known as "trade credit." There is certainly nothing wrong with this form of VC self-financing, and it is often done out of necessity because few formal FIs see any opportunity in agricultural lending. For an FI, internal VC financing in many cases represents a potential opportunity, with the challenge being to ensure that the FI can offer financial products and services that are clearly more attractive for the VC actor or actors than existing VC financing. The focus of the FI, therefore, must be on adding value and solving problems.

Note that many FIs take a "product approach" to agricultural lending—an approach they often apply to lending to other industries as well. That is, if an FI has grown comfortable with a certain kind of loan product, they are tempted to offer that loan product to all customers, regardless of whether it is the most appropriate product for a particular customer. This is certainly not good practice for either agricultural finance generally or AVCF specifically. Often microfinance institutions (MFIs) are guilty of this unhelpfully rigid product-focused approach to agricultural lending; standard MFI products require interest and principle repayments at frequent (weekly or monthly) intervals, which rarely coincide with the cash flow characteristics of smallholders or aggregators within value chains. Many MFIs have learned, all too predictably, that these short-term lending products designed for small traders do not fit the needs of smallholders.

Bank the existing relationships in the value chain

Lenders often face an asymmetrical information problem when evaluating potential lending opportunities. In the context of AVCF, lenders may have insufficient information about a potential borrower to make a proper evaluation of the borrower's true creditworthiness.

Understanding the scope and nature of the commercial relationships within a VC creates opportunities for FIs to reduce the risk of their lending operations. Good agricultural lenders try

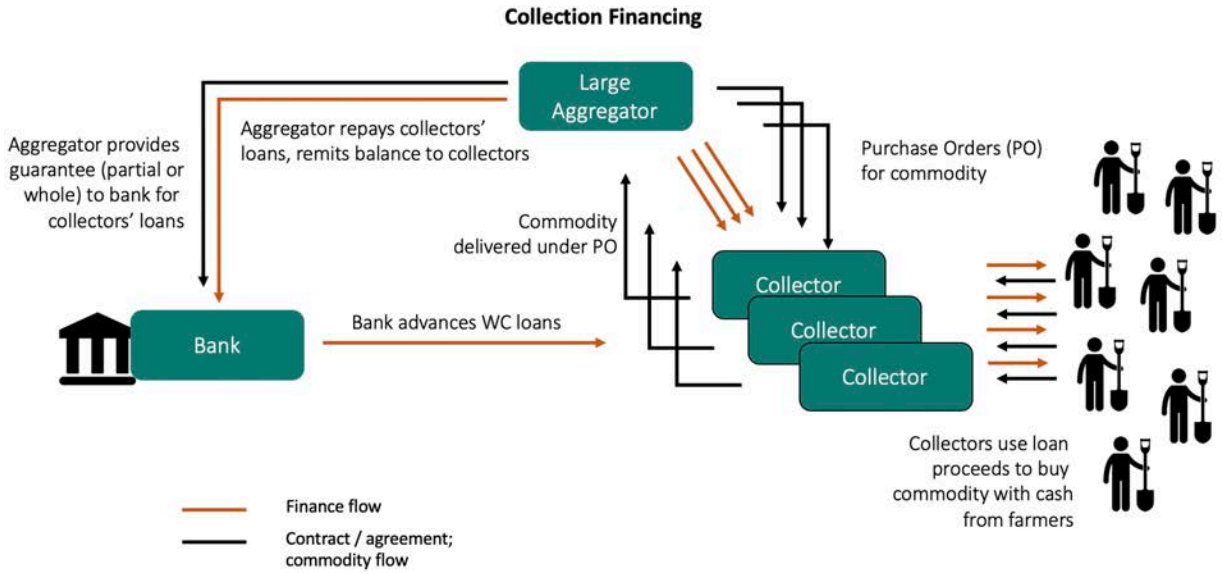
to “bank the relationships” that already exist within a given VC, that is, the FI will try to leverage the long-standing relationships of mutual trust built, for example, between producers and buyers or off-takers. A good agricultural lender can overcome asymmetrical information by relying on the interested VC actors to indicate who is creditworthy and who is not.

Good examples of banking the relationships in a VC come from the sugar industry. Imagine a sugar miller who has identified a group of trustworthy primary cane producers, and over the course of many years has come to provide credit to a certain group of growers (but probably not all growers who want credit—only the most trustworthy) to support the annual cost of growing cane. In exchange for the mill-provided credit, these producers faithfully send their cane to the sugar mill. These kinds of supplier-buyer relationships support efficiency in the operation of the VC. The savvy agricultural lender, looking to enter the sugar VC, might go to the miller and offer to provide financing for that same group of trusted growers (perhaps at a rate lower than the miller charges, which benefits the growers). The miller benefits by not having to use their own funds to finance the growers, reducing their own risk and potentially allowing the miller to invest their funds in better opportunities. The agricultural lender usually can get a guarantee from the miller for the amount it lends to the group of trusted growers. As the miller has developed a relationship with all the growers and has been willing to lend only to the most trustworthy individuals, the miller should be happy to provide a partial credit guarantee to the agricultural lender (20 to 50 percent of the outstanding value of the credit provided). The FI, through the agency of the miller, has overcome asymmetrical information by leveraging the trust built up over years between growers and miller, and provided a useful service to both. Often, the FI can further rely on the miller to help manage the repayments of the loans when the cane is delivered to the mill. This is a classic example of an AVCF arrangement that benefits the FI, the miller, and the growers. However, the relationships beyond the farm can be banked as well; we provide an example of collection financing in Box 3.

Box 3: AVCF model for collection financing

The AVCF "collection financing" model, described here in general terms, provides working capital for smaller-scale buyers of a given commodity to enable them to deliver contracted quantities of that commodity to a large aggregator. The aggregator could be an agribusiness that sells large "aggregated" amounts of a given commodity, for example wheat or meat. This model is equally relevant when the aggregator is also a processing agribusiness that must secure a certain supply of raw materials for processing. This AVCF unfolds through five steps:

1) Large Processor enters into a Purchase Contract (or "Purchase Order") with collectors to deliver a certain quantity and quality of a commodity at a certain time for a certain price.
2) Large Processor issues a guarantee (partial, e.g., 50–80%, or whole) to the Bank for the amount the Bank will lend to the Collectors; terms, conditions and exposure levels are pre-agreed in advance of the collection period.
3) Bank makes a loan to the Collectors (usually designated by the Aggregator) based upon a given percentage of the Purchase Contract amount (e.g., 50%).
4) Collectors use the loan to buy the commodity from farmers for cash (helping to boost farmgate prices), then deliver the commodity to the Large Aggregator according to the terms of the contract. Note that this process can be continuous over several weeks/months.
5) Large Processor pays the Bank back for the loan amounts owed by Collectors; Collectors receive the net amount of the proceeds of their contracted sale to the Aggregator, after subtracting their loan balances.



Capture the VC financial flows inside the FI

It is particularly important for an FI—and perhaps here we should refer more specifically to a commercial bank—to try to capture the flow of cash within a VC within the bank. That means in practice requiring borrowers to also use the deposit and payment services of the bank, and otherwise seeking to attract and bank key VC actors as deposit and transactions account customers. This approach has key benefits for the bank. First, it provides visibility to the cash flows moving through the VC, important information to help the FI understand the volume and timing of transactions driving the VC and the businesses within it. The benefit here is that the volume of cash flowing in and out of VC actors' accounts is immediately visible to the bank. Because transactions data (often reflecting revenue of the borrower) are not self-reported by the bank customer, they are not subject to inaccuracy or distortion. The bank will have verifiable, accurate information on the volume of business transactions, data that provide valuable insight into the financial size and strength of a company, as well as the VC. Another key benefit is the opportunity to earn transaction fees on payments and gather deposits from VC actors that can be an important source of lending.

Among different kinds of FIs, banks enjoy the advantage of being able to "bank" the full spectrum of actors in a VC, from large-scale processors to various layers of middlemen down to the primary producers in the VC. This shows that banks have an advantage in being able to structure AVCF arrangements involving multiple VC actors. Further, banks can use AVCF arrangements to help manage the credit risk of lending by requiring cash to flow through the VC participants' accounts within the bank.

MFIs for their part often do not—or in some cases are not permitted to—have relationships with larger agribusiness firms and tend to lend to micro, small, and medium-sized enterprises and smallholders.[6] Wherever possible, MFIs should be urged to seek out larger buyers to explore AVCF options. As MFIs are not always able to offer deposit or transaction accounts, structuring and managing AVCF arrangements is quite challenging for MFIs, as well as for finance companies that do not take deposits or offer payment services. Though they can be important providers of agricultural finance, they are generally niche players in the sector, focused on more basic credit services such as working capital and equipment financing.

6 MFIs are unlikely to be able to work directly with larger companies as they often face relatively low size limits on the loans they can issue.

Diversify agricultural lending across crops and regions

From an overall portfolio risk management perspective, the successful agricultural lender will maintain a diversified loan portfolio composed of different crop or commodity value chains, wherein the inherent risks in each "banked" VC are, to the maximum extent possible, uncorrelated. Even though an FI follows all the good practices listed above, bad weather or other negative conditions may cause large-scale losses if the credit exposure is not adequately spread across different crops, commodities, or geographic areas. It is also good practice to look for seasonal diversification, if that is possible within a given country in which the FI operates.

Adopt financial technology

AVCF techniques have been developed to help make the process of lending to VCs more efficient and to reduce risks in lending by FIs. The advent of fintech certainly promises to improve efficiency and may also significantly lower the risk of lending to agriculture. Lower risk may make it possible to bank the unbanked with small accounts and to reduce transaction costs in dealing with a large number of smallholders.

There have been some recent successes in developing agri-fintech approaches to AVCF, as well as to agricultural finance in general, including the use of alternative data for credit scoring. These emerging scoring techniques in some cases rely on behavioral data,[7] while in others they build on access to proliferating sources of data related to digital payment transactions. Some algorithms being tested combine both behavioral and transactional data, and experts are looking at how to apply these models to smallholders and SMEs. In principle, these data are most valuable for customer acquisition—when a financial institution is considering its first loan to a new customer. Once a new client takes up a new financial product then the financial institution will begin to get direct observations of the customer's desirability as a customer, so the marginal value of other data sources decreases. Whether these alternative data sources have medium- or long-term value for lenders remains an open question.

7 In the context of evaluating a person's behavioral data, a credit scoring algorithm might examine the phone calls a person makes—and the length of those calls—to determine if the person has stable relationships. Likewise, a person's Facebook account can reveal the extent of people's friend networks, supporting similar inferences. Locational data can be gathered from smartphones to determine the degree to which a person stays at or near their home or business. Designers of credit scorecards draw inferences about people's behavior and look for correlations between those "data points" and a person's propensity to repay a loan. This type of model has been successful in South America (Bjorkegren and Grissen, in press). With "data points" expanding exponentially, further field tests of these techniques ongoing, and now machine learning techniques being refined, the field shows great promise. These "alternative data" related techniques allow FIs (and fintechs) to expand the use of credit scoring to lend to people who do not have more "mainstream" data to provide to FIs, like income statements, balance sheets, tax records, bank account histories, etc.

Though the use of increasingly sophisticated credit modeling techniques appears highly promising, these tools and approaches still need to be tested. We are not aware of any extensive, systematic research into the emerging use of fintech applied to agricultural finance, so it is too early to discuss good practices. At this stage we can just highlight emerging lessons: Regulators should recognize that digital loans can drive over-indebtedness in populations with low financial literacy, and that automated credit modeling can run the risk of further advantaging privileged populations and pushing disadvantaged populations further to the margins. In the agricultural context, consideration should be given to the optimal level of "touch" between borrowers and financial institutions. While in many markets digital loans have short repayment cycles (often 30 days), agricultural loans require longer repayment cycles, e.g., 3 to 4 months. Screening and administering a loan purely digitally may raise repayment issues, particularly for new borrowers used to ongoing social contact with loan officers. Given these potential risks, we urge regulators and practitioners to closely monitor the rollout of innovative digital financial products.

It is reasonable to predict, however, that the increasing use of cell phones and growing use of credit scoring that builds on the base of available digital data will spur some FIs to take a new look at how they might lend to the agricultural sector, perhaps in some fintech-enabled manner. Emerging digital tools and techniques are unlikely to preclude or replace good practices in AVCF. Still, there is reason to be hopeful that fintech can enhance AVCF by increasing information flows about the functioning of VCs and creating tools to leverage that information to support more accurate credit modeling.

Leverage Value Chain and Other Existing Relationships to Promote New Insurance Models, or Consider Other Ways of De-Risking

As discussed earlier in this chapter, while individually marketed index insurance is a promising idea, in practice it has been plagued globally by very low demand. While there is ongoing work attempting to make such products more appealing using new data sources and new technologies, another approach is to move away from individually marketed insurance (which carries high distribution and education costs) and move toward working through institutions that aggregate farmers. One approach works on the demand side. Suppose farmers are committed to selling to a specific aggregator (for example, in the case of contract farming). An insurance product can be marketed which allows farmers opt in, but the aggregator pays for the insurance. If there is no loss event, then the aggregator deducts the cost of insurance before paying farmers for their

output. If there is a loss event, then the aggregator deducts the cost of insurance before distributing the remaining funds (payment for output and insurance payout) to the farmers.[8]

Alternatively, relationships from the supply side can be used. Farmers can be reluctant to take on production loans (e.g., to buy inputs), because borrowing multiplies their financial risk—if the crops fail, they lose their investment *and* may default on their loan. Instead, insurance could be marketed to input suppliers who provide informal loans to farmers (e.g., providing fertilizer for the growing season, but not requiring payment, including interest, until after harvest). Marketing insurance to such input suppliers should reduce marketing costs, while allowing input suppliers to recover funds in the case of a major disaster and thus forgive some if not all of their input supply loans to farmers. A further set of approaches works through credit relationships, for example by pre-screening and hence pre-approving farmers for a disaster-recovery loan, or focusing on insuring local financial institutions like MFIs, so they can better assist farmers in recovery after a disaster event.[9] Insurance can also be packaged with other financial products—for example, jointly credit and insurance can be jointly marketed—or insurance-like features can be incorporated into credit products—creating, for example, "index-based" credit products that automatically grant borrowers a loan grace period during an externally verified disaster event.

Other approaches to de-risking agriculture should also be considered, beyond insurance and credit products. The development of irrigation systems can significant lower the risks of rainfed agriculture. The development of transport infrastructure can reduce market access constraints, allowing farmers to diversify their market risks. Promoting more resilient seeds and other production inputs can also allow farmers to reduce risks. Finally, promoting savings can allow farmers to "self-insure," allowing them to respond more flexibly in the case of financial hardship.

8 Casaburi and Willis (2018) show that this approach also shifts the timing of payment for insurance, making it much more desirable for farmers, leading to much higher take-up rates.
9 For a rigorous test of this idea see Lane (2018).

Annex 1: Principles of Agricultural Finance for Smallholders[10]

We suggest a set of general principles related to agricultural finance worth thinking about when considering how best to facilitate financing of agriculture, with particular attention to how best to meet the financing needs of smallholders.

- **Be agnostic about the source of credit for agriculture or agricultural activities.** Credit can flow efficiently from both formal and informal sources, and often informal sources, for example suppliers, understand the credit requirements of farmers better than bankers do.

- **Start from the market—the demand side—for the crop/commodity.** When looking to assist smallholders, avoid focusing too much on production-related issues. Often the temptation is to promote a crop or commodity without first properly evaluating market demand. When working with smallholders, it is critical to understand the market demand for the crop that the farmer is growing or wants to grow. Ask whether the farmer can grow the kind of crop that the market really wants—including meeting the latest quality standards— and identify the likely buyers of that crop. The more buyers, the better.

- **Be mindful that lending is risky.** Banks and other formal financial providers are interested in clients who can repay loans based on the cash flow from their economic activities—not serving the poor per se or supporting agricultural livelihoods. Often observers complain that "banks don't want to lend to small farmers," but it is reasonable (as well as very commonplace) for a formal FI to be hesitant to lend to farmers. Before trying to convince a reluctant financial institution to lend to a farmer, ask yourself, "Would I be willing to finance this activity with my own money?"

- **Understand that lending to agriculture is a specialization.** Most banks or FIs will not be interested in agricultural finance, let alone "pro-poor" agricultural finance. In any given emerging-market country, there may only be a handful of banks, MFIs, or other financial providers interested in financing agriculture. Banks prefer lending to industries whose risks they understand, or where there is collateral to support their lending. Furthermore, many FIs do not have the rural "footprint" that encompasses agricultural activity—they are often clustered in urban areas. It is possible to help FIs overcome their lack of skill or experience in agricultural finance, but it is worthwhile identifying which formal financial providers are already comfortable with agriculture-related risk and are already servicing rural areas.

10 These principles were prepared for the ACIAR-supported project to revise the Agricultural Value Chain "Toolbook."

- **Appreciate that financial services include more than just credit.** Historically there has been excessive emphasis on farmers' need for credit, and until now not enough emphasis on financial inclusion. Credit is a financial obligation of the borrower that must be repaid—so providing credit to a farmer for agricultural production or other purposes increases the financial risk of that farming household. Farmers, even poorer smallholders, are often financially conservative and do not want to borrow if they can avoid it. Having access to multiple financial services—being "financially included"—can help poorer smallholders to better deal with economic risks. Access to savings deposit services means having a safe place to keep their money with access when they need it—potentially reducing their need to borrow, for instance, for crop production inputs. Access to low-cost payments or transaction services means people can receive money more cheaply from relatives living in urban areas or even in another country. Access to insurance—and microinsurance—also helps smallholder households avoid financial shocks that can put them at significant risk of falling further into poverty.

- **Take a financial inclusion approach.** Smallholders, as well as all other rural dwellers, benefit from having access to a variety of financial products. While credit may be useful and very important for smallholders, savings, payment facilities, and other products such as insurance (life, health, agricultural) also provide a high degree of utility for consumers. All other things being equal, if a supplier and a formal FI are both offering credit to a smallholder on the same terms, a farmer is better off receiving credit from a bank or other formal financial provider that is also willing and able to provide other financial products to that farmer. If you want to be pro-poor, you should try to follow the financial inclusion approach to agricultural finance.

- **Be patient while FIs develop competence and confidence.** It takes a long time—measured in years—to develop a lending business focused on farming and agricultural activity. Generally, financial providers develop expertise in one or two crop or commodity value chains, and then apply what they have learned and adapt their lending approaches to new value chains through a step-by-step process. It can take more than a year to pilot a loan product for a single value chain, with its own unique growing cycle, sets of value chain relationships, and other unique characteristics. Building a sizeable book of lending to agriculture, starting from zero, it can take a bank more than five years to achieve the kind of size and scale that would be considered commercially viable. If working with a bank or other kind of FI to develop agricultural lending, you should be prepared to provide at least two years of support just for the pilot phase.

- **Don’t expect a lot from agricultural insurance.** There are many interesting insurance products that have been created to help manage the risk of agricultural activity. However, they all tend to be costly and, in absence of significant subsidization, agricultural insurance is rarely marketed to individual farmers, particularly smallholders, to reach scale. While innovations in data and product design are being developed, these contracts are still likely to be too expensive to reach mass-market scale without subsidization. There are still numerous innovations being developed, including a move from individual to group-based product design that can economize on the unit costs of marketing microinsurance to individual farmers and agri-businesses, but to our knowledge it is too early to say which models will be scalable in the mass market.

Box 4: An Annotated Bibliography of AVCF Cases and Examples

The following references contain a wealth of examples related to agricultural financing, as well as AVCF case studies.

Hoffman, N., & Roscoe, A. (2016). *Investing in Women along Agribusiness Value Chains.* Washington, DC: IFC. Provides four interesting cases focused on investing in women in agriculture.

Miller, C. (2015). *New Trends in Agricultural Finance.* Washington, DC. G20 Global Partnership for Financial Inclusion (GPFI). Contains many examples of new approaches of providing finance, particularly via digital financial services.

Miller, C., & Jones, L. (2010). *Agricultural Value Chain Finance: Tools and Lessons.* Rome. FAO, Practical Action Publishing. This book is a very useful reference, which in addition to provding dozens of AVCF examples, also contains a very comprehensive list and detailed description of agricultural loan products. If there was a single "standard reference" on AVCF, this would be it.

Successful Models for Financing the Rural and Agricultural Sectors. 2017. Incofin, MIF. A recent view of some new, largely digital approaches to engaging value chains, with a focus on the role of payments and payment agents in agricultural finance.

Varangis, P., Teima, G., Khan, A., & van de Velde, P. (2012). *Innovative Agricultural SME Finance Models.* Washington, DC. International Finance Corporation. This document was meant to serve as a source book for case studies on agricultural finance, and certainly delivers on that promise, with more than 30 detailed case studies, and references to an additional 50 more.

Working with Smallholders: A Handbook for Firms Building Sustainable Supply Chains. (2019). Washington, DC. International Finance Corporation. This work does not contain AVCF case studies, but provides a comprehensive set of references in a variety of areas relevant for agricultural finance.

Chapter 2

The Role of Agriculture and Finance in Myanmar's Economy

This chapter was written by Mark Middleton (Independent Consultant), Khin Pwint Oo (Myanmar Economic Association), Russell Toth (University of Sydney and Myanmar Economic Association), and Alan de Brauw (International Food Policy Research Institute).

Introduction

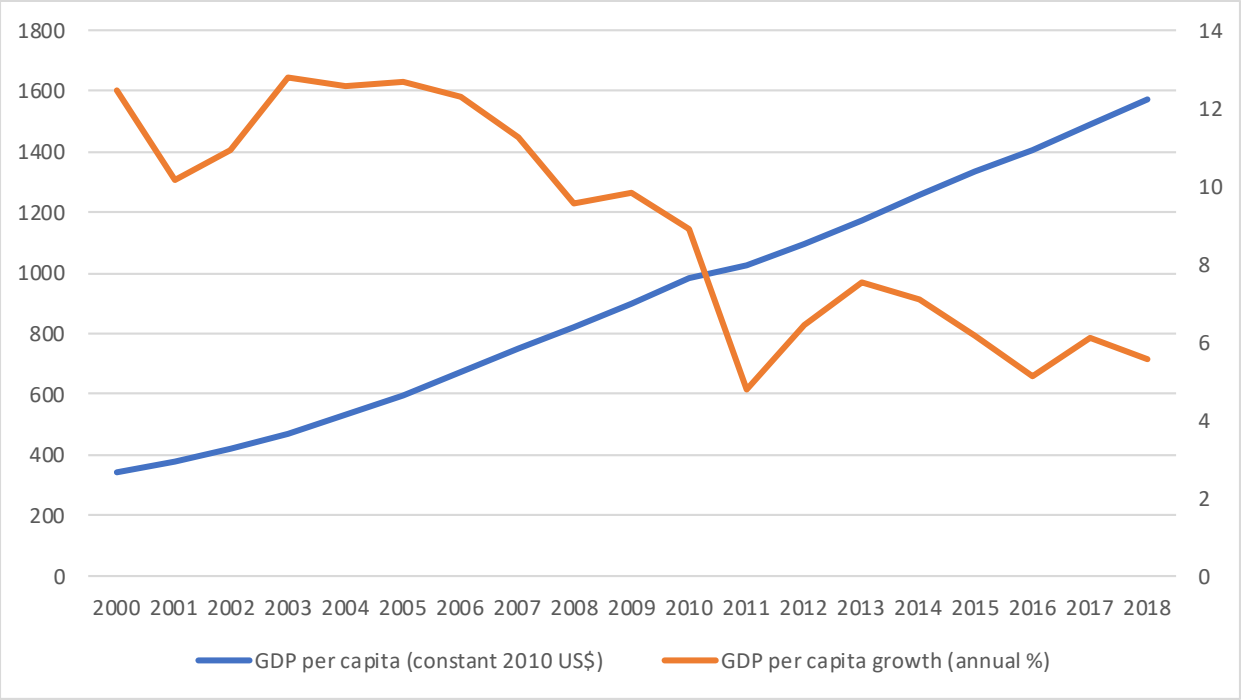
In this chapter, we have two objectives. First, we study the role agriculture plays in Myanmar's economy, and consider the way that the demographics of the population, international trade, and potentially other factors will potentially affect future demand. Second, we consider the development of the financial sector in Myanmar, and how agriculture factors into lending by the financial sector. These two topics will help set up the potential role for AVCF.

