CGAP

FOCUS NOTE

No. 111
April 2019

Jamie Anderson, Ramesh Karuppusamy, Paul Enrico Neumann, Howard Miller, and Ram Tamara

Smallholder Households: Distinct Segments, Different Needs

Executive Summary

Understanding the distinct profiles of smallholder segments can help financial services providers, government bodies, and agricultural development partners better identify and serve their most relevant smallholder households, reducing costs and driving scale. This Focus Note proposes an approach that distinguishes three segments of smallholder households—Subsisting, Commercializing, and Diversifying—according to their crop and livestock sales, amount of agricultural land, and smallholder livelihood profile.

Using data from nationally representative surveys of smallholder households in Mozambique, Uganda, Tanzania, Côte d'Ivoire, Nigeria, and Bangladesh, the analysis estimates the market size of each segment and outlines recommendations on high-value financial solutions. Key findings include:

- The Commercializing segment is the primary market for financial solutions related to agricultural goals.
- The Diversifying segment is in transition and generally values the standard portfolio of financial services.
- To serve the more vulnerable Subsisting segment at scale, partnerships, technology, and comprehensive approaches to financial and nonfinancial services are key.
- Agriculture exerts a strong influence on the identity and income of smallholder households. But their financial inclusion is not primarily determined by their agricultural livelihood profile: in all six sample countries, there is only modest variation between the three segments, despite their distinct livelihoods and the varying roles of agriculture.
- Farm and nonfarm aspects of their livelihoods need to be considered to help each segment of smallholder households effectively build resilience and capture opportunities. This wider lens is essential to understanding the financial, economic, and social exclusion of rural households and in striving for their inclusion.

"We've got to lower costs. It's too expensive for us to onboard farmers," said the founder of this rapidly expanding agricultural fintech (agri-tech).[1] "We're growing, but to reach scale we need to find less expensive ways to identify and register our target smallholders. The way we communicate with customers also needs to be better tailored and more cost-effective. But even at its best, our current business model will still not reach some farmers. How can we serve them too? Are there ways we can adapt our approach to meet their needs or partners that can help us?"

Like many financial services providers (FSPs), this founder of a fast-growing agri-tech is asking crucial questions about how business models can leverage technology to deliver customer value at scale to smallholder households. Government and development partners that work in poverty alleviation and agricultural development confront similar questions. They must direct scarce resources to those most in need of relief and resilience. And all stakeholders are challenged by the size of this market—an estimated 500 million smallholder households in low-income countries—and its remarkable diversity.

To help stakeholders identify and serve the smallholder households most relevant to them, this Focus Note proposes an approach that distinguishes three segments of smallholder households—Subsisting, Commercializing, and Diversifying—based on their livelihood profile. Using data from

1 "Agri-tech" firms leverage data and technology to offer innovative solutions designed to improve agricultural productivity and sustainability, and often they also offer financial services. Examples include agricultural marketplace platforms that connect buyers and sellers of agricultural products, data-connected devices such as sensors and imaging, apps for farmers to improve access to agricultural inputs and information, and uses of big data designed to optimize decision-making and risk management.

six nationally representative surveys of smallholder households, the analysis estimates the market size of each segment and offers recommendations on designing and delivering the financial solutions that each segment values.

Understanding segmentation

Segmentation is the subdivision of a market into discrete customer groups that share, or are perceived to share, similar characteristics. Segmentation can be applied throughout a product lifecycle to:

- Identify market opportunities (e.g., identify unmet customer needs, estimate market size, lower onboarding costs).
- Design and deliver financial solutions, including use cases, features, pricing, messaging, and communications.
- Build loyalty (e.g., tailor incentives and rewards, increase retention).[2]

Using both quantitative and qualitative research methods, markets can be segmented *inter alia* by their demographics, livelihoods, behaviors, attitudes, or aspirations, as well as a combination of these factors. The resulting segments should be clearly distinct from one other and large enough to represent a meaningful market.

A heterogenous client group with many dimensions can be explored in various complementary ways. Different methods of segmentation can be used to answer different research questions or test various hypotheses, and each may surface unique insights. One method of segmentation focuses on a specific outcome, such as financial inclusion or the use of fertilizer; explores how other independent variables influence it; and outlines the distinct segments that emerge. Other methods of segmentation use clustering approaches or draw on qualitative methods to identify smaller, homogeneous subgroups. No single segmentation method can completely explain a market, especially one as large and diverse as smallholder families. Taken together, however, these complementary views can offer a more comprehensive understanding.

CGAP research on segmenting smallholder households

In 2013, CGAP began exploring the diversity of smallholder households though a literature review (Christen and Anderson 2013). Analysis from the review differentiated farming families by what they produce and where they sell it and identified three segments of smallholder families: noncommercial households, commercial households in loose value chains, and commercial households in tight value chains. Because of the lack of data at that time, detailed profiles of these segments or estimates of their relative market size were not possible; instead, we developed a framework that placed these three segments along a continuum.[3]

To fill the data gap, we collected extensive data on smallholder households through national surveys in Mozambique, Uganda, Tanzania, Côte d'Ivoire, Nigeria, and Bangladesh and financial diaries in three communities in Mozambique, Tanzania, and Pakistan.[4] In 2016 and 2017, as each national survey was concluded, we used these data to segment for financial inclusion among smallholder households in each country. Each segmentation exercise identified six variables as the key drivers of financial inclusion among smallholder households—including educational attainment, socioeconomic status, and mobile phone ownership[5]—and generated

2 This definition of segmentation is drawn from CGAP (2017), which offers additional resources and detail on segmentation methods for FSPs.