The chapter is organized as follows. First, we set up the present economic situation in Myanmar, including the role of agriculture. As agriculture sector maintains an important role in Myanmar's economy, its modernization is a priority in the country's social and economic development agenda. Increased agriculture production and poverty reduction are noted as part of its Poverty Alleviation and Rural Development Action Plan (Government of the Republic of the Union of Myanmar, 2016), and the Myanmar Sustainable Development Plan (2018-2030). Second, we describe the most important crops and value chains in Myanmar's agricultural system, and then expand on the role of agriculture in international trade. The final subsection of the chapter discusses the role of finance in Myanmar's economy, how it is changing, and the current state of agricultural finance, including AVCF.

Myanmar Economic Situation

Throughout the 2000s, Myanmar's economy has been rapidly growing, though in general growth rates have been slowing (Figure 1). In constant 2010 dollars, GDP per capita has risen from $342 in 2000 to $1571 in 2018, though growth has slowed down to just under 6 percent per year since a rapid slowdown in 2011 (World Bank, 2019). The share of agriculture in GDP has concurrently declined and represents about one-fourth of the economy in 2018. Nonetheless, agriculture continues to employ just over half of Myanmar's labor force.

Figure 1: GDP per capita and GDP growth rates, Myanmar, 2000-2018



Source: World Development Indicators, 2019.

Due to the relatively large share of employment in agriculture, agricultural growth will likely remain important in improving returns to labor and for poverty reduction in the near future.[11] Moreover, Myanmar is particularly well situated to take advantage of potential export markets, as it is adjacent to two major, rapidly growing economies (China and India), and is proximate to a number of large, and growing countries in Southeast Asia. Agriculture is important to its exports; approximately one quarter of Myanmar's exports are agricultural (Myanmar Statistical Information Service, 2017).

Despite the high level of importance for the Myanmar economy, both now and in the future, the agricultural sector still suffers from a lack of effective infrastructure, financing and public agricultural services. Even compared with its peers, Myanmar agriculture is labour intensive, primarily carried out on small farms with low levels of mechanisation, productivity and profitability. About 80 percent of Myanmar small holder farmers have less than 10 acres and earn between USD1.80 – USD2.5 per day in monsoon season (World Bank, 2016).

[11] Some argue that agriculture and promoting agricultural growth can be given too prominent a role in development (e.g. Dercon, 2013); for example, Gollin, Lagakos and Waugh (2014) demonstrate that returns to labor outside of agriculture are double returns within agriculture, even controlling for observables. Nonetheless, due to the heavy relative incidence of poverty in rural areas of developing countries, it is important to understand whether the promotion of agriculture with policy can affect poverty reduction or not (e.g. Ravallion and Chen, 2007; Christaensen et al., 2011).

Myanmar Demographics

Myanmar's population was roughly 54 million by 2019, and growing at 0.6 percent per year (Myanmar Department of Planning, 2019). This growth rate lags behind other ASEAN countries which average 1.2 percent population growth (ASEAN, 2018). Nonetheless, the population is relatively young and rural. The 2014 census found that 34 percent of the population is younger than 18 years of age, and 70 percent of the population lives in rural areas. Nonetheless, the population has urbanized fairly quickly; the population of Yangon, Myanmar's largest city, has been growing at about 2 percent per year, outpacing population growth in Myanmar as a whole.

Rising income per capita and urbanization can have two effects on food demand, related to Bennett's Law. Bennett's law states that as income rises, the share of the food budget allocated to staples declines relative to more expensive sources of calories. These changes are presumably related to the greater variety of food available and growing demand for prepared or semi prepared foods (e.g. Timmer, 1997). These changes are compounded by more recent trends towards more rapidly transforming food markets around the world, which are converging towards Western models (e.g. Barrett et al., 2019).

There are few sources on food consumption in Myanmar, mainly due to a paucity of data. On exception is Chen and Lu (2018), who use FAO balance sheets to estimate changes in consumption of specific foods between 1990 and 2013. They find growth in consumption per capita of several foodstuffs, but notably rapid increases in consumption of animal source foods. Although these estimates may be unreliable, they are consistent with the idea that growth in the consumption of animal source foods as the economy has grown.

Moreover, while rising incomes can lead to healthier diets, they can also lead to higher demand for processed foods (e.g. Ruel and Alderman, 2013). Broadly, the EAT-Lancet commission shows that traditional diets, particularly in urban areas, are being replaced by diets higher in fats, salts and animal products, with lower intake of fresh fruit and vegetables resulting in a nutrition transition (Willett et al., 2019). The key drivers are varied and include the emergence of supermarkets (accessibility), increases in income and socioeconomic gains, urbanization, and access to social and mass media (Minot et al., 2003), factors that are all likely to be relevant to Myanmar.

Myanmar Agricultural Production Zones

Myanmar has four agricultural zones: the Hilly Mountainous Zone, the Central Dry Zone, the Delta Zone, and the Coastal Zone (Table 1). Major crops vary substantially by zone, though rice is grown in all four zones. Within the four zones, 5 key production regions account for about 70 percent of cultivated land (Ayeyarwaddy, Sagaing, Bago, Magway and Mandalay).

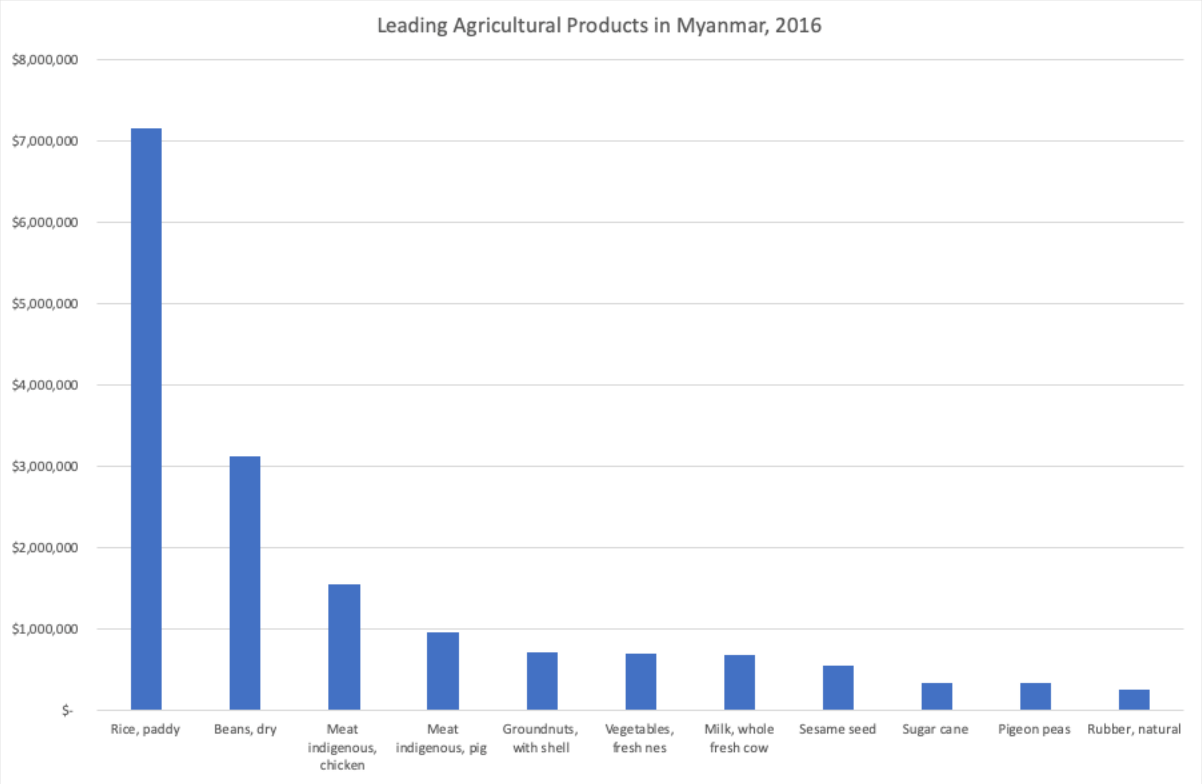
Table 1: Agricultural Crops by Zone, Myanmar

Zone	Regions	Major Crops
Hilly Mountainous Zone	Shan, Chin	Rice, Wheat, Maize, Sorghum, Vegetables, Sugarcane & Coffee
Central Dry Zone	Magway, Mandalay, Sagaing	Rice, Oil Crops, Pulses, Vegetables, Tea, Sesame, Groundnuts
Delta	Bago, Yangon, Ayeyarwady, Mon State	Rice (delta-type rice production, intensive rice production using irrigation canals); Pulses
Coastal	Tanintharyi Region, Mon State, Kayin State	Rice, Rubber, Oil, Palm, Tree Fruits

Source: Eurocham Myanmar, 2017

Rice dominates Myanmar agriculture in terms of value of production (Figure 2). Of the top 10 commodities, rice accounts for 44 percent of production value based on its Gross Value of Production (GVP) of $7bn in 2016 followed by dry beans with a GVP of $3bn. However, the share of rice in total production has been declining. In 1990, rice represented 76 percent of the total GVP, which declined to 44 percent in 2016 (Table 2). Meanwhile, beans have increased from 3 to 19 percent of GVP, and chicken production has also increased from 2 to 9 percent. As the sum of the value of these three commodities also declined from 81 to 72 percent of total production during the same period, there is some clear diversification in production over time.

Figure 2: Leading Agricultural Products, Myanmar, 2016



Source: FAO, 2019.

Table 2: Gross Value of Production: Rice, Beans and Chicken, Myanmar

Year	1990	1995	2000	2005	2010	2016
Rice	76%	71%	66%	61%	54%	44%
	$3.9bn	$4.9bn	$5.9bn	$7.9bn	$8.9bn	$7.1bn
Beans	3%	7%	9%	11%	13%	19%
	$158m	$452m	$772m	$1.3bn	$2.1bn	$3.1bn
Chicken	2%	2%	3%	6%	9%	9%
	$96m	$141m	$302m	$798m	$1.4bn	$1.5bn
Total	$5.1bn	$6.9bn	$8.8bn	$12.4bn	$16.5bn	$16.3bn

Source: FAO, 2019

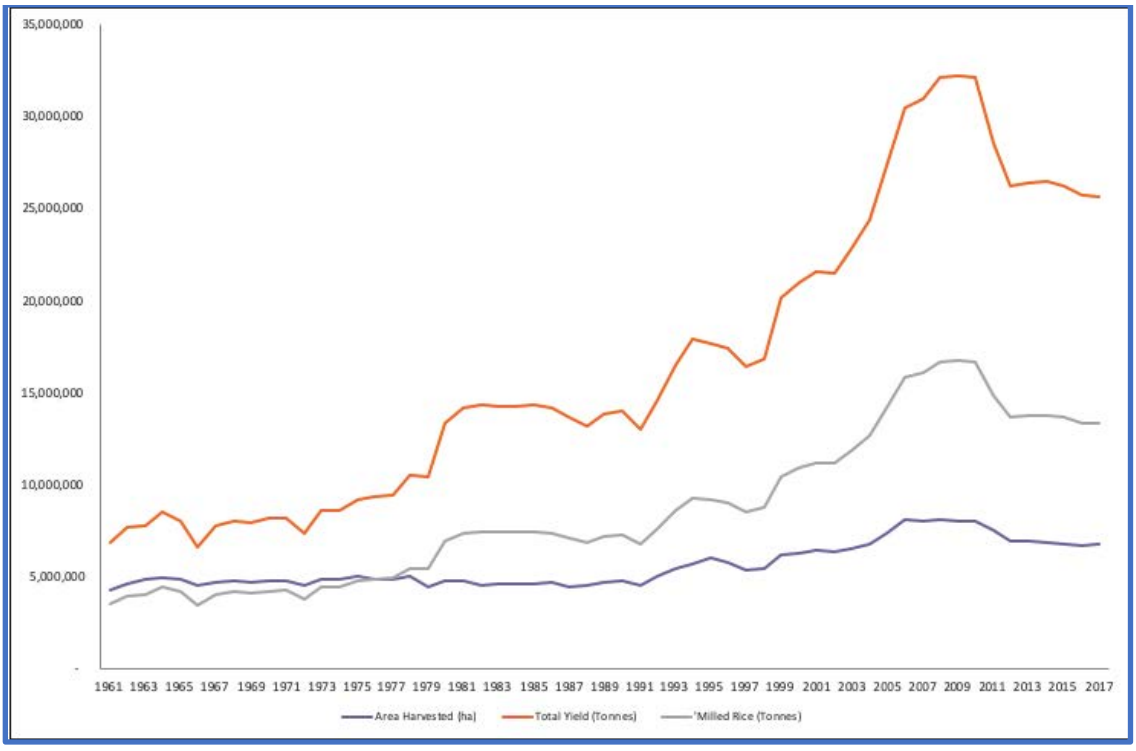
Rice

Rice is clearly the most important food crop in terms of production, and the same is true of consumption. It is cultivated on about 6.7 million ha (FAO, 2019). Ayeyawardy is the key

production region with about 28 percent of acres sown, followed by Bago (17 percent) and Sagaing (12 percent) (Eleven Media Group, 2019). In 2016/17, about 83 percent of the annual production was harvested during the monsoon season and the remaining 17 percent during the summer season with approximately 48 percent of total production grown in the Ayeyawardy Region in Monsoon season (Myint, 2019). The fact that 83 percent of production is harvested at the same time creates a challenge and an opportunity for the value chain. The challenge is getting surplus into markets, but the opportunity is to meet that challenge, either through storage or through substantial capacity to transport rice. A further challenge is spatial, as 48 percent of the crop is grown in the Delta region, creating an additional long-term production risk through climate change.

As illustrated in Figure 3, paddy rice production increased rapidly from the 1990s to present, while sown area remained relatively constant. The total milled rice production suggests total production of about 13.3 MMT in 2017.[12] As sown area is not increasing nearly as rapidly, the average yield has been increasing as well, reaching 3.8 MT/ha in 2017 (FAO, 2019).

Figure 3: Myanmar Paddy and Rice production 1961 - 2017



Source: FAO, 2019

[12] A standard way to convert paddy production to milled rice production, which occurs by removing the husk, is to use a 52% conversion rate.

According to Myint (2019), the government target is to produce 19.4 MMT of milled rice by 2030. This goal suggests that under this target, 40 percent of rice would be exported; to meet this goal, the target suggests that 7.7 million ha would be grown in rice, and yields would average 4.2 MT/ha. Relative to 2017, the last year available in FAOSTAT, these targets suggest an area expansion of about 15 percent in total and a concurrent yield increase of 11 percent in total. The expansion in milled rice exports would have to be substantial, as these figures imply exports of 7.76 MMT, whereas only 2.7 MMT of rice were projected to be exported in 2019-2020 (USDA FAS, 2020).

There are two potential opportunities for expansion of value chain activities around rice in the near future. First, while China already absorbs the majority of Myanmar's rice exports, there is an opportunity to expand this trade. From China's perspective, only 2 percent of total rice imports are from Myanmar, while 86 percent of rice imports come from Viet Nam and Thailand. While those countries have no geographic or logistical advantage compared to Myanmar, they do have better established rice value chains. Exports to China are expected to rise following the signing of a Memorandum of Understanding (MOU), set to displace exports to the EU, which imposed safeguard measures on Myanmar rice.

Second, there is an opportunity to fill potential new domestic markets. Domestic consumption of milled rice is expected to increase to 10.25MMT in 2018/19 and 2019/20 due to more broken rice demand from the livestock sector, especially poultry due to higher corn prices (USDA FAS, 2020). Meanwhile, the USDA forecasts that per capita consumption of rice will decline to 175kg for rural households and 150kg for urban households in 2017/18 (USDA FAS, 2018). So long as household incomes grow, opportunities for rice should focus on upgrading quality and the creation of value-added products.

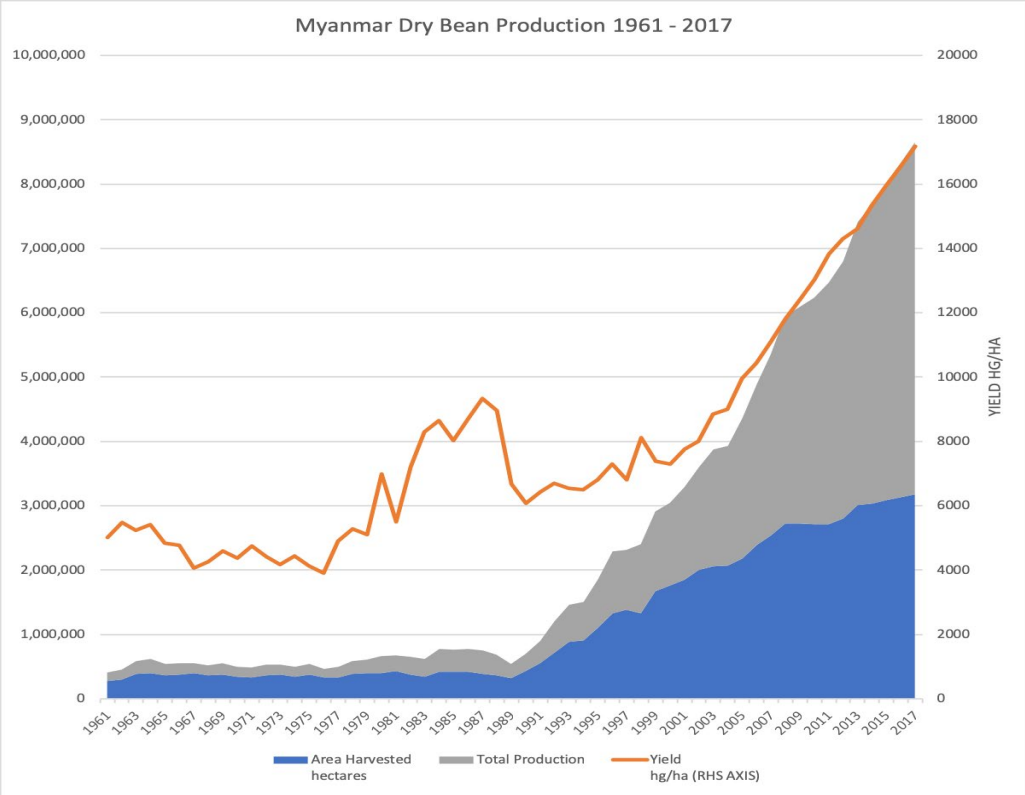
Pulses

While rice occupies a significant proportion of cropland, pulses have emerged as a significant contributor to agricultural GDP and are the top foreign exchange earner for Myanmar, averaging USD1bn per annum. Pulses are climate resilient and can be sown in rain-fed area, and fix nitrogen in the soil, reducing dependence on nitrogenous fertilizers. Hence increasing area under pulses or planting pulses as an inter-season crop promotes sustainable agriculture – the requirement of nitrogenous chemical fertilizers is reduced for the succeeding crops and periodical crop disease cycles are disrupted by the decreased use of chemical pesticides and weedicides (Venkateswarlu, Balloli, and Ramakrishna, 2008).

Myanmar produces over 20 different types of beans and pulses, but black Matpe (black gram), green gram and pigeon pea accounted for 70-75 percent of total bean and pulse production and are the main kinds of exported beans and pulses. About 80-90 percent of total pigeon pea production and 60-70 percent of total Black Matpe is exported to India and the domestic wholesale prices depend almost entirely on India's demand. Another exported bean, the green gram (mung bean), has more extended markets such as China, Vietnam, Malaysia, Bangladesh, India, Indonesia and EU countries (USDA FAS, 2018).

Pulses production in Myanmar has increased rapidly since roughly 1990; over the 2010s production increased at about 6 percent per year (Figure 4). Unlike rice, the data suggest that sown area has also been expanding over time. Nonetheless, pulses have become more productive over time; the data suggest an increase in yield from 0.5 MT/ha to 1.7 MT/ha.

Figure 4: Growth in Quantity of Production of Dry Beans in Myanmar 1961-2017



Source: FAO, 2019

Myanmar is the third largest producer of pulses in the world, after Canada and India; nearly 90 percent of its pulse exports go to either India (68 percent) or China (20 percent). Therefore, pulse exports are quite susceptible to India's import policies; in 2016/7 a drought in India induced a rally in demand for pulse exports from Myanmar, in turn leading to increased production and over-supply in 2017/18. Meanwhile, in 2017 a bumper harvest in India drove down domestic prices, and therefore its government limited the import of pigeon peas, reducing exports from Myanmar to India substantially. A final constraint in formal trade is the lack of trade finance, particularly for companies on the Myanmar side. Indian banks are reportedly reluctant in accepting Letters of Credit from Myanmar banks (Taneja et al., 2019).

Oilseeds

Oilseeds are the second most important crop domestically produced for consumption in Myanmar, after rice paddy. In terms of sown area, they are the third largest crop, after paddy rice and beans, at about 2.8 million ha. Edible oils that are traditionally consumed include groundnut and sesame oil. Groundnut oil accounts for the majority of consumed oilseeds, at 90 to 95 percent of total oil consumption, while sesame oil accounts for much of the remainder.

Sesame occupies about 51 percent of oilseed area, followed by groundnuts and sunflower. In terms of farming production systems, groundnut and sesame crops are a good fit in terms of crop rotations along with pulses. For example, in the Magway region, groundnuts and sesame are grown as the main crops during the monsoon season. However, about 80 percent of sesame is produced in central Myanmar, and the rest is produced in Kayah and Ayeyarwady divisions. After harvesting the groundnut or sesame, farmers have the option to either grow another groundnut crop, or pulses (Linn, 2013).

Table 3: Myanmar Agricultural Growing Seasons for Key Groundnut and Oilseed Varieties

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Groundnut (monsoon)												
Groundnut (winter)												
Sesame (monsoon)												
Sesame (winter)												
Pulses												
Sorghum												

Source: Linn (2013)

Myanmar is the world's largest producer of sesame, and produces 50 percent more sesame than the next biggest producer, India. In 2017-18, MOALI estimated the country's sown area in sesame at 1.59 million ha, Myanmar exports sesame seed to Japan (53%) other South East Asian nations (26%), and China (18.6%). Myanmar is also the second largest sesame exporter in the world. However, its sesame seed is relatively low quality, and hence prices for Myanmar sesame seeds lag below the price for the rest of the world (Myint and Kyaw, 2019).

There are three main types of sesame seed: white sesame seed are used in snacks and cooking, and red and black sesame seeds are primarily used for oil extraction. According to Linn (2013), the major problems with oilseed crops and the edible oil sector in Myanmar is price uncertainty, low productivity, and a lack of marketing laws and regulations. Sonar et al. (2012) suggest the major constraints in sesame value chains are a lack of agricultural knowledge and technology, crop price fluctuations, pest and disease, inadequate market information, and poor linkage within marketing activities.

Meanwhile, groundnuts occupy 33 percent sown area in oilseeds (1.04m ha), largely in central Myanmar. Similar to sesame, groundnut's main growing seasons are the monsoon and winter months; they typically follow sesame by about a month. Based on data from both FAOSTAT and MOALI, Myanmar's average groundnut yield is 1.64 MT/ha, or roughly the same as the global average (Tun, 2019). Expanding or improving groundnut production is an opportunity for Myanmar, as China is both the world's leading producer and importer of groundnuts (Tun, 2019). Myanmar's ability to export groundnuts is hampered by two factors, which are relatively low average groundnut quality, and the lack of modern technology to even lightly process groundnuts.[13] When groundnuts are exported, they largely go to India (97%).

Despite being the world's largest producer by volume, Myanmar's share of global trade in oilseed is less than 3 percent due to its perceived low quality. Myanmar's current oilseed processing technology and infrastructure are simply incapable of meeting global quality expectations. Many farmers cannot access good quality seed because of their high cost, therefore they use their own seed for production, which produces low yield and ultimately a low quality product (Myint and Kyaw, 2019).

[13] Aflatoxins appear not to be much of a concern for groundnuts in Myanmar (Chaw, 2017), though testing for aflatoxins is certainly also important to grow exports.

Cash Crops – Maize / Corn

A last crop worth mentioning is maize, which is one of Myanmar's top ten crops by sown area. Due to increasing demand for animal protein, maize is considered increasingly important to produce in Myanmar to meet both domestic feed demand and to sell as an export commodity used in intensive livestock farming internationally. Maize is grown during the winter, the majority of it in Shan state (52 percent). Similar to pulses, it is frequently cropped in rotation with rice production. The crop is ideal in terms of rotation fit and because it has an estimated gross margin around $73/ha. According to Htwe (2020), maize production in Myanmar was forecast to grow 15.4 percent between 2015 to 2018. Due to heightened demand and perceived higher returns, the harvested area has been increasing, going from 470,000 ha in 2014/15 to 530,000 ha in 2018 (USDA FAS, 2020). Yields have consistently been around 4 MT/ha.

While there is clear demand for maize, and Myanmar is exporting just over half of its production, it faces several constraints to increasing production further. There is a general lack of on farm or village storage, few quality processors, and limited financial assistance for producers. The first concern hinders farmers from holding their produce until prices rise. The second leads to price downgrades due to smoke taint from rudimentary drying systems. Finally, the third reduces productivity; however, there are a number of value chain style finance arrangements beginning to be developed (discussed further in Chapter 4).

Livestock and Fisheries

Livestock

Most rural households raise livestock both for subsistence and as an investment (either as a savings vehicle or for use as draft animals). In part due to increasing demand for animal protein, both domestically and abroad, the livestock and fisheries sectors in Myanmar are growing rapidly, at 7 percent annually. Among the cattle/buffalo, goats/sheep, pigs, and chickens, the latter appears to be the most prominent, as poultry is the most consumed meat in Myanmar, at 6 kg/person annually; consumption of eggs is also around 40 eggs per person annually.

The poultry industry in Myanmar is somewhat focused in 5 divisions: Mandalay, Sagaing, Yangon, Bago and Shan (Burgos, Otte, and Roland-Hoste, 2009). Most poultry (whether chickens or ducks) are kept by households Myanmar poultry is typically (~85%) grown in backyards across the

country with the whole family being responsible for tending to the birds. According to Henning et al. (2007), the average flock size in village settings ranges from 30-40 birds per household, consisting of 4 hens, 2 cocks, 12 chicks and 12 growers. Little to no infrastructure is required, making the poultry industry a vital source of income and wealth for smallholder farmers.

A smaller proportion of production are grown in commercial poultry 'broiler' farms with more than 1,000 birds. These enterprises are capital intensive with high levels of investment in animal management, poultry health, maintenance, and biosecurity, resulting in high levels of productivity.[14] Such broilers start with day old chicks, which are grown for 6 weeks on a nutritionally balanced, energy dense feed. They are harvested at around 2 kgs and typically sold at the Yangon Chicken Markets (in Mingalar Taung Nyunt Township). Over half of all chickens are commercially raised broilers. Native chickens receive a slightly higher price than broilers due to consumer preferences, lower supply, and potentially due to higher nutritional value. However, demand for broiler meat is increasing (e.g. Win, 2012).

Fisheries

Fish are the primary source of animal protein in the Myanmar diet. According to Belton et al. (2015), nearly as much is spent on fish (14 percent of food expenditure) as on rice (19 percent of food expenditures). Not surprisingly, the production system underlying this production is wide ranging. Myanmar has inland freshwater bodies of over 8.1 million ha, of which 1.3 m ha are permanent, while the remainder are seasonal flood plains. Myanmar's total fish production was reported to be 3.2 million MT in 2017, comprised of 2.1 million MT of capture fish and 1.1 million MT from aquaculture.

Fisheries have been growing rapidly; since the mid-2000s production has more than doubled. The source of demand has largely been domestic, as the domestic market consumes almost 80 percent of all aquaculture products. Within farmed fish, one variety (the *rohu*, an indigenous carp) constitutes about 70 percent of all farmed fish. Despite growth in demand for fish, there has been little change in production techniques, sustainability or quality assurance systems over time.

According to Belton et al. (2015), the intensification of fish farming has been accompanied by an increase in the availability of fish feed. However, one large vertically integrated firm dominates

[14] According to data from the LBVD, there are approximately 3,000 commercial farms with 4.9m broiler chickens at any given time.

that market, and consequently manufactured fish feed prices in Myanmar are amongst the most expensive in Asia, costing 10-30 percent more than in neighboring countries. The high cost of feed is forcing farmers to seek out alternative and less beneficial feeds from agricultural by-products, resulting in lower production levels. Moreover, there is little formal credit available to fish farmers (big or small) forcing the farmers to borrow from other members of the value chain or informal lenders at rates from 2 to 6 percent per month.

Summary

A clear message from this subsection is that Myanmar has a great deal of untapped agricultural potential. Several of its crops could be more productive, either in terms of higher yields or quality of output. Shifting agricultural production from focusing on staples into more high value commodities requires significant investments both in agricultural supply channels and in developing linkages between farmers, processors, traders and retailers to coordinate supply to meet demand. These linkages could come within the crop categories already discussed, or among commodities such as fruits and vegetables which also have higher economic and nutritional value as outputs. To develop these value chains, finance is crucially needed throughout the system.

Trade and Myanmar's Economy

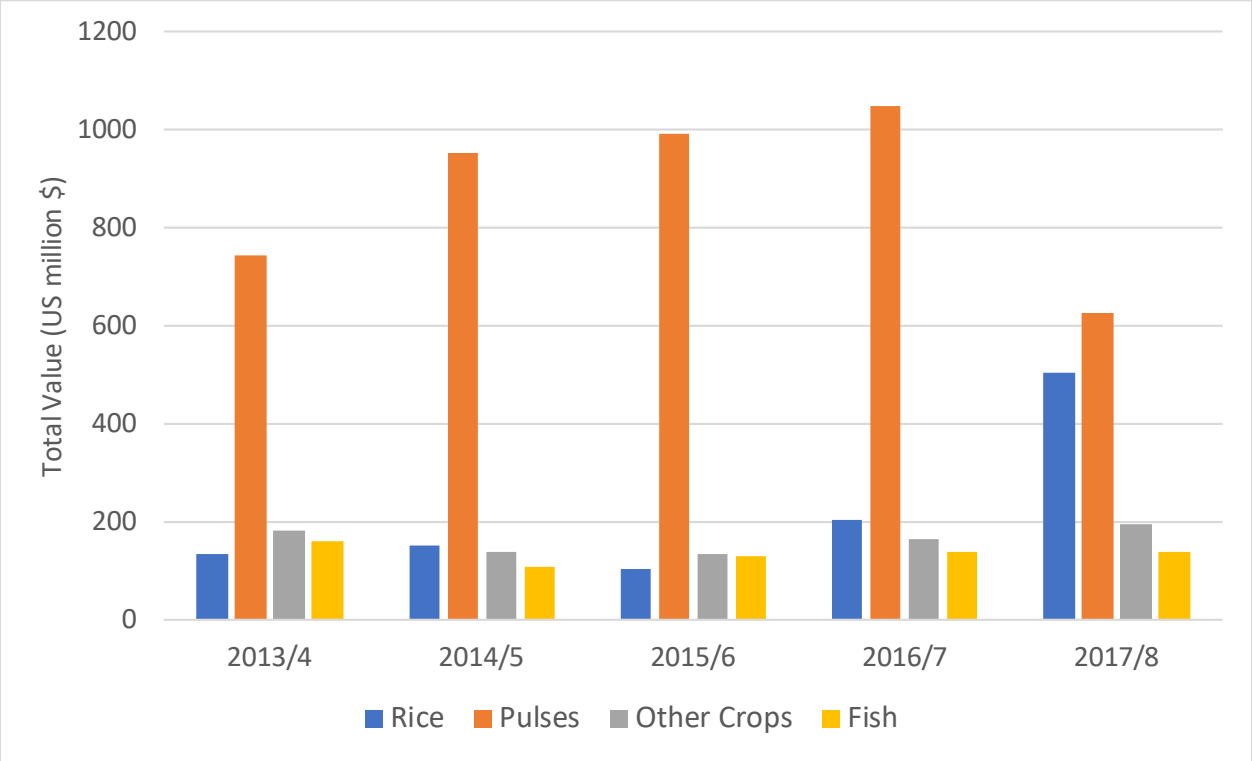
Myanmar has been rapidly expanding trade as its economy has grown. Total exports reached $16.3 billion in 2017, and it had been increasing by about 12 percent per year between 2013 and 2017 (World Bank, 2019). Myanmar conducts a substantial amount of trade at its borders, with the large majority taking place with China (87 percent; Taneja et al., 2019). A significant constraint on border trade, particularly agricultural trade, with all border countries is the lack of adequate infrastructure. Furthermore, basic infrastructure facilities such as warehouses, cold storage for perishables, and laboratories for testing are not available, causing both time and cost delays in testing products. As a result, traders face significant costs related to unloading, loading and storage (Taneja et al., 2019).

Another key impediment to trade is the limited availability of instruments for trade finance for companies in Myanmar. Trade transactions are primarily settled through countries such as Singapore using telegraphic transfer, which is expensive due to brokerage fees. Additionally, many foreign banks are reluctant in accepting Letters of credit (LC's) from Myanmar banks (Taneja et al., 2019).

Agricultural Exports

Pertinent to this report, agricultural products accounted for 34.7 percent of total Myanmar exports (World Bank, 2019). Beans and pulses make up the majority of agricultural exports from Myanmar (Figure 5). However, a decline was expected for 2017 due to restrictions on the Indian market (USDA FAS, 2018). Rice exports in 2017 were significantly higher due to the quantity of rice more than doubling, rather than any increase in value per ton; further increases were expected in 2017-8. Fish are also an important export, though their value varies substantially from year-to-year.

Figure 5: Key Agricultural Exports from Myanmar, US million $



Agricultural Imports

While Myanmar imports over $1.73 billion in agricultural or foodstuff products, not all of those imports will affect value chain opportunities. Perhaps the most important potential impact is through substitutes for oil seeds. Specifically, the world palm oil price may affect edible oil prices, especially groundnut oil (Moe et al., 2016). In fact, edible oil is the largest foodstuff import by value (Myanmar Statistical Information Service, 2018). The majority of consumers, with low

incomes, may choose the lower price imported oil rather than domestically produced oil. Therefore, oil prices are constrained from rising too quickly, by this substitutability.

Second, it is notable that Myanmar imports substantial amounts of agricultural inputs. In 2017, it imported $778 million in harvesting equipment, $194 million in tractors, $132 million in nitrogen-based fertilizers, $153 million in mixed mineral/chemical fertilizers, and $84.5 million in pesticides were imported (Myanmar Statistical Information Service, 2018). To the extent that improved agricultural finance in general might increase demand for these inputs, it is worthwhile considering how that might affect Myanmar's overall balance of payments if that demand increased substantially.

Agricultural Finance in Myanmar

Access to financial services in agriculture is particularly limited in Myanmar. While only about 25 percent of the $200 billion of credit needed by smallholders is met globally (Shakhovskoy and Wendle, 2013), this figure is surely an upper bound for Myanmar. Less than 2 percent of commercial bank lending goes to agriculture in Myanmar, and less than 20 percent of households have bank accounts. Savings are often limited by legal and regulatory constraints to deposit taking by microfinance institutions (MFIs), and insurance markets are in an embryonic state. There are signs of change to this equilibrium; for example, regulatory changes and donor support are starting to nudge commercial banks to more seriously consider agricultural lending. Microfinance is growing rapidly to meet credit needs in rural areas. And mobile money systems are beginning to reach scale and potentially provide a new payment and distribution channel for financial services.

While agricultural finance may be constrained in developing countries, it is particularly constrained for smallholders (Villeda and Hansel, 2005). Larger agribusinesses are more likely than smallholders to have a land title or other collateral, and transaction linkages that can facilitate access to finance. But smallholders also have a range of financial needs (FAO, 2017b). From an agricultural perspective, their cash flow is likely to be irregular, so they need safe methods to save; they may also need working capital to finance their agricultural production and investment capital to invest in growing production. Moreover, they may need insurance to help manage risks and/or unexpected events. Despite all these needs, they are often perceived as too risky by commercial financial institutions. And whereas MFIs may fill or partially fill the financing gap for some rural households, rural agribusinesses that directly transact with smallholder farmers can fall into the category of "the missing middle," as they are served neither by microfinance institutions nor by commercial banks.

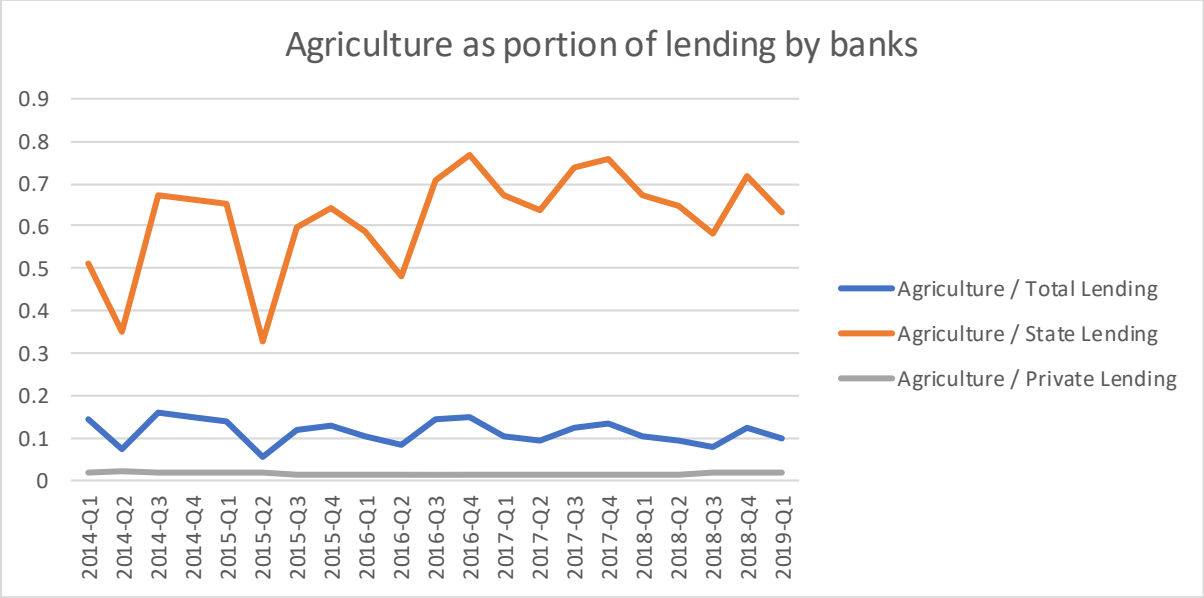
Financial Service Providers and Financial Institutions in Myanmar

We provide an overview of the financial services providers in Myanmar across six categories: private commercial banks; state owned banks, MFIs, insurance companies; cooperatives, and semi-formal or informal financing; and insurance companies.

Private commercial banks

There are twenty semi-government and private banks in Myanmar. While agriculture generates about one quarter of Myanmar's GDP, it receives less than 2 percent of commercial bank lending (Figure 6). This ratio trails the rest of the world; worldwide, the ratio of percentage of lending to agriculture to agriculture's share of GDP is usually over 50 percent (FAO, 2018). By contrast, the ratio of about 8 percent in Myanmar is particularly concerning given the low rate of commercial financial intermediation—Myanmar's loan-to-GDP ratio for private sector lending of 15 percent in 2015 falls well short of a set of ASEAN comparators in the 30-50 percent range, and well below some more advanced ASEAN economies near or well over 100 percent (Turnell, 2016). That said, overall commercial lending has been growing by 40-50 percent per annum in recent years, so simply maintaining agriculture's proportion of commercial lending at about 2 percent still implies a similarly high rate of growth.

Figure 6: Agricultural Lending as a proportion of Myanmar Banks Total Lending



Source: Central Bank of Myanmar data (https://www.cbm.gov.mm/content/3913)

An important caveat to these numbers is that large agri-businesses often serve as major depositors at private commercial banks. Lending against these balances tends toward large urban enterprises. Hence, the private commercial banks are an important institution for one form of rural savings, and large rural agribusinesses have become an important source of capital. Loans are also increasing from private commercial banks to MFIs, which have the potential to provide access to finance in rural areas, and hence become a wholesale distribution point for private commercial banks.

Perhaps the most notable recent project supporting access to commercial bank financing for agriculture is the LIFT-funded Agri-Business Finance Program (AFP) with Yoma Bank. The financing provided by LIFT covered loan loss provisions and technical support, including consultancy support from Rabobank, and also involved the partnership of MekongBiz (Myint, 2019). This program has facilitated the purchase of nearly $200 million in agricultural equipment, which affects as many as 100,000 farmers through the rental market or in-kind use (LIFT, 2019). The AFP has also facilitated (1) the creation of an unsecured overdraft facility that benefited about 20,000 farmers, (2) a payables finance product that allowed input dealers to buy inputs on credit, benefiting about 4,000 farmers, and (3) a seasonal overdraft for the maize sector that reached an estimated 10,000 farmers.

State-owned banks

There are also five state-owned banks in Myanmar; Figure 6 shows that these banks provide a much larger share of their capital to agriculture than commercial banks. The main lender to agriculture is the Myanmar Agricultural Development Bank (MADB), now part of MOPF. MADB overwhelmingly focuses its lending in the form of seasonal crop loans to smallholders, primarily in paddy.[15] MADB provides both seasonal loans (monsoon, winter, and pre-monsoon), and term loans (short-term and long-term loans for crop development). MADB provides up to 150,000 MMK per acre, for up to 10 acres, for monsoon paddy, and up to 100,000 MMK per acre, for up to 10 acres, to other crops; all loans are priced at an 8 percent interest rate. The MADB also requires borrowers to hold part of the loan value as a savings deposit (typically 10-15 percent), which also pays an 8 percent interest rate. While it has been part of MADB's mission to promote rural savings, in practice these mandatory deposits function mainly as an additional form of cash collateral. MADB lacks a modern credit assessment system, and all record keeping is on paper. Hence in addition to the mandatory savings product borrowers must put up secure collateral in addition to the deposit; the typical form of credit is the Form 7 land title document. It is not clear whether or how many land seizures MADB carries out in practice for non-performing loans. The

[15] We briefly review the history of MADB in Chapter 3.

lack of automation and challenging rural context often means that loans are disbursed later-than-ideal for the crops they are meant to fund.

MADB's term loans allow for larger loan amounts for longer loan terms, covering items such as engines, power tillers, tractors, threshers, and extended crop development. Perhaps most prominently, in 2017 JICA supported the MADB in launching a subsidized two-step loan program focused on agricultural mechanization. The loans have a limit of 50 million MMK to individuals and 500 million MMK to groups. Loans have a term limit of 3 years for small machines (e.g., power tillers) and 5 years for other machines (e.g., tractors and threshers). As of March 2019, it was reported that over 80 billion MMK head been lent to 2,051 farmers across 154 townships. In spite of the size of these loans, they also carry a mandatory savings component, in this case 30 percent.

MADB loans are heavily subsidized. Costs of loan disbursement alone are probably around 8-10 percent on crop loans, on top of capital costs. Earnings on deposits are not sufficient to make up the difference. In practice, this funding deficit is transmitted through another state-owned bank, the Myanmar Economic Bank (MEB), which is funded by the national treasury, through the MOPF.

Microfinance institutions (MFIs)

Formal microfinance operations in Myanmar commenced in the late 1990s with the UNDP Human Development Initiative Program (Turnell, 2009). All NGOs operating under this program worked with solidarity group lending procedures, and the interest rate charged per annum was 2 percent. While these programs were not insubstantial, microfinance did not begin to truly grow until the 2011 Microfinance Law was passed. As discussed further in Chapter 3, the law provided a stronger regulatory framework for the sector, and those regulations helped lead to significant growth in the sector.

As of July 2019, there are over 180 licensed and operating MFIs in Myanmar. According to recent Financial Regulatory Department (FRD) regulations, MFIs must have two straight years of profits before they can take deposits. Hence the sector is in transition, as some MFIs choose to take losses with a focus on expansion, while others attempt to meet the requirement for deposit taking. There have also been important advancements allowing MFIs to access international sources of capital, which were often held up in bureaucratic approval processes. In any case, the sector is growing rapidly – as of Q2 2019 the outstanding portfolio is 5.1 trillion MMK, a 57 percent increase from 2018. The sector has reached over 4 million borrowers.

Much of the expansion in the microfinance sector has occurred in urban areas. However, a number of MFIs have been successful in rural areas as well. Originating from the UNDP era in the 1990s, PACT Global Microfinance (PGMF) is the largest MFI in Myanmar, and at 1.6 million has the second largest client base of any financial institution after MADB. It is also the second largest agricultural lender, layering a number of agricultural loan products over its baseline group loan product. Another example is Proximity Microfinance, which began as an agricultural technology organization. Through its work tailoring appropriate technology for lower-income farmers, its staff began to recognize the importance of finance in stimulating the take-up of new technologies. It has over 60,000 clients, equally split between men and women. BRAC-Myanmar is the Myanmar-based subsidiary of the world's largest NGO, pursuing traditional group lending along with innovative digital payments and distribution models. It serves over 60,000 clients from a network of branches primarily in central Myanmar. Part of the Maha Awba agricultural conglomerate, Maha Microfinance established greater corporate independence and obtained an important investment from the International Finance Corporation in 2016. It has over 30,000 clients, primarily farmers.

An important emerging trend in both the banking and MFI sectors is an increased interest in digitization. While efforts are still nascent, there are ongoing pilots involving organizations such as Wave Money, Ongo, and BRAC-Myanmar, seeking to find effective ways to use digital channels and platforms particularly to overcome the significant transactions costs of reaching clients in rural areas.

Insurance companies

Myanmar has a nascent insurance sector. Until recently there was limited insurance provision within some of the economic conglomerates, but mass market insurance did not exist. A number of reforms, discussed further in Chapter 3, have begun to open up the market. However, it is likely that the initial market expansion will be focused on higher-end commercial and individual customers with products such as life insurance. These products may only apply to larger agricultural firms, such as wholesalers, processors, and exporters.

However, the path ahead for small and medium holder agricultural insurance is less clear. There are emerging discussions around crop insurance, including a pilot project for weather index-based crop insurance in Bago and Sagaing regions, managed by Sompo Japan Nipponkoa Insurance Inc, Myanmar Insurance and the MADB.[16] However, insurance at any kind of scale does

[16] https://agroinsurance.com/en/myanmar-weather-index-based-crop-insurance-system-introduced-in-two-regions/

not seem imminent for small and medium farmers and agribusinesses. In most other countries, even higher-income countries, widespread agricultural insurance has depended on significant government subsidization.

Cooperatives

Cooperatives have a mixed history in Myanmar (Turnell, 2009). Current management methods have significant room for improvement (World Bank, 2017). Data on their performance is relatively limited, with thousands of local organizations serving about 2.6 million members as of 2016, though with a financial impact less than that of MFIs (World Bank, 2017). Cooperatives are supervised by the Directorate of Cooperatives (DOC) in MOALI, which receives less than 1 percent of the MOALI budget (World Bank, 2017). Between 2013-14 to 2015-16 the DOC received $400 million USD in loans from China's EXIM Bank, and a $100 million loan from South Korea's Daedong Industry Co. Ltd. for agricultural machinery, providing an important impetus for credit expansion amongst the cooperatives. Cooperatives tend to be more flexible than banks and MFIs in credit provision, and hence can be an important complement to these other institutions (World Bank, 2017). When properly governed, they can also serve as an important conduit for wholesale finance from commercial banks and other institutions. A recent example is a recent loan from the A Bank to a sesame cooperative in Magway region (Regional Farmer Development Association), facilitated by the DFID-funded DaNa Facility working with two national farmer-focused NGOs.[17]

Semi-formal and informal financing

Semi-formal and informal credit also exists in Myanmar, including private money lenders, pawn shops, village revolving funds, village savings and credit groups, and other sources of mostly informal financing, such as trade credit. The World Bank (2017) estimates that about 53 percent of financing came from moneylenders and agricultural input companies as more formal sources are limited. A somewhat unique institution in Myanmar is the hundi system, discussed in Chapter 3. Given the lack of data it is hard to make definitive statements about the relative important of these sources of financing, however they clearly play a critical role in providing some credit access for farmers.

Given the availability of informal finance for smallholders, medium- and large-holders between about 10-20 acres and other small and medium agribusinesses may be the most constrained and

[17] http://www.danafacility.com/wp-content/uploads/2019/08/DaNa-Access-to-Finance-Case-Study.pdf

are probably the most limited in meeting their credit needs, as the larger agricultural dealers, wholesalers and processors tend to have large cash reserves, while smallholders have the MADB, the microfinance sector, and cooperatives. The aforementioned mechanization loan programs are probably the most prominent exceptions, however the market for production loans is largely financed informally through value chain relationships, if at all. There have been some efforts to encourage MFIs to move into this market segment, but the rate of penetration to SMEs in the agricultural sector is still relatively low.

Conclusion

From our research we find that Myanmar agriculture needs a transformational change in efficiency, quality assurance, traceability and differentiation. Increasing urbanisation and a gradual shift of employment from agriculture to industry leads into changes in consumption patterns. A key factor in meeting new domestic and international demand will be the expansion of access to finance for agriculture, which currently receives less than 2 percent of lending from private commercial banks. A larger amount comes from the Myanmar Agricultural Development Bank, in the form of seasonal smallholder loans, primarily to the rice sector. The microfinance sector has been expanding rapidly, with over 150 institutions serving over 3 million clients, however many remain unserved or underserved. Digital mobile money has just reached scale in Myanmar, with Wave Money processing the equivalent of 2 percent of GDP, providing a new potential channel to expand financial inclusion.

Chapter 3

Agricultural Value Chain Finance Policy

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Introduction

Agriculture is one of the most important sectors in the Myanmar economy, as it generates about one quarter of GDP and provides employment to about 70 percent of the population of 54 million.[17] Despite its importance, but fitting with global patterns, the agricultural sector receives limited access to formal-sector finance relative to its importance in the economy. Only about 10-12 percent of commercial lending goes to agriculture.[18] The majority of this financing is from state-owned banks, primarily in the form of loans indexed to acreage and capped at 2.5 million MMK (1600 USD) from the Myanmar Agricultural Development Bank (MADB). Less than 2 percent of private banks' lending goes directly to agriculture. While the microfinance industry has been expanding rapidly in the past decade, a substantial portion of the expansion has been in urban areas. There are still significant opportunities to expand agricultural small-scale agricultural lending beyond the MADB.

The development of the agricultural sector and improvements in access to finance are important pillars of Myanmar's national development strategies. Policy #6 of the Economic Policy of the Union of Myanmar, established in July, 2016, involves "(e)stablishing an economic model that balances agriculture and industry and supports the holistic development of the agriculture, livestock and industrial sectors, so as to enable rounded development, food security and increased exports," while policy #8 involves "(a)chieving financial stability through a finance system that can support the sustainable long-term development of households, farmers and businesses." The Myanmar Sustainable Development Plan (2018-2030) includes the strategies to "(c)reate an enabling environment which supports a diverse and productive economy through inclusive agricultural, aquacultural and polycultural practices as a foundation for poverty reduction in rural areas" and to "(i)ncrease broad-based access to financial services and strengthen the financial system overall" under Pillar 2 (Prosperity and Partnership), Goal 3 (Job Creation and Private Sector-Led Growth).

We recognize that Agricultural Value Chain Financing (AVCF) is just one element of the broader development of the agricultural sector. We also recognize the limitations of direct government intervention in this realm, given Myanmar's constrained fiscal environment for agricultural investment (World Bank, 2017). Government policies need to strike a balance between providing a framework for private sector financial services to expand, so that a much larger pool of resources can be leveraged for agricultural investment, while protecting customers and the stability of the economy. Hence any resource-intensive government intervention in expanding financial services for agriculture should be focused on overcoming market failures, and

[17] Recent figures suggest that this employment share is rapidly declining (World Bank, 2019).
[18] Authors' own calculations based on Central Bank of Myanmar statistics: https://www.cbm.gov.mm/content/3913

investments with high social returns. In this chapter we discuss the current state of policy affecting AVCF in Myanmar, as a basis for policy recommendations to develop the sector in the near future and longer-term.

We define AVCF as formal financing that affects at least three value chain participants: a financial institution, a borrower, and another facilitator or beneficiary. For example, this might involve a formal lender, a farmer, and a third-party that facilitates financing. The third party might be a supplier, dealer, or processor that provides information, a guarantee, facilitation of loan collections, in-kind distribution of inputs, or some other support that facilitates financing between the lender and the borrower. Another form of AVCF could also involve a formal lender and a borrower, with the latter then leveraging its value chain relationships to informally provide trade credit financing upstream or downstream in the value chain. Such models are promising, because they leverage value chain relationships to bridge financing gaps that are challenging for formal sector lenders to fill directly, due to gaps in information, trust, physical proximity, or other frictions. This also generally helps to reduce lending risks. While such models are our focus, the issues and policies we discuss are relevant for the financing of agriculture more generally.

We briefly summarize the history of policymaking toward AVCF in Myanmar in section 3.2. Like many countries, Myanmar doesn't have a central policy unit specifically focused on AVCF. Hence policies affecting AVCF are covered by a range of government units. We take the perspective that extending AVCF depends not only on financial sector regulations, but also on improving the broader environment for investment in agriculture. In principle, any factors influencing the returns, costs, or risks of agriculture are relevant, as these factors may enter the financing decision of a financial services provider. We provide an overview of the government units that we see within our primary scope in section 3.3. We then proceed to review the current state of policymaking across three subsections, roughly corresponding to the main government units affecting financial policy, agriculture and rural development policy, and commercial policy, respectively: the Ministry of Planning and Finance (MOPF) and Central Bank of Myanmar (CBM) (3.4), the Ministry of Agriculture, Livestock and Irrigation (MOALI) (3.5), and the Ministry of Commerce (MOC) (3.6). Some additional details, particularly expanding on section 3.3, are provided in the Appendix.

This chapter should be seen as closely linked in particular to Chapter 5, which provides policy recommendations that flow out of the discussion in this chapter. And both chapters also draw heavily on Chapter 1, which provides advice on "good practice" for agricultural value chain financing, drawing on global perspectives.

Brief History of Agriculture Finance Policy in Myanmar[19]

The first Anglo-Burmese war in 1826 brought southern parts of Burma under the British Empire, and Burma become a province of British India in 1886. The expansion of British rule in Burma introduced legal institutions that allowed land to be taken as collateral on loans. This was pivotal to the entrance of the "Chettiars" – an Indian ethnic group specializing in moneylending and finance – to Burma (Turnell, 2009). The Chettiars played a key role in Burma becoming a world leader in rice production by the early 20th century. Alongside their own capital, they served as the key intermediaries between western banks and farmers through a network of 1,650 offices across Burma by 1930 and embedded the "hundi" system of informal remittance transfers that persists until the present day. While some historians have argued that the Chettiars leveraged the lack of lending market competition to charge excessive interest rates (e.g., Wah, 2012), a closer look at the numbers largely absolves the Chettiars (Turnell, 2009). However, political attacks on the Chettiars grew in strength after significant land collateral seizures, particularly during the Great Depression of 1930s. Attempts to stem the dominance of the Chettiars through co-operative credit institutions largely failed due to implementation challenges by WWII, and co-operative credit has largely had a similarly disappointing track record in practice in the subsequent decades (Turnell, 2016).

The independence era after 1948 was not friendly to the Chettiars, who had at least provided a proto-financial system (Turnell, 2009), and no fully adequate substitute took their place.[20] Productivity and output in rice and other commodities dropped throughout the rest of the 20th century, though of course financing was only one factor in this trend. The country has had a state-owned agricultural bank under various names since 1953, when the State Agricultural Bank (SAB) was founded. Typically, the state-owned agricultural bank has focused on financing smallholder agriculture, particularly paddy, with loan sizes that typically don't cover the full cost of agricultural production. The SAB extended credit through a system of village and district banks, using "joint security" and programs of compulsory savings (ideas which are still central to today's microfinance loans), achieving a repayment rate of 98.7 percent from 1953 to 1962.

All banks were nationalized after Myanmar adopted the socialist economic system after a military coup in 1962. A monolithic bank was formed under the People's Bank of the Union of Burma Act in 1967. Then, after the reformed administrative system in 1972, the Union Bank of Burma Law of 1975 was passed. The People's Bank of the Union of Burma changed its name to the Union of Burma Bank, and a number of important state-owned banks appeared, including the Myanma

[19] This account draws heavily on Turnell (2009).

[20] https://www.mmtimes.com/business/12446-ghosts-of-2003-crisis-haunt-banks.html

Economic Bank (MEB), Myanma Foreign Trade Bank (MFTB) and the Myanma Agricultural Bank (MAB), with the Myanma Apex Bank (MAB) providing seasonal agricultural loans.

The economic system of Myanmar started to be transformed from a planned economic system to a market-oriented system after major political upheaval in 1988. The government also started to allow for foreign direct investment and foreign economic aid. To promote the development of the financial system, the Central Bank of Myanmar Law and the Financial Institutions of Myanmar Law were enacted in 1990 to establish modern monetary policy and a legal framework for financial institutions. This was followed by the Myanmar Agricultural and Rural Development Bank Law to tackle the rural credit shortage, which led the MAB to morph into the Myanma Agricultural and Rural Development Bank (MARDB). The 1990s saw the emergence of several private banks, while the MARDB became the Myanmar Agricultural Development Bank (MADB) in 1997, the name that continues until the present day. Microfinance programs began to emerge in the late 1990s with support from the United Nations Development Program (UNDP). However, the banking system did not meet international standards of governance (in particular, money laundering was a key issue), and after a bank run the banking system experienced a major crisis in 2003.

After the crisis several constraints were enforced on the banking system, such as some banks being banned from certain core banking activities. Some of these constraints remained until the early 2010s, and a spirit of caution has continued to guide banking policy. Yet in the current decade several reforms have also emerged, as a part of more substantial moves towards an independent, accountable, and stable banking sector. The revised Central Bank of Myanmar CBM Law of July 2013 strengthened the independence of the CBM. More recently, the CBM has loosened constraints on interest rates and collateral. It has also instructed the banks to rationalize their loan books by transitioning from lending practices heavily based on annual overdraft loans, to terms loans allowing for more transparent identification of non-performing loans.

In agricultural banking, the Ayeyarwady Farmers Development Bank, or the A bank, was launched by the Ayeyarwady regional government in November 2015. Meanwhile, supervision of the MADB, which remains the largest provider of agricultural loans, still with a heavy focus on smallholders in the rice sector, was moved from the Ministry of Agriculture, Livestock and Irrigation to the Ministry of Planning and Finance (MoPF), in 2017.

The market for insurance is underdeveloped in Myanmar, with agricultural insurance essentially non-existent until very recently. State-owned Myanma Insurance was founded in 1952, and was

Myanmar's only formal insurance company until 2013, however it did not provide specific insurance products to cover the agricultural sector until an agricultural insurance pilot launched in 2018. In early January 2019, MoPF issued Announcement No.1/2019 to permit a select number of foreign insurers to enter the market, as part of ongoing liberalization. New insurance products are likely to emerge most quickly for higher-return commercial and consumer applications, such as life insurance, rather than in agriculture.

While some initiatives emerged in the microfinance sector with UNDP support in the late 1990s, the sector still lacked a robust legal and regulatory framework by the late 2000s (Turnell, 2009). In 2011, the government passed a new Microfinance Law[21] with objectives including poverty reduction, developing the social, education, and health opportunities among the *"low-income farmers, laborers and vendors who reside in rural and urban areas,"* creating job opportunities, and improving incomes in the agricultural sector, and encouraging livestock breeding. This legal framework has facilitated rapid growth of the microfinance industry in the 2010s, including in rural areas, with several institutions offering loan products tailored to the agricultural seasons. However, this legal framework has still been constraining on MFIs, with frictions to capitalization both through deposit-taking and accessing foreign capital. Some of these constraints were weakened through a 2016 liberalization, and a reform of the Microfinance Law is now under consideration.

Scope of Analysis

Several government units affect the potential for agricultural value chain finance to thrive in Myanmar. In this section we provide a brief summary of the main units we consider to be within the purview of this chapter. A more detailed overview of the structure of relevant government units, including more detailed organizational charts, is provided in the Appendix to this chapter, and would be of particular interest to readers less familiar with the structure of the Myanmar government.

According to the broad definition of our scope, nearly all departments in MOALI bear an important relationship to AVCF, as they are responsible for issues affecting the risks, costs or returns to agriculture. Some departments (e.g., Agricultural Land Management and Statistics, Irrigation and Water Utilization) oversee important inputs to agricultural production. Irrigation is particularly important in substantially lowering the risks of financing purely rain-fed agriculture.

[21] http://www.burmalibrary.org/docs18/2011-11-30-Myanmar_Microfinance_Law-en.pdf

The Departments of Agriculture and Cooperatives play important roles in overseeing farmer groups and farmer organizations that can be important channels to increase agricultural productivity and wholesale financing. The Department of Rural Development oversees several rural development programs. The Department of Planning plays an important policy coordination role.

There are two main government units involved in the financial sector: MOPF and CBM. MOPF plays a broad role in financial sector regulation. Within MOPF, the Financial Regulatory Department (FRD) plays a particularly important role in setting regulations based on financial laws, and in supervision of microfinance institutions, the insurance sector, and state-owned banks. MOPF is also the home to three important financial institutions of particular relevance to agriculture: MADB, MEB, and Myanma Insurance. MADB has an exclusive focus on the agricultural sector, while MEB does so at least indirectly through financing MADB. Crop insurance is just emerging in Myanmar, and Myanma Insurance is an important player in this sector. CBM complements MOPF by setting monetary policy and regulating private, commercial banks. CBM has in recent years played a critical role in influencing the state of commercial lending, such as in setting strict interest rate and collateral requirements for the sector.

Within MOC the Department of Trade manages the country's trade policy. This is critical for the agricultural sector, given that in several its highest-output agricultural sectors, Myanmar largely depends on a small number of nearby countries such as India and China as its main export markets. This dependency can have significant effects on export-oriented agricultural sectors such as rice, beans and pulses, and sugar, as border shutdowns and other trade disruptions can bottle up agricultural exports and depress commodity prices. Diversification of export markets, partly through quality upgrading, is an important government priority that affects several export-oriented agricultural sectors.

From a cross-cutting perspective, the National Economic Coordination Committee (NECC), chaired by the State Counselor, has become a critical organ for national economic policymaking and driving high-level policy reform. The NECC has broad scope covering a range of economic issues and is often a critical forum for debate and development of key economic policy reforms. An emerging force for evidence-based policymaking within the Myanmar government is the Myanmar Development Institute, which is developing its capacity to provide policy advice across the government, including in agricultural and financial sector policy.

Financial Policy

The two major regulators of the financial sector, the Central Bank of Myanmar (CBM), and the Ministry of Planning and Finance (MOPF) have a critical role to play in setting the framework for financing in Myanmar, including for agriculture, and in setting regulations and supervising institutions in the financial sector, including banks, microfinance institutions, and insurance companies. Banking and finance reform is a broad and important topic for the Myanmar economy, with a full scope far beyond the coverage of this report. We see our contribution in providing a narrower, agricultural value chain finance-focused analysis, complementing and updating a number of important recent reports including Nehru (2015), Turnell (2016), Foerch et al (2016), Moyes and Shwedel (2017), Roland Berger (2017), and Hofmann (2018) for the banking and financial sectors, and World Bank (2017), which focused on the main areas of agricultural public expenditure, which in financing is primarily the MADB, and in cooperative lending and microfinance services.

Commercial banks

Commercial banks in Myanmar are regulated by the CBM, which controls monetary policy, sets specific regulations such as for interest rates and collateral requirements, and supervises the banks. Until recently, the CBM was understood to be creating a particularly difficult environment for agricultural value chain finance, and rural lending by banks in general. In particular, commercial banks had a narrow interest rate margin to work in: a 13 percent ceiling was set on lending rates, and an 8 percent floor was set on deposit returns. The ceiling, in particular, was too low to make higher-risk lending, such as in agriculture, commercially viable. Perhaps even more constraining was the understanding that only highly secure assets,[22] typically in a value of 200 percent of the loan amount, could be provided as loan collateral. Throughout the 2010s, less than 2 percent of lending by private commercial banks was going directly to agriculture, [23] a time period in which agriculture accounted for upwards of one-third of GDP. This was not for a lack of liquidity: many banks had very low loan-to-deposit ratios by global standards (Turnell, 2016), with one key source of deposits being well-endowed agribusinesses.

Since the 2013 revision of the CBM Law, the CBM has increasingly sought to direct the financial sector toward global standards of prudential management. This included a July 2017 implementation of Basel standards. A key step in lending markets was taken in November, 2017, when CBM directed that overdraft loans should be converted to term loans, in an effort to

[22] Land and buildings (with verifiable title), gold, diamonds and precious stones, savings certificates, government treasury bonds, fixed deposits, credit certifications and credit guarantees.

[23] Authors' own calculations based on Central Bank of Myanmar statistics: https://www.cbm.gov.mm/content/3913

rationalize the non-performing loan ratio of the commercial banks over a 3-year period, and to limit overdrafts to at most 20 percent of outstanding loans by July, 2020.[24] The CBM has raised the interest rate cap to 16 percent, as of February 1, 2019,[25] for unsecured (i.e., uncollateralized or partially collateralized) lending, and there is formal discussion of a continuing process of liberalization in the coming years.[26] The CBM has also begun to allow foreign banks to slowly take a larger role in the economy. For example, on November 8, 2018, the CBM issued notification 6/2018, allowing foreign banks to lend to domestic firms in Myanmar kyat at the standard lending rate of 13 percent, and to lend in foreign currency at any interest rate.

Alongside these substantive reforms, in recent years the CBM and other regulators have also provided greater clarity around a number of policies that were not constraining the financial sector *de jure*, but were constraining on a *de facto* basis due to confusion on the part of private banks, state-owned banks including MADB, microfinance institutions (MFIs), and cooperatives, over which policies applied to which institutions. These "myths" generated additional frictions on lending, creating a strong incentive for commercial banks to focus their lending exclusively in urban areas (and particularly, Yangon) near the banks' headquarters and largest branches. A number of these myths were summarized by Moyes and Shwedel (2017), and we update a few of these here.[27]

- The CBM has now fully clarified policies around collateral and unsecured lending, and it is now broadly understood that banks are able to lend with collateral other than land, and to carry out partial and unsecured lending. This is particularly pivotal for smaller and rural enterprises, which are considered to carry higher risks, and are much less likely to possess traditional forms of collateral.
- Some banks thought that they could only lend to farmers up to MMK 1,500,000. In fact, this limit only applied to the MADB and not to private commercial banks. This confusion appears to have now dissipated.
- There also seemed to be confusion over the maximum loan tenor, as most commercial bank loans were one year, structured as overdraft loans with minimal or no scheduled interim principle payments before the loan expiry date. These loans were frequently "rolled over" for an additional year, with the accrued interest added to the principal. While the loan rollovers provided some flexibility to banks and borrowers in managing repayment, in practice limiting loans to a series of annual rollovers creates significant uncertainty if borrowers want to make more substantial capital investments, and these

[24] https://www.mmtimes.com/news/banks-convert-overdrafts-term-loans-reduce-lending-risk.html
[25] https://www.mmtimes.com/news/central-bank-permits-loans-without-collateral-16pc-interest-rate.html
[26] https://www.mmtimes.com/news/central-bank-will-consider-further-rate-liberalisation.html
[27] We thank Tom Moyes for providing insight on several of these issues.

practices likely led to commercial banks accumulating a large number of effectively defaulted loans on their books. The November 2017 CBM directives have likely started to shift thinking on loan structuring towards greater use of terms loans, and timelines longer than one year when warranted by the proposed use of loan funds.

- Another source of confusion surrounds risk-based pricing of credit. Commercial banks contended that at the 13 percent ceiling they could not effectively price risk. Meanwhile, the CBM considers the banks to be deficient in risk-based pricing, probably with some justification. In practice, through their own internal efforts and through donor support, the banks have begun to develop their capacity for risk analysis and risk-based pricing, though it is still not clear how advanced these capacities have become throughout the banking system. It is also not very clear how capable CBM staff are in evaluating the risk management capacities of the commercial banks. Under such circumstances it is likely that the banking system will continue to manage risk primarily through conservative lending practices such as interest rate caps and excessive collateral demands, which is of particular detriment to the agricultural sector.

In spite of the recent changes, there is still a gap in the market between commercial banks and microfinance institutions, with the former capped at 16 percent on unsecured loans, and the latter allowed to lend at up to 28 percent, after a recent reduction from 30 percent.[28] With MFI loan sizes capped at 10 million MMK, it suggests that there is still likely to be a gap in lending to small and medium enterprises, including in the agricultural sector, that would like loan amounts above 10 million MMK, and yet are seen by commercial banks to require an interest rate above 16 percent.

Another key concern for development banking in Myanmar is the structure of funding for MADB. Essentially, MADB is undercapitalized, receiving subsidized financing from the MEB, which is itself subsidized by the CBM, due to incurring substantial losses over the past 3 decades (Foerch et al., 2016). MADB primarily focuses on financing smallholders, with most of its subsidized lending in the rice sector, following quite rigid lending formulas that are commonly accepted to cover only about half of production costs. MADB does little risk assessment, with lending approval essentially guaranteed as long as farmers can produce the necessary collateral (primarily the Form 7 land title certificate), and interest rates set significantly below the cost of loan provision. This makes MADB the unquestioned first-choice lender for many farmers, and a vital source of rural financing, while leaving other lenders to compete over financing the residual production costs. MADB also promotes rural savings, primarily through packaging forced savings as part of

[28] https://www.mmtimes.com/news/finance-ministry-cuts-microfinance-loan-interest-rates.html

its loan offers. More recently it has provided a subsidized hire-purchase 2-step loan program for agricultural mechanization with the support of the Japan International Cooperation Agency (JICA, 2018).

In 2015 the government provided notification that the MADB would be restructured and turned into a private-public partnership bank (Foerch et al., 2016). In 2017 supervision of MADB was moved from MOALI to MOPF. Discussions of state-owned bank reforms have proceeded in recent years, with Phase 1 recently completed, though public announcements around restructuring are still pending. Given their broad scope and the lack of public information on these discussions, in this report we will limit our focus to discussing the potential for a reformed state-owned development bank to become an important player in agricultural financing.

Microfinance institutions

The 2011 Microfinance Law provided a legal framework for the sector. The most important regulatory steps taken to guide the implementation of the Law were the five new directives for microfinance institutions (MFIs) issued by FRD on 29 August 2016. These directives were influenced by a policy reform white paper authored by the Myanmar Microfinance Association. This reform to the 2011 Microfinance Law included directives[29] such as:

- Client Protection Principles aimed at MFIs to be able to avoid over-indebtedness and provide responsible and accountable financial services for the clients.

- Allowing registered MFIs to take loans in either foreign currency or kyat and permitting them to borrow from local and foreign financial sources. In the past, foreign MFIs could only access to foreign-currency loans while domestic MFIs could only access to kyat loans.

- Allowing MFIs to carry out their activities in urban and rural areas based on their business models, and removing a previous restriction that loans offered in urban areas must not exceed those in rural areas. Before the 2016 reforms, MFIs had to have at least 50 percent of their loan portfolio and members in rural areas. Collateral is still not allowed.

- Deposit-taking and minimum paid-up capital requirements. With regard to taking deposits from clients, compulsory savings may not exceed 5 percent of the size of a loan received, and the interest rate for compulsory savings shall be no less than 15 percent per annum. Voluntary

[29] www.myanmarmfa.com

savings from clients may not be higher than the required solvency ratio, and the interest rate set for the savings shall be no less than 10 percent per annum. Previously it was 15 percent. Deposits can also still not be accepted from non-members. Minimum paid-up capital requirements were increased from K30 million to K300 million for deposit-taking MFIs, and K15 million to K100 million for non-deposit-taking MFIs.

- The fifth notification is associated with the solvency ratio and liquidity ratio, which is meant to improve the prudential management of MFIs.

A reform to the 2011 Microfinance Law is current underway in the legislative process. The new law is likely to reflect a natural evolution of the microfinance sector, rather than a drastic reform.

Payments and mobile money

Potentially pivotal for inclusive financial services access, especially in rural areas, is the modernization of payments systems with the rapid expansion of internet access since 2014. Most of the major commercial banks have set up online banking systems. Various digital payment systems are rapidly emerging in the wake of the 2016 Mobile Financial Services Regulation, providing financial access to households that don't have a bank account and don't necessarily want to deal with the fees and travel costs involved in obtaining and maintaining one. The largest mobile money operator, Wave Money, oversees a network of 50,000 agents across more than 85 percent of the townships, and handles a transaction volume equivalent to about 2 percent of Myanmar's GDP.[30] Other licensed mobile money providers including M-Pitesan and OK Dollar, while Ongo has a particular focus on digital payments in rural areas. However, the payments system is still fragmented. Point-of-sale digital payments are still difficult without a bank account and credit or debit card. However, there are emerging discussions around so-called interoperability, and point-of-sale integration leveraging technologies such as QR codes.[31]

Developments in payments can play a facilitating role for agricultural finance. First, they provide a means to overcome travel and transport costs in executing transactions and increase security in transmitting funds. Given the limits on mobile money transaction sizes, this is likely to be most impactful for smallholder or contract farmers, who might be able to send and receive payments from suppliers and buyers digitally. Second, they provide a platform to provide digital financial services. This could include loan financing, whether in a direct relationship with a financial institution, or facilitated by additional contributions from another member of the value chain in

[30] https://www.mmtimes.com/news/wave-money-sees-higher-demand-its-mobile-money-services.html
[31] https://www.mmtimes.com/news/cbm-approve-qr-code-payment-transactions-soon.html

a value chain financing relationship. Digital channels can also provide more efficient means to implement other financial services like saving and microinsurance.

Insurance

Reforms have also begun to emerge in the insurance sector, as the MOPF has begun to liberalize the insurance market, particularly allowing foreign insurance companies, which had previously been limited to representative offices, to become active in offering commercial and individual insurance products. While much of the focus is outside agriculture – for example in life insurance – there have been emerging steps toward agricultural insurance. The MADB and Myanma Insurance signed a memorandum of understanding (MOU) in December, 2018 to develop an index-based crop insurance scheme, while in the private sector, Global World Insurance had received permission from MOPF to start a crop insurance pilot.[32] These efforts are quite new, and it remains to be seen whether they will develop in viable initiatives that can reach a large number of farmers.

Credit market institutions

In December, 2018, it was announced that Myanmar would launch a credit bureau in the subsequent 12 months, after authorization in May, 2018.[33] Credit bureaus can play an important role in financial sector deepening, as they can lower the lending risk of banks by allowing borrowers to develop a public borrowing history, helping financial institutions to assess risk and address issues like multiple borrowing. However it will take time for the credit bureau to take full effect, as the system will need to be developed, a full database of commercial credit will need to be accumulated, and bank staff will need to be trained and gain experience with making the best use of the system for loan risk assessment, which is likely to take a few years.

Since 2016, the International Finance Corporation of the World Bank Group has been supporting the Myanmar government in developing a secured transactions reform.[34] The overwhelming majority of assets that have been pledged as loan collateral in Myanmar have been fixed assets like land and buildings, with secure title. A secured transactions reform typically involves legal and regulatory reforms extending the definition of collateral to include movable assets like vehicles, machinery, inventory and accounts payable, clarifying rules around seizure of collateral, along with creating an efficient, usually digital, registry of assets. This gives potential borrowers, particularly micro, small, and medium enterprises which are less likely to have secure title on

[32] https://www.mmtimes.com/news/crop-insurance-begins-take-root-myanmar.html
[33] https://www.mmtimes.com/news/credit-bureau-be-and-running-within-next-12-months.html
[34] https://frontiermyanmar.net/mm/node/9948

fixed assets, extra collateral options. Furthermore, it gives financial institutions extra confidence to lend against such assets.

Agriculture and Rural Development Policy

This section discusses policies of the Ministry of Agriculture, Livestock and Irrigation (MOALI) as they relate to agricultural value chain finance in Myanmar.[35] The Agriculture Development Strategy (ADS), launched in June 2018 seeks to operationalize these policies and will run for a period of five years. The ADS emphasizes a public-private partnership approach, with the Department of Planning (DOP) playing a central role on the government side in monitoring, coordinating and supporting the implementation of the ADS.

Even though MOALI does not have a primary role in regulating or facilitating financing in Myanmar, it still has a critical role to play in a range of areas that affect the returns, costs, and risks of agricultural financing. Furthermore, MOALI is typically the implementing agency for rural development schemes, which may involve financing components. Our review will touch on the direct and indirect ways that MOALI policymaking can affect the viability of AVCF in Myanmar.

Agricultural financing policy

Myanmar's agricultural policy recognizes a lack of access to finance as a constraint to agricultural development and vouches its support for financial facilities such as revolving funds, microfinance and block grants to raise rural incomes. However, highly interventionist, subsidized schemes can potentially distort rural credit markets. One way the government can reduce the cost of borrowing for farmers without deterring private lenders is by helping to reduce transaction costs, such as by promoting physical infrastructure like roads and irrigation, and digital infrastructure such as ICT networks and mobile money. Indeed, this technology has already gained currency in Myanmar, and one donor-funded project, launching in collaboration with the Department of Rural Development, will be promoting digital finance in Myanmar's Dry Zone.

MOALI's policies also include a role in attracting foreign direct investment (FDI), given the potential for agricultural FDI to go beyond financial support in providing technical support and improving international market access. Indeed, the new Myanmar Investment Law allows foreign firms to contribute up to 80 percent of an investment in the country's agriculture sector (at least

[35] See Appendix B for a more comprehensive listing of specific policy areas.

20 percent must be from domestic capital).[36] For the time being, inward agricultural FDI in Myanmar remains low, possibly because of the risks involved.[37]

In some cases, the policy environment can exacerbate risks. For example, the need to obtain government permission before changing land use means that farmers and, indeed, investors in the farming sector are more vulnerable to weather and market risk, as they cannot easily switch to another crop when they anticipate weather conditions or market demand will not be favorable for their usual crop. On the other hand, if MOALI can successfully promote FDI in the agriculture sector, they may be able to shift agricultural production into higher value-added activities that offer greater profit opportunities. Lenders may then view such businesses as less risky to lend to and, correspondingly, these businesses may benefit from relatively lower interest rates.

Land use policy

All land in Myanmar is owned by the state, so the government can nationalize any parcel of land at any point in time (Allaverdian, 2016). This ever-present risk of nationalization or, simply, a land dispute, contributes to the overall risk of lending to any business that uses land as a factor of production, and also negatively affects the willingness of businesses to invest in their land. As such, current land policy likely reduces both the supply of as well as the demand for credit in most agricultural and manufacturing contexts. On the supply side, a force majeure clause in the contract that allows the bank to charge higher interest when some unforeseen event, such as state confiscation of land, prevents timely repayment of the loan transfers this risk onto the potential borrower instead (or, where applicable, the guarantor), and thus can lead to a further contraction in the demand for credit (or, indeed, the availability of willing guarantors).

The Farmland Law 2012, a key piece of legislation, legalized the buying, selling, mortgaging and inheritance of the right to use land, the certificate of which is known as 'Form 7', which is issued by the Department of Agricultural Land Management and Statistics (DALMS). This legalized the use of Form 7 as collateral for obtaining finance, allowing farmers to obtain credit without having to pawn their land for a predetermined period, as was common before. More specifically, previously, a farmer that took on debt would also, most likely, lose some of their land on which to work. However, as of 2012, farmers that are in possession of Form 7 no longer need to pawn their land to borrow, and thus the proposition of taking on debt is relatively more attractive for them (Allaverdian, 2016). This may increase the demand for agricultural finance, but only for

[36] https://www.dica.gov.mm/en/faq
[37] https://www.globalnewlightofmyanmar.com/agriculture-sector-still-accounts-for-less-than-1-of-total-fdi/

those in possession of Form 7. Indeed, those farmers unable to secure the appropriate land use rights, for whatever reason, may find themselves more restricted from borrowing than before.[38] Moreover, any biases in the allocation of land use certificates may lend a competitive edge to inefficient enterprises that are able to obtain access to Form 7 over their more efficient counterparts who are unable to do so, for whatever reason. In the longer term, such a distortion may harm overall productivity in the sector and, indeed, global competitiveness, which can cause the sector to become generally less attractive to lenders.[39]

A further aspect of the present land use policy that can be restrictive for agricultural finance is the fact that it is not easy to change the purpose for which registered land can be used. This increases the exposure of farmers to various forms of risk since it inhibits their ability to respond to shocks. For example, if there is a sudden fall in market demand and, therefore, in the price for a certain commodity, farmers cannot easily switch to another commodity for which there is stronger demand and thus maintain higher prices. This means that farmers' profits are relatively less stable than if they had the ability to react by switching crops without having to apply for a new land registration permit. This means that many farmers in Myanmar would be offered higher interest rates simply on this basis.

The role of information

The DOP provides a market information service, which includes information on prices. Regular and accurate market information can help producers to better manage the market risk associated with any one product or destination, and thus benefits the profitability of their businesses and their ability to repay loans. For example, knowing which variety of rice, bean, or pulse is generating the highest domestic or international returns can allow farmers to reallocate their production to the most profitable crop. However, restrictions such as the aforementioned ones on land use put constraints on farmers' ability to fully adjust to new information, as land use restrictions inhibit their ability to switch between the full menu of prospective agricultural production options.

Also, of considerable importance for agricultural credit is the availability of production statistics, which are collected by the Department of Agriculture (DOA) as well as DALMS, however the available information tends to be highly aggregated. For lenders to be able to access production information is important because it allows them to know the relative size of productive sectors,

[38] Land registration in Myanmar occurs in the household head's name, which means that other members of the household may not be in a position to collateralise their Form 7 without the consent of the household head. This can have gender implications, as women are more likely to run into this obstacle than men.
[39] For instance, Khandelwal et al. (2013) find a significant productivity gains from removing misallocated quotas in the case of Chinese textile and clothing exports.

and thus to tailor and market their financial products to those sectors that demonstrate the greatest potential. However, they would benefit from more localized and crop- or sector-specific information.

Agricultural mechanization policy

A move towards mechanization requires investment – such as to purchase or rent machinery – and thus presents a market opportunity for providers of finance. This is particularly true in Myanmar, where rapid out-migration has been generating rural labor shortages, driving demand to substitute towards mechanized agriculture (Win and Thinzar, 2016). Mechanization can of course have direct effects on productivity and efficiency, improving the quantity and quality of agricultural output. Mechanization can also have multiplicative effects on financing markets, as mechanized farmers become more attractive borrowers for other lending products.

Outside of subsistence farming contexts, the high upfront costs of mechanization might prove prohibitive for smaller farmers and, without adequate access to finance, cause them to go out of business, though this appears to have been less of an issue in Myanmar, where, perhaps surprisingly, farms of less than five acres are reportedly more mechanized in their farming practices than their larger counterparts (Win and Thinzar, 2016).

Mechanization at one stage of the value chain, motivated by any number of factors, could drive parallel increases in the demand for mechanization at other points of the chain. For example, the increased use of combine harvesters in Myanmar's rice sector has meant that paddy may be stored when it is still damp, which results in spoilage, unless millers invest in dryers, which can cost up to USD 200,000 (Proximity Designs, 2016). The implication is that mechanization may act as a catalyst for further mechanization, generating further increases in the demand for credit.

An increasing number of private and public banks in Myanmar are engaged in mechanization financing. For instance, Yoma Bank now offers hire-purchase financing, enabling both farmers and non-farmers to borrow and buy agricultural machinery. The purchasing agreement includes technical assistance as well as training in operating and maintaining the machinery. The Livelihoods and Food Security Fund, in partnership with the Asian Development Bank, Rabobank and the United States Agency for International Development, guarantees the portfolio and provides technical assistance for financial product development to Yoma Bank (Do, 2017). Uptake of this particular scheme has been considerable, and LIFT has estimated that it has led to the purchase of nearly USD 200 million in new agricultural equipment, financing over 5,000 SME agribusinesses to purchase transport vehicles, combine harvesters, and tractors, saving production costs and improving productivity for over 100,000 farmers. In the state banking

sector, the MADB has been providing a 2-step agricultural mechanization program with subsidized interest rates, based on funding from Japan International Cooperation Agency (JICA).

Input sector policy

The Myanmar Government has regulated the registration, production, distribution and use of pesticides since the first Pesticide Law was enacted in 1990. A new Pesticide Law, in effect from January 2016, revised the penalties for violations and defines the responsibilities of end-users, the Pesticide Registration Board (PRB) and PRB members. According to this law, users of pesticides are required to have a certificate for which they need to receive training from the Plant Protection Division (under the Department of Agriculture (DOA)). This requirement is justified on the grounds that improper pesticide use can be harmful to farmers, consumers and the environment.[40] From the perspective of lenders, these certificates may serve as an indicator of farmers' knowledge of modern farming practices, thus rendering these particular farmers more attractive as borrowers than those without certificates. In the longer term, this may create pressure on farmers to adopt pesticide usage in line with the law, to improve their access to credit.

The Fertilizer Law was enacted in 2002, with a new Fertilizer Law subsequently enacted in 2015. The new law includes measures to prevent the misuse of fertilizers and, in particular, to regulate the manufacture, import and export of fertilizer for commercial purposes (Republic of the Union of Myanmar, 2015). However, restrictions on fertilizers may inadvertently result in a shortage of fertilizer, which, in the absence of enough enforcement, could result in the proliferation of illegally imported fertilizers of dubious quality. This could have potentially damaging effects on agricultural productivity. Banks and other sources of finance may see this as adding to the risk of lending to agricultural producers.

For promoting soil health, stepping up enforcement is likely a better approach than pursuing deregulation. The new Myanmar Trademark Law may also help to address the problem of fake fertilizers. In this instance, adhering to the law would entail higher costs for farmers, as they would need to pay more for legal fertilizer. Consequently, farmers looking to obtain these inputs may find themselves in need of additional pre-harvest liquidity and/or contract farming arrangements.

Myanmar has more freshwater per capita than all its neighbors, with nine times that of China, 16 times that of India, five times that of Vietnam and 16 times that of Bangladesh (Netherlands

[40] https://www.mmtimes.com/business/6021-careful-pesticide-use-urged.html

Economic Mission, 2015). However, irrigation coverage only amounts to 23.4 percent of Myanmar's net sown area, as of 2015–2016 (Than, 2018). Recognizing this potential, the legislative framework surrounding water resource management is currently being overhauled. The Myanmar National Water Resources Committee (NWRC) was established in 2013, and the country approved its first National Water Policy in 2014. The NWRC also adopted in 2014 the National Water Framework Directive (NWFD), which is inspired by the EU's Water Framework Directive, particularly in its emphasis on river-basin management (Nesheim et al., 2016). The NWFD is not a law, but it does lay down guiding principles for the development of a national water legislation, with one now in the works.[41]

In general, farmers that practice irrigation are more likely to receive credit from for-profit financial institutions, as they are significantly less exposed to weather risk in the form of droughts and floods. From this perspective, the development of a national water law that contributes to increased irrigation coverage is likely to draw in new sources of lending to the agriculture sector, catering especially to farmers with irrigated plots.

Cooperative development policy

Cooperatives account for much of the credit in Myanmar's agriculture sector, perhaps even more than MFIs (Moyes and Shwedel, 2017). The key legislation pertaining to this sector is the Cooperative Society Law, enacted in 1992, which led to the formulation of the Cooperative Society Rules in 1998. This regulatory framework establishes a four-tier cooperative structure, with the Central Cooperative Society at its apex. However, critically, these four tiers are not financially dependent on their owner-members and do not provide services exclusively to these members. This weakens the sense of member ownership over Myanmar cooperatives, and is likely a barrier to the development of cooperatives in the country as a self-sustainable source of agricultural credit. Indeed, for cooperatives to succeed as providers of finance, it is important that the members have a stake in the money they are saving, borrowing and lending (Ferguson, 2013). Such a cooperative may then serve as direct competition with MFIs, commercial banks and other sources of lending, placing downward pressure on interest rates and, potentially, spurring the development of new and innovative financial products.

Farmer organizations, such as cooperatives, can also facilitate access to credit by acting as channels for lending to groups of smallholder farmers. That is, they can serve as banking agents that enable commercial banks to serve rural areas (Moyes and Shwedel, 2017). This would serve to reduce the cost of supplying credit to the agriculture sector – in particular, the cost of

[41] https://www.mmtimes.com/news/world-bank-myanmar-work-national-water-law.html

establishing rural branches – and potentially result in an expansion in the supply of rural and agricultural credit, over and beyond that of successful cooperatives themselves.

At the same time, cooperatives can facilitate wholesale lending to groups of smallholder farmers, who tend to be less attractive as direct clients of commercial banks. In particular, lenders, and particularly commercial banks, are much more likely to serve a group of farmers that is able to pool its credit requirements and request a single, large loan (that it can collectively monitor and pay back) than lend to individual smallholder farmers – for a few reasons. First, smallholder farmers would most likely require loans of too small a size for commercial banks to profit from lending to them as individuals, since the total transaction cost of servicing such a loan may exceed the profit generated from interest on the loan. Second, farmer cooperatives – or, more generally, economic groupings of farmers – would be less likely to collectively default, and would therefore be more attractive to lenders.

There are multiple reasons why lending to cooperatives carries a lower default risk than lending to individual smallholders. For one, a cooperative of farmers producing different crops may be able to hedge against one another to reduce their collective risk of default on a pooled loan. Another reason is that farmers would likely possess better information on one another than a lender would on any individual farmer, and so membership of a cooperative could be an indicator that a farmer is at least somewhat dependable. Furthermore, if a farmer reneged on their commitment to pay back their portion of a loan then the cooperative could respond by placing social sanctions on that farmer, e.g. by denying them access to credit in the future. This would serve as a credible threat to deter farmers from reneging on their commitments in the first place. For these reasons, economic groupings such as cooperatives can open lending to farmers who may otherwise be too small and risky to lend to. Farmers' groups, by allowing farmers to negotiate as a group, may also provide them with greater bargaining power to secure loans at relatively lower rates of interest. However, in practice, it is unlikely that being a group of smallholders would afford them a significantly stronger negotiating position than if they negotiated for loans individually, as they would likely be denied a loan – at least by commercial banks – if they applied as anything other than a group, for the reasons cited above.

As previously mentioned, the current regulatory framework governing cooperatives in Myanmar needs reform. As part of this reform, MOALI should reassess its role in supporting the formation of cooperatives, doing so without weakening their sense of member ownership. One way is to recognize that the DOA's extension activities can help farmers' groups to emerge organically. For example, a group of farmers that is assembled to receive training in pesticide use may choose to also group together to bulk-buy pesticide at relatively lower prices, essentially acting as a supply cooperative. Similarly, marketing extension activities may lead to the creation of marketing

cooperatives that can secure better output prices. These forms of farmer organization would allow individual farmers to earn higher profits, making lenders likely to assess a relatively lower risk of default. With even more direct implications for finance, farmers that receive training in financial management from the DOA may see the formation of a credit cooperative as a natural extension of their relationship with one another. One way to foster these developments is to promote some form of governance structure among groups of farmers that receive agricultural training, such as by asking them to nominate a leader or representative.

Contract farming

Contract farming is not new to Myanmar. Diverse models of contract farming are practiced to varying extents in different parts of the country. However, a regulatory framework to protect those engaged in contract farming is essentially absent – although there are indications that draft legislation may come soon.[42] (Thant, 2019). For example, the Department of Agriculture has been involved in developing standard operating procedures for contract farming in collaboration with key private sector counterparts, like the Myanmar Rice Federation (Grow Asia, 2018).

> "Contract farming can be defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices."
> Source: Eaton and Shepherd (2001)

There are several ways in which contract farming can help or hinder agricultural financing, and agricultural value chain financing in particular. It is important to be conscious of these mechanisms when devising a contract farming framework that also seeks to address the agricultural lending gap in Myanmar.

In principle, contract farming can enhance the profitability of small farming ventures by providing access to inputs and production services – often on credit – new technology and skills, and access to otherwise inaccessible markets. At the same time, as many contracts specify prices in advance, contract farmers may also benefit from a much lower risk of price shocks (Eaton and Shepherd, 2001). These attributes may improve the attractiveness of contract farmers as borrowers by lowering their likelihood of defaulting, potentially drawing in lenders who may otherwise be hesitant to lend to the sector.

[42] https://www.mmtimes.com/news/contract-farming-help-farmers-deal-challenges.html

A notable way in which contract farming can facilitate agricultural lending is by allowing the contract to serve as collateral for loans by third parties such as commercial banks (Eaton and Shepherd, 2001). However, such arrangements are likely to be difficult to implement in Myanmar, where contract enforcement can be costly and unreliable.[43] This would reduce the willingness of all potential parties to undertake such an arrangement. To some extent, an overarching legislation that dispels any doubts as to the legality of these contracts and spells out an appropriate dispute resolution mechanism would help to reassure parties, but effective enforcement would still be critical.

In many instances, contract farming can exacerbate the risks faced by farmers, with implications for the stability of their profits. For example, there are likely to be production risks when introducing a new crop to an area, with the possibility of yields being lower than expected. At the same time, market risk may erode profits when forecasts regarding the size of and price levels in markets turn out to be inaccurate (Eaton and Shepherd, 2001). Recent evidence also suggests that contract farming arrangements that leave farmers with a much-reduced share of their output and/or profits may be harmful for their productivity (Burchardi et al., 2019).

Whether a policy agenda that seeks to promote contract farming will, overall, attract or deter new sources of agricultural lending is likely to depend on the extent to which the potential risks are likely to be high relative to the potential for higher financial returns.

Commercial Policy

Policies set by the Ministry of Commerce (MOC) can have significant consequences for agricultural finance in Myanmar. These relate primarily to trade and consumer protection. Of further note is the role played by the country's overall export strategy in shaping the evolution of policies affecting agricultural value chain finance. At the same time, successful achievement of the country's export strategy is contingent on tackling the challenges facing agricultural value chain finance in Myanmar.

Easing and promoting exports can have important implications for the development of agricultural value chain finance. In particular, improving export opportunities for Myanmar's agriculture sector, by increasing profitability and reducing risk, could attract new sources of commercial lending into these markets. The improved prospects of catering to agriculture can also prompt lenders to invest in their ability to engage in specialized agricultural lending. On the demand side, improved export opportunities can incentivize agribusinesses to invest in their

[43] Myanmar ranks 188 out of 190 countries for the time and cost it takes to resolve a commercial dispute and the quality of its judicial processes, according to the World Bank's Doing Business 2019.

productive capacity, e.g. by purchasing milling equipment, thereby increasing the demand for agricultural lending.

Myanmar's export strategy

The Myanmar Government maintains a National Export Strategy (NES) as a guiding framework for the development of the country's export industries. The current NES, which runs from 2015 to 2019, prioritizes the following industries: rice; beans, pulses and oilseeds; fisheries; forestry products; textiles and garments; rubber; and tourism. In addition, information and promotion, trade facilitation and logistics, access to finance, and quality management are identified as essential supporting services. The 2020-2025 NES, which is currently being drafted, will include fruits and vegetables as an additional priority agricultural sector.[44] Evidently, agriculture features prominently in the country's export strategy, and financial constraints are recognized as an obstacle to achieving export objectives.

To identify key components of Myanmar's agricultural export strategy, let us refer to the NES for the rice and the beans, pulses and oilseeds sectors. The overall strategic vision for rice is summarized as: "[h]igh-quality and environmentally sustainable growth in rice production and export for rural development and income generation" (Ministry of Commerce, 2015a). On the other hand, the strategic vision for beans, pulses and oilseeds is: "[c]ontribute to the socioeconomic development of Myanmar by being a global provider of environmentally sustainable and value-added products based on modern farming and trading techniques" (Ministry of Commerce, 2015b). In general, the country's NES stresses environmental sustainability, socioeconomic development and increasing value added/income generation.

The NES for rice recognizes that better access to finance is needed to modernize the country's rice farming and enable farmers and traders to compete internationally (Ministry of Commerce, 2015a). In general, limited access to credit may be preventing agricultural value chain actors in Myanmar from responding to global trends in demand, with potentially very damaging implications for their ability to reap profits. In the specific case of the rice sector, historically low investment in milling equipment coupled with declining world demand for low-quality rice, along with other factors, pose a significant threat to the profitability of the sector (World Bank, 2014a). These prospects, in turn, can reinforce common notions held by private banks in Myanmar that serving the agriculture sector is risky and unprofitable (Moyes and Shwedel, 2017).

[44] https://www.mmtimes.com/news/updated-national-export-strategy-add-new-sectors-address-constraints.html

A further issue that may be deterring lenders is significant market access risk, stemming partly from a lack of market diversification, which can increase the vulnerability of agricultural producers to negative demand shocks in the form of a loss of market access. A prominent example is India's quotas on Myanmar beans. Another example is that it is legal for Myanmar traders to export rice to China, but illegal for Chinese traders to import rice from Myanmar, resulting in periodic border closures and arrests of traders (Proximity Designs, 2016). These occurrences are damaging for the attractiveness of Myanmar's bean and rice producers, respectively, as potential borrowers. The NES for pulses, beans and oilseeds identifies insufficient export promotion activities in international markets as a major reason for the high concentration of exports to traditional markets, such as India.

Import and export licenses

A prominent feature of Myanmar's trade policies is the government's extensive use of import and export licenses, including during times of shortage (NESAC, 2016). These are issued by the MOC based on a recommendation/endorsement letter from a suitable government agency/department.

Let us consider export licenses. These have been eliminated for key agricultural exports, like beans and pulses, but not all, like livestock and animal products. Removing licenses has the potential to reduce risks associated with lending to actors within these value chains. In general, a non-exporter that has the option of easily becoming an exporter is better placed to deal with negative shocks to domestic demand, in the event of which he/she can promptly start exporting. These benefits would percolate upstream, so primary producers would also be less affected by these shocks. From the perspective of lenders, this reduces the risk of default.

It is worth noting that exporters may be exposed to greater risk on some dimensions than their non-exporting counterparts, e.g., exchange rate risk. However, the option of accessing multiple markets helps to mitigate these risks.

A further implication of the use of import and export licenses for the growth of Myanmar's agriculture sector is that it may undermine Myanmar's longer-term reputation as a reliable supplier, particularly as there is some measure of unpredictability in when these are imposed or removed. This adds to the risks faced by Myanmar agri-businesses, thereby increasing their likelihood of defaulting on loans. Any potential misallocation or variation in the timely issuing of licenses may also distort competition and hinder productivity, as implied by studies such as Khandelwal et al. (2013), which finds a significant productivity gain from removing misallocated quotas in the case of Chinese textile and clothing exports.

In some cases, license requirements may be easier to justify. For example, there may be environmental or health reasons for regulating imports of pesticides, fertilizers and agrochemicals in general. Nevertheless, these measures may be mistargeted in the absence of effective enforcement and supplementary legal provisions, e.g., to prevent the sale of counterfeit products. This year's passing of the Myanmar Trademark Law may see some of these concerns lessen soon.

Chapter 4

Assessing Agricultural Value Chain Finance Potential in Myanmar

This chapter was written by Mark Middleton (Independent Consultant), Russell Toth (University of Sydney and Myanmar Economic Association), and Alan de Brauw (International Food Policy Research Institute).

Introduction

Chapter 1 discussed why provision of financial services in the agricultural sector poses a unique set of challenges. Among them, seasonality and unpredictability of agricultural yields lead to high levels of variance in production along with correlated risks across insured individuals, export products can be vulnerable to correlated shocks linked to world prices, and diffuse producers impose high monitoring, transportation, and coordination costs. In addition, Chapter 1 introduced the promise of AVCF as an approach: leveraging linkages between multiple actors within a value chain may have the potential to solve many of these challenges. Chapter 2 provided a broader context for the role of agriculture in Myanmar's economy, how its role is changing, and how financial services interact with the agricultural sector. Chapter 3 then follows with a discussion of the policy environment for agriculture and AVCF, which is positive as increased agricultural production is a priority in the country's economic development agenda. In this chapter, we focus on understanding which value chains are the highest potential for AVCF in Myanmar, followed by a more detailed look at the maize value chain and the potential role of expanded finance for smallholders.

The purpose of this chapter is to investigate the opportunities for AVCF to enhance the productivity, capability and livelihoods of farmers in Myanmar and in doing so to enhance Myanmar's international trade competitiveness and economic growth. As argued in Chapter 2, Myanmar is well positioned in terms of its natural resources and geographic location to build its agricultural industries, to increase its GDP, its international trade, employment and improve the livelihoods of its smallholder farmers and their communities.

There are several trends in Myanmar and Southeast Asia in general that are leading to changes in both domestic food and agricultural export demand. These trends include urbanization and concurrent wage growth, changes in the way that people purchase food (from traditional markets to supermarkets), and rapid changes in overall food demand are lengthening value chains both in Myanmar and in Southeast Asia in general (e.g. Allen and de Brauw, 2018; Reardon et al., 2019). Globally, the increased demand has motivated increased attention from the public sector in agricultural production and in turn agricultural investment (Birthal et al., 2019). Investment decisions require placing a greater deal of emphasis on assessing future trends and market potential. In addition, in an era of global markets, local supply and demand has less effect on prices as products more readily flow across borders, thus changing the nature of price risk within those markets.

Value chains in developing countries such as Myanmar have a number of constraints and weaknesses that have to be overcome to permit a better flow of finance and maximize shared value. These challenges include poor contract enforcement, a proliferation of quality assurance

standards, a lack of quality assurance laboratories, abuse of market power, limited loan capital, lack of transparency in pricing of credit, and lack of technical know-how. Some of these challenges can be addressed by the actors within a value chain, some by an agricultural sector, while some may require support and intervention from government policymakers. Chapter 3 discusses how policy may share AVCF opportunities; in this chapter, we combine information from Chapters 2 and 3 to attempt to understand which value chains make the best opportunities for AVCF investments.

In Myanmar, because of weather conditions (monsoon flooding on the delta, or drought in dry zone areas) that directly affect cropping patterns and animal husbandry practices, many farmers are able to produce only one crop during the rainy season, even though they have enough labour and arable land for more than one crop. This subsequently limits opportunities to generate additional income. The ability to obtain credit to smooth cash flow throughout the cropping cycle has enabled some farmers (such as Shwe Pyay Myay Co Ltd) to invest in productivity-enhancing technologies (machinery and irrigation) and subsequently improve their income. Conversely, the current lack of access by many farmers to credit has prevented them from realizing additional income by investing in improved technologies.

Therefore, transformational change is required in order to increase access to finance for the agricultural sector in Myanmar, particularly to stimulate financial inclusion for smallholder farmers. Within the current typical structure in Myanmar, downstream processing actors apparently disproportionately accumulate returns relative to farmers. With a whole chain focus through additional finance, there are two possible changes that could take place. First, it could be that additional finance that flows to farmers helps them invest in increasing production and/or quality; second, it could help reduce transaction costs, allowing more value to flow throughout the chain. Similarly, upgrades in processing capital stock (through additional finance) could allow processors to both provide higher quality output, raising the prices they receive, and demand higher quality product from farmers; conditional on meeting that demand, farmers would also receive higher returns.

Assessment of opportunities for Myanmar's agricultural Value Chains

In Chapter 2, we described that the top agricultural products in Myanmar are rice paddy, pulses, oil seeds (including groundnuts and sesame), livestock, and maize. We next want to explore which of these sectors would be potential priorities for AVCF. To do so, we use a rapid evaluation tool developed to guide the process of prioritizing value chains for potential inclusive AVCF. The evaluation tool was used to guide a qualitative assessment of each value chain along three dimensions: 1) the value chain's potential for widespread impact and poverty alleviation, 2) the

value chain's current state of financial needs, and 3) whether the value chain has characteristics amenable to AVCF. The number of questions contributing to each category varies but were motivated to shed light on where investments in AVCF may be most feasible and have the greatest potential for impact. Each question was discussed and assigned a score on a 1-5 scale with "5" assigned to value chains performing significantly better than others on this dimension and "1" indicating that a value chain lags considerably behind others. Questions within each group were weighted equally, and contribute to a group score, scaled as the percent of possible points for that value chain in that category (maximum 100). These three indices are then averaged in order to construct an aggregate score of each value chain's suitability and potential for inclusive investment in AVCF. The goal of using the tool is to be able to rapidly assess which value chains might be more amenable to AVCF projects or investments.

The value chain finance scorecard works as follows. There are five different domains in which the development potential for a value chain is considered: its growth prospects; its level of organization; price risks within the value chain; the bankability of producers; and the overall development impact of AVCF within the chain. Those five domains are then mapped into three indices: The first index maps whether investments in AVCF would have a development impact. The second measures the current state of value chain finance in Myanmar, considering the specific value chain, and the third measures the potential for finance improvements.

In order to complete the scorecard, information was gathered from desk research, field trips, and interviews with industry participants. Scores were applied ranging from 1 (low) to 5 (high) in response to each question. The scores reflect the quantitative interpretation of the available information, which may be qualitative or quantitative. Therefore, the scores should really be considered as relative to one another, rather than the scores having any absolute meaning. Before describing some of the differences in scores below, we present the results of the value chain assessment tool (Table 4).

Table 4: Agriculture Industry Value Chain Assessment tool

Factors	Value Chain						
	Rice	Pulses	Sesame	Fruit & Vegetable	Livestock	Maize	Ground Nuts
Impact of Value Chain							
Scale of total transactions	5	5	4	2	4	3	3
Growth prospects of Value Chain	3	4	4	3	5	5	3
Participation of disadvantaged populations	5	5	5	5	5	5	5
Increased employment potential	5	4	3	3	5	5	3
Index 1 - Value Chain Impact	**90**	**90**	**80**	**65**	**95**	**90**	**70**
State of Value Chain Finance							
Current state of risk	2	2	2	2	2	2	2
Unmet credit needs among credit worthy	5	5	4	4	4	5	4
Index 2 - Current VC Finance	**70**	**70**	**60**	**60**	**60**	**70**	**60**
Potential for Finance Improvements							
Individual Loan scale	3	4	3	4	4	5	3
Organization of producers	3	3	3	3	3	3	3
Presence of apex buyers	4	4	3	3	3	4	3
Is VC efficient/well-developed	3	3	2	3	2	2	3
Possibility of new contracts	4	4	4	3	4	5	3
Possibility of improved risk allocation through data/credit scoring	5	5	4	3	4	5	4
Scope for credit guarantees	4	4	4	3	3	4	2
Additional financing opportunities	5	5	5	5	5	5	5
Potential for impact on vulnerable groups	4	4	4	4	5	4	4
Index 3 - Potential for Improvement	**78**	**80**	**71**	**69**	**73**	**82**	**67**
Total Score	**79**	**80**	**70**	**65**	**76**	**81**	**66**
Rank	**3**	**2**	**5**	**7**	**4**	**1**	**6**

The analysis suggests that results of the analysis indicate that the value chains with the highest development potential include maize, pulses and rice. Relative scores for livestock are next, and they are followed by sesame and groundnuts. The fruits and vegetables value chain are rated with the lowest score.

Before discussing some of the ways that AVCF could be incorporated into the maize value chain, it is worth discussing the way the scores above were developed. As noted above, each value chain was rated on growth prospects, the level of organization, risk, and then the answers to questions in each of the five categories were assigned to the three categories above.

First, in determining growth prospects, we considered three questions:

1. **Is the value chain (VC) substantial enough to support an attractive level of transaction volumes / total credit exposure for a financial institution?**

   In order to attract a financial institution, it was deemed that the level of scale in terms of Value of Production, exports and employment were the key considerations. Based on the FAO STAT (2019) data, rice and pulses are the largest industries so they received the highest scores, while the next three would be livestock, sesame (as Myanmar is the world's largest producer) and maize, the latter having a particular growth opportunity due to growing demand for animal feed in the region.

2. **Would the average potential loan size to VC actors (value chain client segments) be attractive to a financial institution?**

   The key consideration was the **potential** loan size, in the medium term (1-5 years). Given significant growth in animal protein demand throughout Southeast Asia, the prospects for growth in animal feed have high potential. There are many downstream value chain actors in this industry that are developed and have capacity to grow with increased financial liquidity. The prospects for seasonal fruit and vegetables, animal protein (particularly chicken) and pulses are considered to have moderate potential, more for the domestic market.

3. **Does the VC have stable-to-good growth prospects?**

   As above, the best growth prospects appear to be in the livestock and animal feed sectors. Pulses appear to have good growth prospects due to the increasing demand and population growth throughout India. However, the Indian government intervenes in both its domestic pulse market and in import markets, which affects price and market stability. Finally, Myanmar will continue to maintain its dominance as a global leader in sesame production. The prospects for this value chain lie within the industry's ability to improve its processing and quality to derive higher prices and returns for farmers.

The second set of questions relate to the level of organization of each value chain:

1. **Are the primary producers organized, i.e., are they members of effectively functioning groups or is there a prospect of their becoming well organized?**

   The level of farmer-based organisation is considered to be low across all agricultural sectors and regions. In some areas, small farmer groups exist; however, it is not well-known whether these groups function well to help consolidate output or negotiate with traders.

2. **Are there strong apex buyers with a track record of substantial buying?**

   It is evident, and in field research we met a number of apex buyers across rice, pulses and maize. Furthermore it is understood that multinational companies are seeking to increase their exposure to Myanmar via either direct or indirect investment into the local value chains, adding to the number of apex buyers available for the crops or products upon which they would decide to focus (which are unknown at present).

3. **Is the VC relatively efficient and well developed?**

   Myanmar value chains require a great deal of investment in various aspects to deliver efficiency gains from adoption of on-farm technologies, storage, roads and transportation, processing, legal/contractual regulations, finance and quality assurance. While Myanmar's value chains can improve in terms of efficiency, it should be acknowledged that the country ranks highly in terms of global rice, pulse and sesame production and exports; furthermore, as evidenced by visiting the Myanmar Agro Exchange in Yangon, at least one spot market for vegetables is efficient and developed.

The third set of questions relate to the relative risk in different value chains:

1. **Are price and production volatility low enough that these risks are acceptable?**

   Price fluctuation is common in agriculture and is somewhat more pronounced in agricultural markets like Myanmar. Like most commodities in Myanmar, price volatility is high due to most of the product being harvested in a short period of time, with farmers being forced to deliver and sell their product when prices are at their lowest. With this in mind the current level of risk is considered moderately high across all industries until improvements in storage, marketing, data dissemination, and transport and logistics are improved (amongst many other variables) (World Bank, 2014b).

2. **Are there existing or potential mechanisms for contract, off-take and/or other forms of pricing agreements?**

Our research focused on the key demand drivers for agricultural products in Myanmar, which are domestic demand and export opportunities to China, India and Southeast Asia. Recent data suggests strong growth in demand for animal protein and animal feed. Given the favorable geography for Myanmar farmers to deliver animal feed into China, the maize industry would seem to have the highest level of potential for off-take agreements. Rice, pulses, sesame and livestock value chains also have moderately high potential for off take agreements given strong demand and potential improvements in processing.

3. **Is there a reallocation of risk that could be beneficial to everyone (financial sector, producer, buyer)?**

   Improvements and adoption of contract farming would provide a significant reallocation of risk. The presence of global companies seeking supply surety will lead to increased opportunities for contract farming and processing for key commodities such as rice, pulses, sesame and maize. For storable commodities, improvements in on-farm storage of commodities reduces price volatility, which reduces one source of risk for producers and therefore the risk that can be taken on by lenders.

The fourth section of the assessment tool focuses on understanding whether farmers or other value chain participants are bankable or not:

1. **Do VC actors, who are potential customers of a financial institution, own collateral that can be readily and legally pledged to secure loans?**

   The value chain actors interviewed were reticent to elaborate on their capacity to provide collateral, other than Form 7 certificates. In theory actors can provide current assets (receivables, inventory, work-in-progress, cash) and non-current assets (land and buildings) as collateral for self-liquidating trade finance products or term loans, respectively. It is known that many downstream actors do provide their financial institution with collateral. Established industries such as rice, pulses and maize are known to provide collateral to banks for their loans.

2. **Can the creditworthiness of VC actors, e.g., primary producers, be enhanced by use of alternative data (e.g., payment/transactions data, other behavioral data)?**

   Sound credit scoring is a key factor in enhancing the viability of banks and has the potential to reduce the interest cost to farmers if they can be scored for risk in an appropriate and measured manner. According to Bjorkegren and Grissen (forthcoming), credit scoring based on communication patterns, data on social media activities and detailed mobile phone usage has enabled a significant growth in micro loans across developing countries.

3. **Is there scope for the use of credit guarantees or partial credit guarantees to facilitate lending to primary producers?**

   There is scope for credit guarantees to facilitate lending to primary producers, particularly in those industries that have scale and profitable off-takers (rice, pulses, sesame and maize). Farmers, or farmer groups, with supply contracts with quality value chain aggregators have mitigated to an extent their price risk, enabling them to 'know' what their profit may be. Given this enhanced level of risk reduction, financial institutions would be well placed to increase lending to smallholder farmers, particularly if the loans have some form of credit guarantee. Financial institutions in developed countries have precedence of lending against insurance policies such as "debtor insurance," enabling farmers to increase their production to fulfill contracts that are forward sold and assured.

4. **Are there additional financing opportunities in the VC, e.g., working capital and equipment loans, factoring, cash management, and other "cross-selling" opportunities?**

   It is clearly evident, through research, field trips and interviews with value chain actors, that there is a general need for additional finance in agricultural value chains. Financial institutions would be well placed to consider increasing lending to all value chain actors, particularly in the provision of short-term working capital, self-liquidating trade finance, equipment finance, through to the provision of savings and insurance products.

Development Impact

1. **Does the VC contain significant numbers of low-income, women, ethnic minorities or other disadvantaged primary producers or VC actors that lack access to affordable financial services?**

   There is a lack of information on which value chains would include the largest proportion of disadvantaged farmers. However, given the large proportion of Myanmar residents who live in rural areas and overall poverty levels, we assume that any value chain would be about equivalent in terms of the share of participants who fit one of the above categories.

2. **Would the availability of affordable VC-related financial products significantly benefit low-income, women, ethnic minorities or other disadvantaged primary producers or other VC actors?**

   It appears that all selected value chains include a considerable number of disadvantaged persons. Therefore, the provision of any value chain finance products, that enhance efficiency, productivity and profitability, would be significantly beneficial to them so long as they are targeted. In the livestock sector, for example, over 85 percent of chickens and ducks are grown

in backyards across the country with the whole family being responsible for tending to the birds (Henning et al., 2007).

3. **Would an intervention in the value chain create the potential for positive employment and/or income impacts for low-income, women, ethnic minorities or other disadvantaged people?**

   If an intervention enables smallholders to earn more, their purchasing power would increase, Therefore, such interventions would lead to positive employment responses, inclusive of those with low-incomes, women, ethnic minorities and other disadvantaged groups. Due to the scale of the rice industry, interventions into the rice value chain would have the largest impact on farm incomes of all value chains discussed. However, given the strong growth potential for animal protein and feed, we believe that the any intervention in livestock and maize would also be a promising way to reach these groups.

Example: The Potential for AVCF in the Maize Value Chain in Myanmar

It is worth considering how AVCF could be expanded in specific value chains, such as the maize value chain. Maize is frequently cropped in rotation with rice production. The crop is ideal in terms of rotation fit in part because we estimate that it has a positive gross margin in Myanmar, and so it fits the field rotation well. Maize inputs are largely imported from China (hybrid seed, fertilizer) and distributed to dealers and then sub-dealers who sell the inputs to farmers either for cash or on credit. Smallholders who grow maize largely either use savings, money lenders, or microfinance institutions to finance production; although Yoma Bank has begun an AVCF program as discussed in Chapter 1, it is still relatively small.

Maize is largely a cash crop in Myanmar as it is used as animal feed. About 53 percent of maize from Myanmar is exported, and almost all of it (98 percent) goes to China. Domestically, the majority of the remainder of maize is used as animal feed, which is milled in Yangon, Mandalay, and Shan State. Feed production capacity is around 100,000 MT, so the amount of maize that can be processed in a given year is limited. Very little is stored (~3 percent), which limits the ability of upstream buyers to take advantage of arbitrage opportunities and balance seasonality in crop availability.

A particular opportunity for maize arbitrage exists between harvest, which takes place around September and January. The price typically doubles around then relative to the height of harvest, as maize becomes scarce relative to the harvest period. However, smallholders likely must pay back any lending and/or need money for consumption; therefore, a short-term loan secured by their harvest could substantially increase their crop revenue while leading to less price volatility

in the long run if enough farmers could take advantage of the product. In fact, these dynamics have been shown in a randomized control trial in Kenya (Burke et al., 2019).

An alternative way to add finance to the maize value chain in Myanmar would be through feedstock producers; several of the producers operating in Myanmar (and purchasing maize) are large, foreign-owned companies, which would be considered a satisfactory credit risk by most financial institutions.[45] So long as they have supply agreements with retail companies or large livestock operations, financial institutions should be willing to provide finance for that trade. If so, such firms would have capacity to buy maize on contract with forward purchase agreements, allowing farmers to reduce their price risk by entering such contracts. The challenge in doing so is that establishing contracts with a large number of smallholders is also costly, in terms of transaction costs; as such, it might be worth finding alternative methods of developing such contracts (e.g. with collectives of farmers) to reduce such costs.

Less Internal Demand for Finance? Pulses Value Chain

Myanmar produces over 20 different types of pulses. With a total value of USD$1.4 billion in 2017, they are one of Myanmar's most valued agricultural crops. Exporters have successfully developed markets in India (68 percent), China (20 percent) and Singapore (5 percent). However, the markets in other areas of the globe are far more profitable, including the United Kingdom, United States and Europe, because they are focused on quality assurance, nutrition and value-added products. In Myanmar, value chains appear to have focused steadfastly on the scale of production, with only a minimal consideration to quality. As a result, profitability is modest, and has led to profitability at only one end of the chain, where exporters or processors who take a margin (albeit moderate) over a large quantity of produce make considerable profits, leaving the farmers at the other end with low returns.

Yet in interviews with processors, it seems unclear that there would be demand for AVCF, as actors within the chain would need to demand credit. Value chain actors interviewed for this report suggested that the way they would like to see the chain improve would be to continue to be able to purchase products for low prices, but to upgrade the road infrastructure and to implement policies that would allow them to reduce transaction costs and increase profitability. They did not necessarily believe that credit could help grow their profits.

[45] Such firms include CP Group (Thailand), Japfa (Indonesia), Sunjin (Korea), New Hope (China), and De Haus (Netherlands).

Chapter 5

Policy Recommendations

This chapter was written by Siddhartha Basu (International Growth Centre, Myanmar), Khin Pwint Oo (Myanmar Economic Association), Lwin Lwin Aung (Independent consultant), and Russell Toth (University of Sydney and Myanmar Economic Association).

Building on the earlier chapters on this report, we provide several policy recommendations to expand access to agricultural value chain finance, across financial, agricultural, and commercial, trade and market information policy. Our primary audience is government policymakers, especially in MOPF, MOALI and MOC. We particularly draw on Chapter 1 of this report, which provides an overview of "good practice" in agricultural value chain finance, and Chapter 3, which provides an overview of policymaking toward agricultural value chain finance in Myanmar.

In this chapter we distinguish between "quick wins" – policies that in principle can be modified directly through unilateral action by a single policy unit without major changes in laws – and longer-term policy changes that would require more substantial regulatory and/or legal reform. We roughly order recommendations in terms of their specific relevance to AVCF. Where possible we highlight concurrence with previous policy analyses on these issues.

Quick wins

Financial Policy

- Encourage commercial banks and MFIs to engage in value chain financing (VCF), through deepening understanding of VCF concepts. Regulators should continue to build appreciation that VCF is a risk reduction strategy, contributing to a financial institution's risk management capacities (Moyes and Shwedel, 2017).

- Explicitly consider the implications of agricultural financing policies for women (World Bank, 2017) and other underserved groups.

- While promoting the emerging insurance industry for important commercial applications such as trade and large-scale agriculture, be cautious on microinsurance. There is abundant evidence that microinsurance schemes addressed to individual farmers, including index insurance designs, are not viable in the free market due to demand and distribution challenges that generate very low uptake at full market prices (Carter et al., 2017). To reach scale, they hence generally require significant subsidization. Hence, they may be best framed as social protection schemes. This may be attractive in that a blended social protection scheme combining insurance with other instruments can provide a quasi-private mechanism to address requirement of carefully considered fiscal strategies to fund them that go beyond financial or agricultural sector policymaking.
- Individually targeted microcredit suffers from demand and distributional challenges. Consider promoting alternative models such as wholesale microinsurance leveraging value chain and credit relationships (Moore et al, 2019).

- Digital credit has tremendous potential to particularly benefit underserved groups and empower women (Holloway et al, 2017), however emerging digital finance programs should be closely monitored (but not necessarily restricted) by FRD, to ensure a balance between the expansion of inclusive finance and consumer protection. Experience in other markets shows that it may take time for a market to mature.[46] Particular attention should be paid to digital credit for agriculture, where seasonal loans require longer repayment horizons and not enough is yet known about the tradeoffs between efficiency through decentralization of transactions, and the need for a relationship between the consumer and a financial services provider.

- Promote financing of domestic processing to generate higher value added for agribusinesses.

- Continue to move line ministries away from independently delivering financing programs, and instead utilize financial institutions (whether state-owned or private) as primary vehicles for credit schemes.

- Move away from distortionary interest rate subsidies in lending areas such as agricultural mechanization and smallholder paddy credit where there is private sector capacity available to meet the needs of borrowers. Instead focus interventions on addressing credit market failures, such as in temporarily encouraging credit expansion in underserved sectors (Moyes and Shwedel, 2017).

- Continue to heavily encourage capacity building in lending institutions in areas such as risk assessment and underwriting, and the capacity of regulators to assess these capacities, so that artificial limits on interest rates can continue to be gradually removed. Donor funds can likely be leveraged for such capacity building, along with strategic partnerships with foreign lending institutions. Constraints on risk-based pricing particularly dampen the inclusivity of financing, by preventing access of smaller and rural enterprises to financing at commercial bank lending rates.

[46] For example, see the examples at https://www.microsave.net/2019/09/19/is-there-room-for-optimism-in-the-kenyan-digital-credit-sector/ and https://www.microsave.net/2018/09/08/digital-consumer-credit-nano-loans-macro-problems/

Agricultural Policy

- Encourage cooperative formation through agricultural extension – for instance, by assisting beneficiaries to nominate a leader and develop a robust governance structure for themselves – as such farmer organizations can be an important channel for wholesale financing. This can be supplemented by capacity building on how to build and run a successful cooperative.

- Relax land use restrictions to provide farmers with greater flexibility in responding to markets (e.g., a sudden quota) as well as supply-side conditions (e.g., a drought).

Commercial, Trade, and Market Information Policy

- Remove export licenses on agricultural commodities; they are a non-tariff barrier that stifles Myanmar's export potential. For agricultural producers in general, this would lead to greater flexibility in responding to markets and supply-side conditions.

- Explore mechanisms that minimize the bureaucracy needed to ensure the quality of Myanmar's exports. It is important to safeguard the country's reputation as a supplier, but also to be cognizant of the government's limited capacity to play this role. One possibility would be to establish a platform allowing for international buyers to provide feedback on orders from Myanmar, while simultaneously promoting understanding of good agricultural practices to serve target export markets.

- Diversify export destinations to minimize market risk from trade shocks. In the short term, various export promotion activities, such as participation in trade fairs, can support the establishment of new export markets.

- Where possible, remove import licenses that relate to the agriculture sector. That is, not in the case of products that are sensitive and/or with potential negative health or environmental implications of de-licensing.

Longer term developments

Financial Policy

- Create a clearly articulated policy to promote special purpose financial institutions (SPFIs) for agriculture. The financial sector would benefit from financial institutions specialized

in agriculture, ranging from banking agents to warehouse receipt financing companies. SPFIs, with more focused and skilled staff, are often better equipped than banks to manage the risk of agricultural lending (Moyes and Schwedel, 2017).

- Continue to allow MFIs to expand up-market in loan amounts and with a greater product mix, with appropriate prudential requirements, controls, and capital requirements in place. Consider loosening requirements on deposit taking. MFIs can be a particularly important vehicle for inclusive financing, through their focus on smaller loan amounts, outreach to hard-to-reach areas, and focus on women.

- The requirement for additional capital for setting up branches in rural areas should be eliminated. Banks' ability to extend their branch network into rural areas is hindered by the paid-in capital requirements for each new branch (Moyes and Shwedel, 2017).

- Develop a licensing process that encourages agency banking. The use of banking agents represents another opportunity to extend the reach of banks into the nation's countryside. It is worth considering MFIs and financial cooperatives as potential banking agents (Moyes and Schwedel, 2017).

- It is widely accepted both inside and outside the government that a reform of the national agricultural development bank is needed (e.g. World Bank, 2017; Ki, 2019). Phase 1 of the reform review process has been completed, though concrete next steps are not yet public. A reformed and well-governed agricultural development bank, or agricultural finance unit within a national development bank, could gradually shift away from the subsidized smallholder and agricultural mechanization financing that can be served by private sector MFIs and banks in the medium- to long-term, and into high social return value chain financing, based on international standard lending risk assessment. A team of local experts could partner with regional and international experts to pursue high value, but underserved borrowers in agricultural value chains. The unit could demonstrate proof-of-concept and promote commercially viable, innovative agricultural financing models, with an inclusive targeting strategy.

- Complete the secured transactions reform that is underway, to allow underserved borrower groups to utilize existing non-land capital assets to secure lower lending interest rates, and to provide increased security for lenders.

- Develop the warehouse financing function through a specific law, or specialized regulations that define the functioning of the system through clear roles and

responsibilities. While warehouse financing exists in Myanmar, it is a thin market providing relatively costly services. Further, the lack of a warehouse receipts law and accompanying regulatory provisions for warehouse receipts as a financial instrument hinders the development of inventory-based lending in agriculture (Moyes and Shwedel, 2017).

Agricultural Policy

- Before deciding whether to introduce a dedicated contract farming law, conduct a comprehensive review of all existing laws and policies in Myanmar that are relevant to contract farming, bearing in mind that most countries do not have a single contract farming law. Consult global best practices in devising laws.

- Reassess the role of the state in supporting cooperatives. In particular, reform the legislative framework to grant much greater independence to the sector and foster a stronger sense of member ownership. Moving away from seeing cooperatives as a direct channel for government-facilitated financing, and rather as a well-governed and commercially-viable conduit for private financing is needed.

- Reform laws surrounding land ownership to promote investment. Investors may perceive the risk of state confiscation of land as a reason to restrict their investments. This risk would be substantially lower from the perspective of investors if they were permitted to own the land they are investing in.

- Tackle the proliferation of illegal fertiliser by stepping up enforcement of relevant policies.

- Facilitate irrigation through the enactment of a national water law that is consistent with the National Water Framework Directive.

Commercial, Trade, and Market Information Policy

- Recognising that specific sectors are being targeted by the government for export promotion, focus on quality upgrading to gain access to high-value markets in the medium to long term.

- Improve trade diplomacy with neighbouring countries to bring down the risk of trade shocks.

- Invest in capacity, potentially with the help of international organisations, to systematically collect and publicly release market information and production statistics. In the agricultural sector this most urgently includes export and import volumes, and domestic and international price data. Detailed disaggregated data on crop, livestock and aquaculture production locations, volumes and production costs wold also tremendously benefit financial institutions (Moyes and Shwedel, 2017). Greater transparency in financial system reporting would also be beneficial.

- Correspondingly, again potentially with the help of international organisations, continue to invest in domestic policy research institutions, including those embedded in the government such as the Myanmar Development Institute, to assist in evidence-based policymaking by providing timely and rigorous analysis, including in agriculture.

- Conduct a comprehensive study of deficiencies in the legal system and contract enforcement in Myanmar, and develop a strategy towards addressing these.

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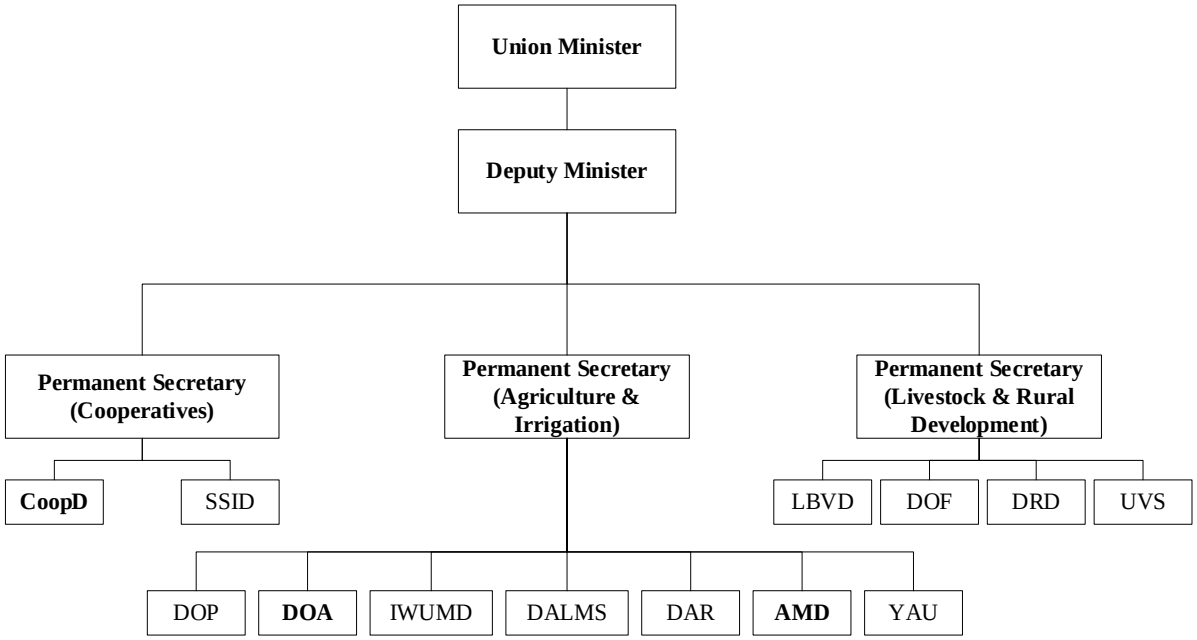
Appendix A: Overview of current government units affecting agricultural (value chain) finance

In this section, we highlight main government ministries, units, and institutions that are responsible for policies for Agricultural Value Chain Financing (AVCF). They are Department of Agriculture, Agricultural Mechanization Department and Cooperative Department under the Ministry of Agriculture, Livestock and Irrigation; Financial Regulatory Department, Myanma Agriculture Development Bank, and Myanma Economic Bank under the Ministry of Planning and Finance; Ministry of Commerce, Central Bank of Myanmar, National Economic Coordination Committee, and Myanmar Development Institute.

1. Ministry of Agriculture, Livestock and Irrigation

Figure 1: Organization structure of Ministry of Agriculture, Livestock and Irrigation



CoopD - Cooperative Department

SSID - Small Scale Industries Department

DOP - Department of Planning

DOA - Department of Agriculture

IWUMD - Irrigation & Water Utilizations Management Department

DALMS - Department of Agricultural Land Management & Statistics
DAR - Department of Agricultural Research
AMD - Agricultural Mechanization Department
YAU - Yezin Agricultural University
LBVD - Livestock Breeding and Veterinary Department
DOF - Department of Fisheries
DRD - Department of Rural Development
UVS - University of Veterinary Science

Source: Myanmar Agriculture Sector in Brief 2018

According to the approval of Cabinet Meeting No.5 /2016, held on 9 June 2016, the three former ministries, i.e., Ministry of Agriculture and Irrigation (MOALI), Ministry of Cooperatives (MoCoop), Ministry of Livestock, Fishery and Rural Development (MLFRD), were merged into one ministry namely "Ministry of Agriculture, Livestock and Irrigation (MoALI)". The organization structure of MoALI is presented in Figure 1.

Agricultural extension division under the DoA is a key division for farmers to be able to access to micro finance. Agricultural extension agents are important to disseminate farm management and basic accounting such as bookkeeping not only to smallholder farmers but also to processors or middlemen for promoting the AVCF.

Agricultural Mechanization Department is also crucial for the farmers due to shortage of laborers in rural area and high labour cost. Labour issue is huge in Myanmar because most young people nowadays migrate to other countries for working. So, the role of AMD will be important for the farmers to be productive and to get maximum returns from their agricultural farms.

Former Ministry of Cooperatives is changed into Cooperative Department. One of the objectives of the Cooperative Department is "To seek technical assistance and mobilize the financial resources from local and international agencies in support of crops, livestock, fisheries and rural development in the agriculture sector." [47] Recently the government developed and approved a national policy for cooperatives. One of the main tasks enumerated in the policy is "To establish the Microfinance Bank for the requirement of capital of the microfinance firm by receiving Aids, Grants and Concessional loans from international organizations". [48] Hence, the department is important for the farmers to access to loans from Agricultural cooperatives.

[47] https://www.moali.gov.mm/en/content/cooperative-department
[48] GoM. (2016). *Formulation and Operationalization of National Action Plan for Poverty Alleviation and Rural Development through Agriculture (NAPA)*. Working Paper – 7: Rural Cooperative.

2. Ministry of Planning and Finance

Financial Regulatory Department, Myanma Agriculture Development Bank, and Myanma Economic Bank under the Ministry of Planning and Finance (MoPF) are key departments for the AVCF. The organization structure of the MoPF is presented in Figure 2.

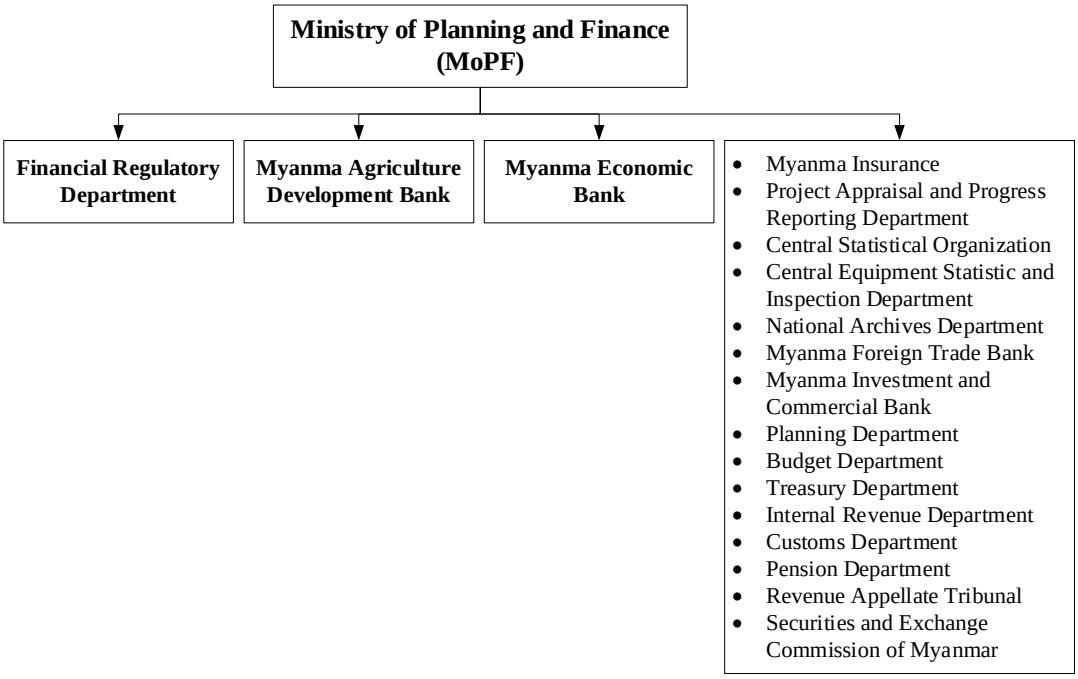
a. Financial Regulatory Department

"To be systematic and precise in supervising Microfinance Business, Myanma Small Loans Enterprise was transformed into Myanma Microfinance Supervisory Enterprise on 10 October 2011 in accordance with the sanction of the Union Government. It had been under the purview of the Ministry. In accordance with the decision made by the Meeting No. (16/2014) of the Union Government Office held on 14 August 2014, the Ministry of Finance issued the Directive No. (1560/2014) on 1 September 2014, to be transformed Myanma Microfinance Supervisory Enterprise into 'Financial Regulatory Department' with effect from 1 September 2014. The Financial Regulatory Department is composed of six divisions in head office and 15 regional branch offices, respectively"[49].

The Financial Regulatory Department (FRD) mainly monitors all MFIs, and the FRD acts as an external audit and the FRD audits headquarters of MFIs and branch offices of MFIs. The FRD has full authority to supervise and guide all MFIs in Myanmar. MFIs have to report their progress monthly to the FRD. If an MFI wants to launch a new loan project as a pilot, for example, for farmers for agricultural financing, the MFI must submit a detailed procedure of the project and its location to the FRD. In addition, MFIs must follow Directives issued by the FRD from time to time. The current interest rate cap in Myanmar for MFIs is 28% per year. The organization structure of FRD is presented in Figure 3.

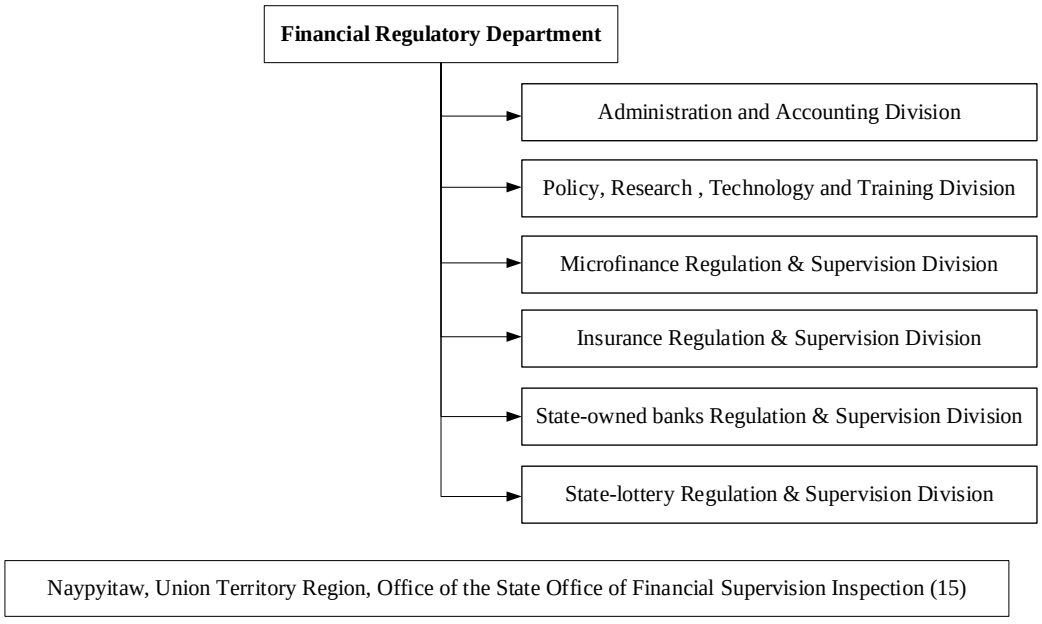
[49] www.frd.gov.mm

Figure 2: Organization Structure of Ministry of Planning and Finance



Source: www.mopf.gov.mm

Figure 3: Organization structure of Financial Regulatory Department



Source: www.frd.gov.mm

b. Myanma Agriculture Development Bank

"MADB was established in June 1953 by the Government of Myanmar to support the development of agriculture, livestock, and rural enterprises in Myanmar. MADB is currently the largest financial institution serving the rural areas and financing agriculture activities. Since its creation, MADB has played an important economic and social role by providing loans to a large segment of low-income households engaged in agricultural activities. Despite the high volume of loans disbursed by MADB every year, MADB's loan portfolio is heavily concentrated on a single type of client (farmers) and one commodity (rice). MADB finances only up to 10 acres per farmer. MADB does not finance large farmers engaged in commercial agriculture or other agribusiness firms. Furthermore, MADB does not serve traders, exporters, transport firms, warehouses, equipment sellers, and other type of firms along the agricultural value chains.

MADB finances the production of a limited number of crops and commodities nationwide, including paddy, groundnut, sesame, beans, cotton, and corn. In fact, 88 percent of MADB's loan portfolio is concentrated in paddy farmers. MADB does not finance the production of fruits and vegetables with a higher added value. MADB does not finance livestock, fish, the production of processed food or beverages, seeds, fertilizers, or any other high value-added products. Currently, the annual interest rate for loans is 8 percent, which is a subsidized rate. Farmers are required to join a group 5 to 10 farmers to collectively guarantee each individual loan. Even though MADB is established as a development bank, it is not licensed as a full-fledged bank".[50]

"The Myanmar Agricultural Development Bank (MADB) will start disbursing loans on an individual basis, moving away from the current group-based lending system"[51]. The organization structure of MADB is presented in Figure 4.

The Board of Directors of MADB, which is responsible for laying down the bank's operational rules, is comprised of the following members:

1.	Deputy Minister Ministry of Planning and Finance	Chairman
2.	Director General Livestock Breeding and Veterinary Department Ministry of Agriculture, Livestock and Irrigation	Member
3.	Director General	Member

[50] The World Bank. (2014). *Myanmar Agricultural Development Bank: Initial Assessment and Restructuring Options*

[51] www.thaibizmyanmar.com

	Department of Agriculture Land Management and Statistics Ministry of Agriculture, Livestock and Irrigation	
4.	Director General Department of Agriculture Ministry of Agriculture, Livestock and Irrigation	Member
5.	Director General Department of Trade Ministry of Commerce	Member
6.	Managing Director Myanma Economic Bank Ministry of Planning and Finance	Member
7.	Director General Budget Department Ministry of Planning and Finance	Member
8.	Director General Central Bank of Myanmar	Member
9.	Managing Director Myanma Agricultural Development Bank Ministry of Planning and Finance	Secretary

Source: www.mopf.gov.mm

c. Myanma Economic Bank

"Myanma Economic Bank (MEB), which was established on 2 April 1976, was originated from the State Commercial Bank (SCB) founded in 1954. In 1988, Myanmar has pursued market-oriented economy and accordingly, the Central Bank of Myanmar (CBM) Law and Financial Institutions of Myanmar (FIM) Law were promulgated in 1990 in order to restructure the financial sector to be in line with the market economy. The FIM Law recognized MEB as an existing state-owned commercial bank. As FIM Law grants a wider coverage of banking services to all banks in the country, MEB now operates both domestic and foreign banking services. MEB mainly conducts commercial banking services in Myanmar through its network consisted of 315 bank branches, 14 State and regional Banking Offices and 6 **Head Office Departments**. MEB's management, together with the support from its 3 policy development entities – **the Board of Directors, the Credit Committee and the Executive Committee**– oversees MEB's daily operations. The policy of the MEB is as follows:

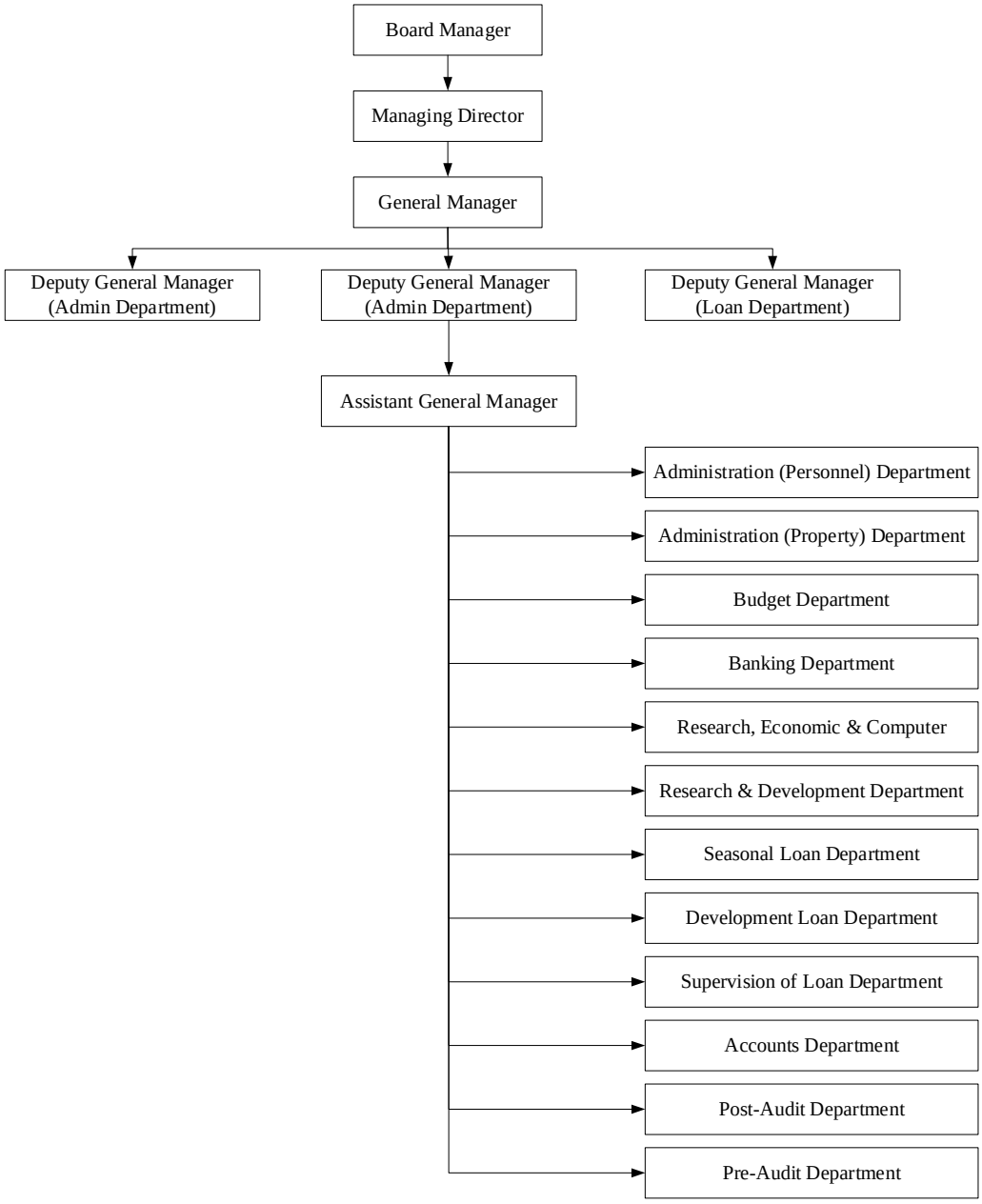
- To sustain public trust on MEB

- To harmonize services like State Fund Accounts services, commercial banking and development policy loan services.
- To upgrade banking services with modern technology in accordance with international banking standard
- To enhance financial services among public."[52]

The organization structure of the MEB is presented in Figure 5.

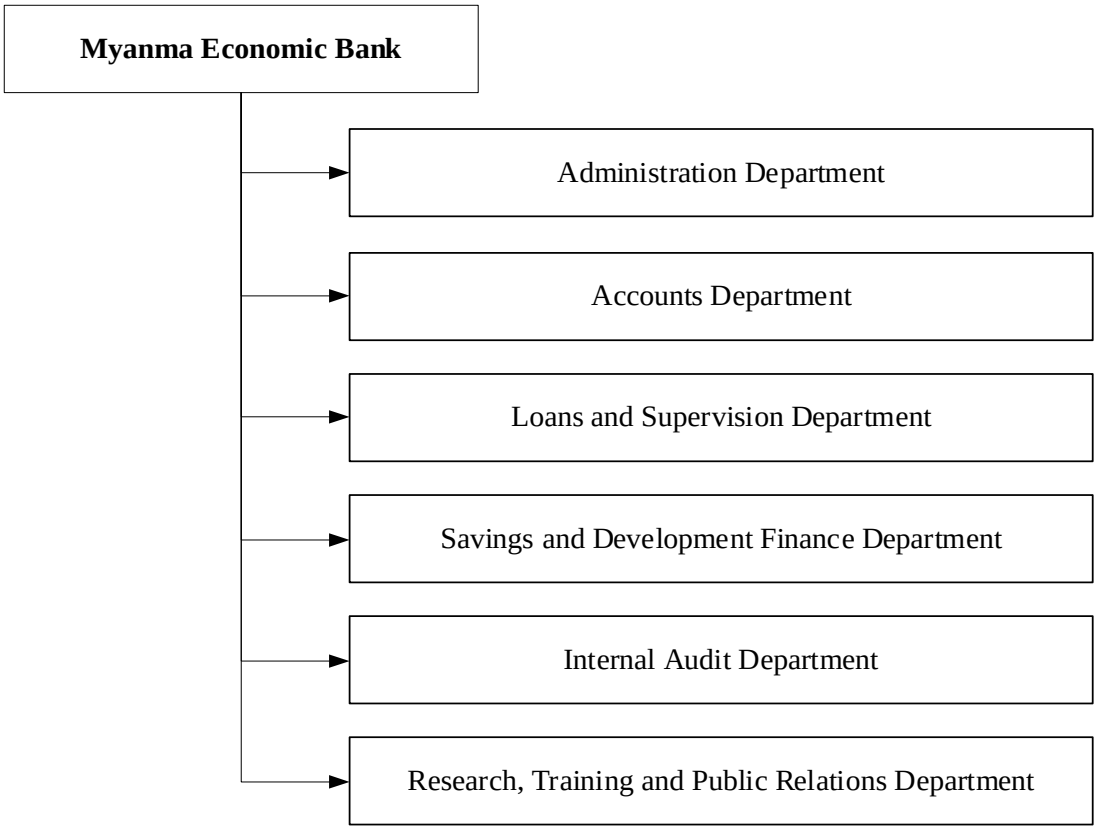
[52] www.meb.gov.mm

Figure 4: Organization structure of Myanma Agricultural Development Bank



Source: www.mopf.gov.mm

Figure 5: Organization Structure of Myanma Economic Bank



Source: www.meb.gov.mm

3. Ministry of Commerce

"According to the agreement at the meeting of union government number (2/2015) held on 15 January 2015, Ministry of Commerce (MoC) has been restructured as follows:

- Minister Office
- Department of Trade
- Department of Consumer Affair
- Myanmar Trade Promotion Organization

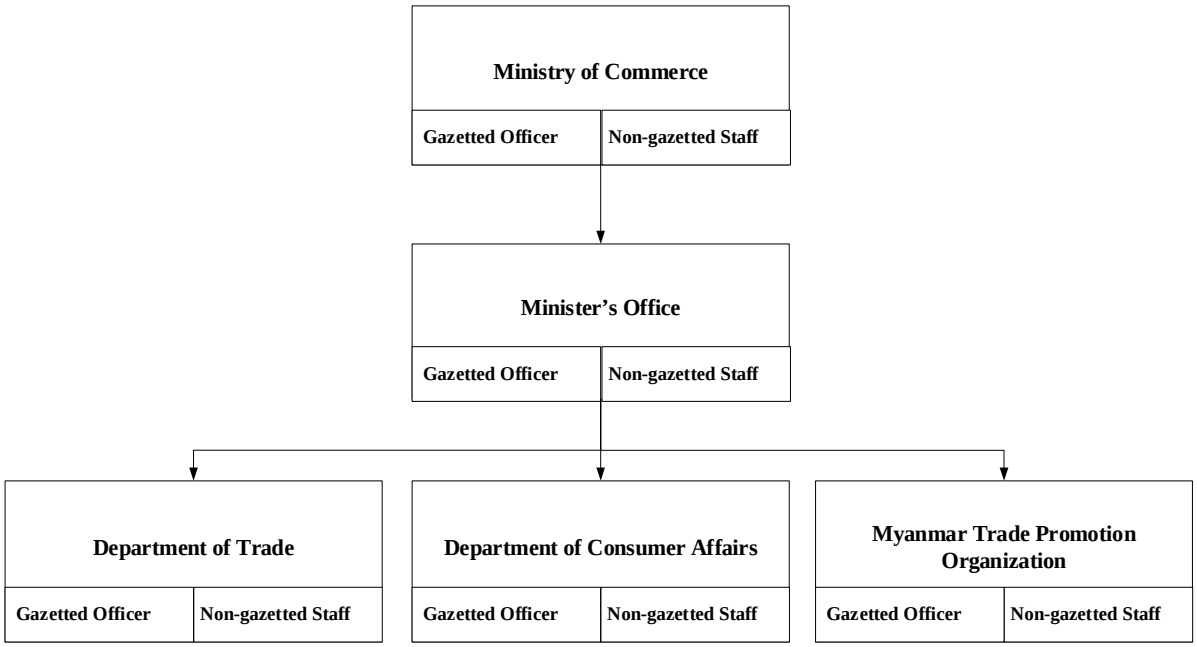
Five trade policy objectives of ministry of commerce are:

1. To formulate and implement the trade policies systematically in accordance with market economic system.
2. To implement export promotion and enhance trade by means of advanced ICT.
3. To expand trade through regional and international cooperation.

4. To improve trade environment.
5. To produce/maintain enough amount of essential and important goods for domestic consumption and manufacturing industries and stability of prices"[53]

Department of Trade handles trade policy, trade facilitation, and export and import supervision. Trade policy laid down by the MoC is important for market risks, returns and costs of agriculture. The organization structure of the MoC is presented in Figure 6.

Figure 6: Organization Structure of Ministry of Commerce



Source: Ministry of Commerce

4. Central Bank of Myanmar

"To develop the financial system which is in line with the market oriented by the Government, and to promote the efficiency of financial activities, the Central Bank of Myanmar Law was enacted on 2 July 1990. According with the new government, was formed on March 30, 2011, Central Bank of Myanmar have to become independently to laid down the policies. Central Bank of Myanmar needs to enact monetary policy independently to control the price stability in domestic market and to preserve the internal and external value of the Myanmar currency the

[53] www.commerce.gov.mm

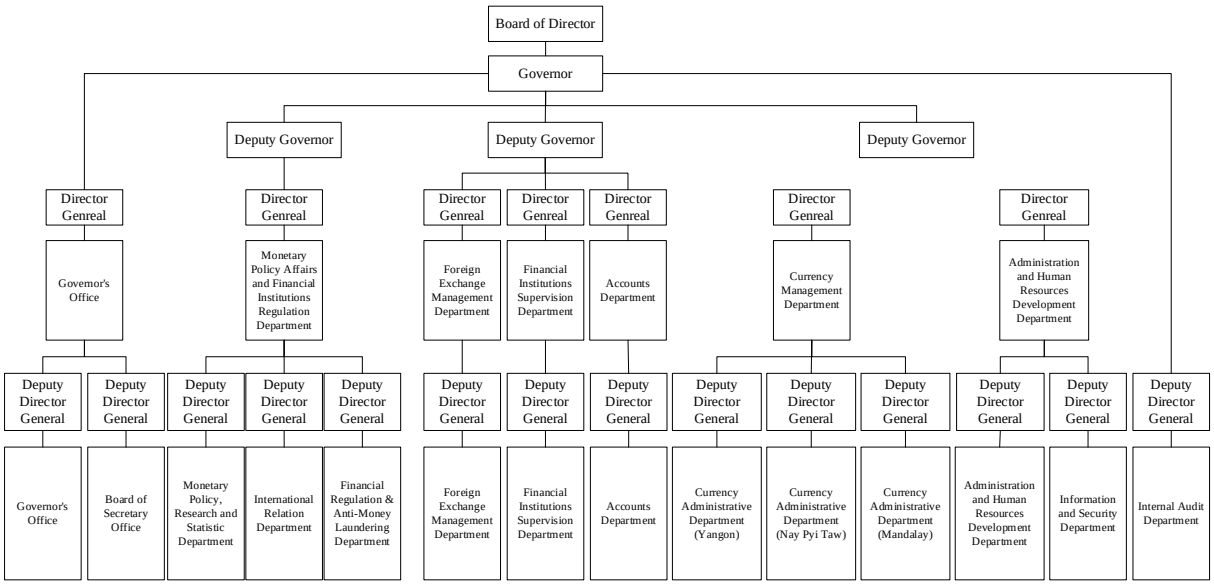
kyat. According to the new law of Central Bank (Draft), Central Bank of Myanmar will set up with paid up capital of 300 Billion kyat and of which 100 billion kyat will fully paid up by state.
The aim of the Central Bank is to control the price stabilities in domestic market and to preserve the internal and external value of the Myanmar Currency, the kyat. The main responsibilities of the Central Bank of Myanmar are;

a) to act as to role issuer of domestic currency and as a banker to the Government;
b) to act as an adviser to the Government in respect of economic matters;
c) to inspect and supervise the financial institutions;
d) to act as a banker for the financial institutions;
e) to manage the international reserves of the State and to perform the transactions resulting from the participation of the State in intergovernmental organization and to undertake all the responsibilities in the name of the Government in dealing with the aforesaid organizations on behalf of the Government.

The Central Bank of Myanmar has formulated and implemented the monetary policy which is in harmony with economic and production growth rates. At present, the Central Bank of Myanmar mainly uses such monetary policy instruments as reserves requirements, interest rate policy and limited open-market operation with a view to achieve financial sector stability which is consistent with transition market-oriented economy"[54]. The organization chart of the Central Bank of Myanmar is presented in Figure 7.

[54] www.cbm.gov.mm

Figure 7: Organization chart of the Central Bank of Myanmar



Source: www.cbm.gov.mm

5. The National Economic Coordination Committee – NECC

The National Economic Coordination Committee (NECC) was established on June 2, 2016 with the aims to formulate and implement a robust and stable national economic policy, and to enhance cross-sectoral coordination and policy coherence based on the needs for well-coordinated reforms in trade, fiscal, financial, investment, industrial and agricultural sectors. For effective coordination and implementation of national economic policies and reforms, the NECC had been reorganized on July 3, 2018 under the chairpersonship of H.E Daw Aung San Suu Kyi, State Counsellor of the Republic of the Union of Myanmar. As of July 3, 2018, the committee consists of the following members:

1. Daw Aung San Suu Kyi, Chairperson (State Counsellor)
2. U Soe Win, Vice Chairperson (1), Union Minister, Ministry of Planning and Finance
3. U Than Myint, Vice Chairperson (2), Union Minister, Ministry of Commerce
4. U Set Aung, Member, Deputy Minister, Ministry of Planning and Finance
5. U Soe Min, Member, Deputy Governor, Central Bank of Myanmar
6. U Khin Aye, Member, Chairman, Economic and Financial Development Committee, Pyithu Hluttaw
7. Daw Khin San Hlaing, Member, Chairman, Banks and Monetary Development Committee, Pyithu Hluttaw

8. U Hantha Myint, Member, Member, Central Executive Committee, National League for Democracy
9. U Myo Myint, Member, Member, Central Economic Committee National League for Democracy
10. U Min Ye Paing Hein, Member, Member, Development Assistance Coordination Unit
11. U Bo Bo Nge, Secretary, Deputy Governor, Central Bank of Myanmar

NECC receives its administrative, logistics and analytical support from NECC Office (NECCO), ensconced within the National Archives Office in Nay Pyi Taw, with approximately twenty government staff hailing from the Ministry of Planning and Finance, the Ministry of Commerce, Ministry of Industry and Ministry of Labor, Immigration and Population.

6. Myanmar Development Institute

"Myanmar Development Institute is a public economic think tank established by the Government of the Republic of the Union of Myanmar in February 2017 through Cabinet Notification No. 9/2017. The primary objective of MDI is to support the government of Myanmar in the formulation of economic policies through robust and reliable policy research. In addition, the cabinet notification proffers a mandate to MDI for training and capacity building in economic policy making. At present, MDI has been conducting research projects over a wide range of issues, such as budget and tax analysis, financial sector reform, macroeconomic policies, project evaluation, trade, labor, infrastructure and investment planning. Research agenda of MDI is intimately linked to reform agenda of the government of Myanmar. MDI is also providing direct policy inputs to the government in State-Owned Enterprise Reform, Myanmar Sustainable Development Plan, National Development Assistance Policy, Contract and Loan Negotiations, Macroeconomic Forecasting Unit, Public Investment Program (PIP) and the implementation of Standard Operating Procedures in the Ministry of Planning and Finance"[55].

[55] www.mdi.org.mm

Appendix B

As per the Ministry of Agriculture, Livestock and Irrigation (2016), Myanmar's short-term policies directed at the agriculture sector are as follows:

a) Land use and management policy
b) Water use and management policy
c) Agricultural financing policy
d) Agricultural mechanization and input sector policy
e) Cooperative societies and cooperative system development policy
f) Rural infrastructure development policy
g) Research, development and extension policy
h) Marketing, value-added processing and export policy
i) Governance, institutional and human resource development policy
j) Environmental conservation and climate change resilience policy

a) Land use and management policy

- Formation of groups of farmers, including crops and livestock, and fisherman, will be encouraged and supported and aimed to work within the Land Consolidation and Land Use Management system in the transformation to a larger scale farm parcel.
- Assistance will be provided to those who are interested in farming activities, in particular, small holder farmers and farm labors, who are landless and have extremely limited financial resources will have the rights of tilling the land that they have cleared or developed as new farm land.

b) Water use and management policy

- To implement feasible water supply projects for the benefit of farmers in different regions.
- To explore the possibility of exploiting underground water for agriculture/ livestock/fishery and related activities without adversely affecting natural environment and water resources.
- To ensure that irrigation water is accessible and efficiently utilized by farmers when needed for crops.
- To establish Water User Groups in respective regions and states to ensure that irrigation water is effectively and efficiently utilized.

c) Agricultural financing policy of MOALI

- To assist farmers in having access to financial support, loan, credit, capital investment and inputs for agriculture, livestock, fishery and cooperative activities.
- To support the establishment of people centered financial facilities, such as, revolving fund, microfinance, and block grant, to improve the livelihood and incomes of the rural population.
- To restructure and modernize the Myanmar Agriculture Development Bank to operate with full capacity so that long-term and short-term loan can be provided in addition to seasonal loan; and loans can be made available in a timely manner from the national budget and can be recollected and utilized.
- To attract foreign direct investment which is necessary to financially and technically support the development in agriculture, livestock, and fishery activities and to access more international markets.

d) Agricultural mechanization and input sector policy

- To help support the increase use of well adapted quality farm machineries and equipment to transform into a more modern mechanized agricultural system.
- To support the process of transforming agricultural commodity value chains by introducing machinery and equipment into postharvest and value-added activities, thereby enhancing the production of high-quality agricultural products.
- To support capacity building for technological development in agro-based industries in use of modern machineries and equipment in primary and value-added processing.
- To formulate and enact laws, procedures, and directives to guarantee safe and systematic use of fertilizer, pesticides, herbicides, medicines and vaccines.
- To support basic infrastructure development and upgrading initiatives to ensure the production of safe and high quality agricultural and livestock products for high end domestic and international markets.
- To support improved access and use of quality seeds of crops, good animal breeds and fish fingerlings to enhance the production and improve the quality of agriculture, livestock and fishery products.

e) Cooperative societies and cooperative system development policy

- To support viable agribusiness initiatives, including investment in machineries and equipment, of cooperative enterprises, through innovative financing and existing microfinance credit programs.
- To link with international cooperative organizations for productive collaboration.
- To build the capacity of cooperative societies focusing on production, service provision, and trade aspects.

f) Rural infrastructure development policy

- To support sustainable development of rural roads and bridges, including farm to market to uplift the socio-economics of rural dwellers.
- To support the provision of rural lighting electrical initiatives in areas outside of the national electrical grids, aiming to uplift the living standards and livelihoods of rural dwellers.
- To support basic social infrastructures development through people-centered approach.

g) Research, development and extension policy

- To encourage private sector participation in the development program of Research and Development, and Extension of advanced technologies.
- To establish cooperation and collaboration with international organizations for exchanging modern agriculture, livestock and fishery technologies.
- To support germplasm conservation; the development of different crop varieties resistant to climate, pests and diseases; fish resource conservation; the development of good livestock breeds and fish species which are resistant to disease and the adverse effects of climate change.
- To enhance and improve the prevailing awareness raising programs for farmers, livestock keepers, and fisher folks with active participation of concerned government departments, non-governmental organizations, and civil society organizations.
- To establish a research system covering agriculture, livestock, and fishery sectors, at the national level and enhance sector-wise research and development programs.

h) Marketing, value-added processing and export policy

- To cooperate in the preparation and standardization of quality standards as well as in collection and dissemination of price and trade information, aiming to develop and improve access to markets for agriculture, livestock and fishery products.

- To support the entire value chain starting from the export of raw materials to the production and export of value-added products aiming to increase incomes and mitigate post-harvest losses experienced by producers (agriculture, livestock and fishery).
- To encourage mutual consent between trading partners of governments, collection and dissemination of internal and external market information and issuance of relevant certificates by using advanced information technology.

i) Governance, institutional and human resource development policy

- Policy planning and implementation will be carried out in collaboration and coordination among concerned departments and with private sector organizations at the union level as well as the regional/state level.
- New organizations are to be formed; already established organizations are to be restructured; strategic thrusts and performance capacities are to be upgraded to effectively and successfully implement policies and strategic thrusts (agricultural, livestock and fishery).
- To produce sector-wise competent technicians and assign specifically and effectively to relevant services and work.

j) Environmental conservation and climate change resilience policy

- To collaborate with internal and external organizations to acquire needed technology, construct basic infrastructures, and uplift the capacity of concerned departments and organizations – aiming at mitigating losses and damages caused by natural disasters; and implementing resilient agriculture, livestock and fishery activities.
- To support the empowerment of socioeconomic responsiveness of farmers, livestock keepers and fisher folks when they are facing the adverse effects of climate change and natural disaster.
- To conserve natural ecological system to sustain increased utilizations, to mitigate land degradation, soil and biodiversity losses, and to ameliorate soil fertility.

Appendix C: Agricultural Value Chain Models in Practice

Integrated value chain models: In Nicaragua, Banco LAFISE holding company provides a full array of value chain services, including banking, input supply provision, transport, processing, commodity management, including warehouse receipt financing, insurance and exporting as well as providing or linking producers to technical assistance providers.

Full-Service financial models: In India, YES Bank offers a full-service model with lending against production contracts, sales contracts, forward contracts, warehouse receipts and vendor bill discounting as well as insurance.

Securitisation Models: In Columbia, the National Agriculture and Livestock Exchange (BNA) issues securities to investors through a commodity exchange. Using the cattle as collateral, it 'packages' the financing for them into securities acceptable to investors, resulting in financial costs to the cattlemen which are less than bank loans.

Inventory financing models: In the Philippines, Quendancor allows buyers and processors of agri-fishery commodities to obtain loans based upon Commodity Acknowledgement Receipts issued by the buyer/processor to farmers for commodities delivered for processing. Varied models of formal inventory systems using Warehouse Recepts and informal ones relying on peer control are found in all continents.

Contract Farming Models: In Ukraine, Konzum supermarkets negotiated with the local banks to use the farmers' contracts with the supermarket as a collateral substitute for funding irrigation and greenhouses since they did not have traditional collateral.

Examples of Value Chain Finance in Developing Countries

Under its "Tierra Fertil" program, the Walmart supermarket chain in Nicaragua has perfected a "triangulated" purchase order finance (POF) system for a network of approximately 200 small horticulture producers. In the POF model, Walmart contracts with producers to buy their fresh fruit and vegetables at specified quantities and quality (size, shape, colour, maturity, etc). Lafise Bancecentro advances working capital credit to the producers. The triangle is completed with Walmart depositing payments for delivered produce in the producer's bank accounts, from which the bank deducts the payments due on credits. The model also includes technical assistance organised by Walmart in collaboration with various non-profit organisations

COMASA: COMASA (Comercializadora de Maní, S.A.) is a leading peanut processor and exporter. Its affiliated peanut producers receive both working capital and investment finance from the commercial banks, guaranteed by sales contracts with COMASA for anticipated crop harvests as well as already warehoused peanut inventories. COMASA is an example of a highly profitable "A" client with secure export markets. Banpro is the lead commercial bank, but other banks are also involved via syndicated loans.

CISA Exportadora: CISA Exportadora specializes in high-quality coffee exports sourced from a large network of Nicaraguan coffee growers. As an anchor firm, it provides technical assistance and training for small producers to assure that strict quality guidelines are met in all phases of production and processing. It also provides access to finance through credit lines arranged with the Nicaraguan commercial banks, as well as social services (schools, health centers, etc.) in the communities where it operates. There is a high degree of loyalty within the CISA Exportadora chains, reaching hundreds of small producers and representing a successful model for value chain development, VCF, and shared benefits of profitable export operations.

Bencafé: Bencafé (Beneficiadora Norteña de Café, S.A.) is a smaller coffee processor and export broker in northern Nicaragua. It deals with about ten medium-sized to large individual producers, for whom it arranges credit lines with two international banks. The credits are guaranteed by 75% of the value of each producer's coffee that has been processed and is registered in the BenCafé warehouse. Most loans are short-term and cover costs of the next crop cycle. Bencafé helps broker the export sales contracts between the individual producers and principally European buyers, and the producers repay the banks out of the proceeds of sale. (Landmann, 2011)