3 The segments from this 2013 analysis are broadly aligned with Hazell and Rahman's (2014) segmentation of small farms, which is further detailed in AGRA (2017), despite differences in the approaches.

4 All papers, datasets, slide decks, and resources related to the national surveys and financial diaries with smallholder households are found at "Customer Insights on Smallholder Families: Demand for Financial Services," CGAP, https://www.cgap.org/topics/collections/smallholder-families/demand-financial-services. For key charts from the national surveys, see the interactive "CGAP Smallholder Families Data Hub," http://www.cgap.org/sites/default/files/small_holders_data_portal/.

5 The six variables are (i)) educational attainment of the head of the household; (ii) socioeconomic status (above or below the US$2.50 poverty line); (iii) access to emergency funds (equivalent of 5 percent of per capita gross national income in local currency within a month); (iv) mobile phone ownership (at least one phone in the household); (v) attitude toward the future; and (vi) occurrence of an unexpected event (e.g., severe illness, accident) in the prior 12 months. See, e.g., results from Uganda (Anderson, Learch, and Gardner 2016, p. 56) and Bangladesh (Anderson, Moler, and Kretchun 2017, p. 56).

five segments of smallholder households in Mozambique, Uganda, Tanzania, and Côte d'Ivoire and four segments in Nigeria and Bangladesh.

Financial inclusion varied substantially across these segments. In Mozambique, for example, 77 percent of smallholder households were in the most vulnerable, lowest-income segment, of which only 3 percent were financially included (Anderson and Learch 2016). In contrast, the relatively better-off segments with more successful agricultural businesses represented only 3 percent of smallholder households in Mozambique, but two-thirds of this group were financially included.

Across the six countries, none of the variables that most strongly influenced financial inclusion of smallholder households was related to agriculture. The resulting segments did have very distinct agricultural livelihood profiles and levels of financial inclusion, but their agricultural characteristics were not the most influential drivers of their financial inclusion. This finding is reflected in the livelihood segmentation presented in Figure 2.

The wider literature and these earlier approaches to segmentation—the desk review in 2013 and the six single-country segmentations exploring drivers of financial inclusion in 2016 and 2017—inform the approach presented in this Focus Note.[6] The two key distinguishing factors of this segmentation approach are (i) the use of data from national surveys of smallholder households and (ii) a methodology to cluster by variables related to agricultural livelihoods (see details in Box 1).

What do the data tell us?

The nationally representative surveys of smallholder households, which were conducted in close cooperation with the national bureau of statistics in each country, targeted a sample size of 3,000 smallholder households in each country.[7]

Using these data, smallholder households were segmented according to their crop and livestock sales, amount of agricultural land, and smallholder livelihood profile (Box 1). In all six countries, this segmentation is conducted at the household level

Box 1. Methodology

The approach to segmentation used in this analysis has three components:

- **Crop and livestock sales**—the total number of types of crops and livestock sold by all household members over the total number of types of crops and livestock raised by all household members. This serves as a proxy for commercial crop and livestock sales across the household. The results are clustered into three groups using Ward's linkage method (an approach to hierarchical cluster analysis) and then each group is scored.
- **Amount of agricultural land**—the total hectares owned, rented, or borrowed used for agriculture. Again, households are clustered into three groups using Ward's linkage method and then each group is scored.
- **Smallholder livelihood profile**—includes:
  - Perception of their agricultural activities as a business
  - Types of agricultural labor used
  - Buyers of agricultural outputs
  - Use of contracts to sell crops or livestock
  - Main reported source of income

Responses from individual smallholder household members are scored along a matrix and then averaged to generate a household score. This approach includes input from all household members and accounts for bias stemming from household size.

The final score for each smallholder household is the sum of these three components. Smallholder households are clustered again by their overall score using Ward's linkage method and three segments emerge:

- Subsisting smallholder households—total scores around the middle
- Commercializing smallholder households—relatively high total scores
- Diversifying smallholder households—relatively low total scores

6 See Hazell (2019), AGRA (2017), and Hazell and Rahman (2014) for examples of segmenting agricultural households.
7 For more information, see "Customer Insights on Smallholder Families: Demand for Financial Services," CGAP, https://www.cgap.org/topics/collections/smallholder-families/demand-financial-services.

and draws on data from all members of smallholder households over 15 years old who contributed to the household income and/or participated in its agricultural activities.

Three distinct segments of smallholder households emerge from this analysis of agricultural livelihoods: Subsisting, Commercializing, and Diversifying (Table 1).

Subsisting smallholder households

For smallholder families in the Subsisting segment, livelihoods focus on agriculture and are complemented by income from casual labor, often from working on other farms. These smallholders live largely in rural areas and farm on small plots (2.6 hectares at the median). They generally use their own agricultural production to feed their

Table 1. Profiles of smallholder households by segment from the six sample countries[a]

	Subsisting	Commercializing	Diversifying
Location	Rural (70–90%)	Rural (70–90%)	Urban, peri-urban, and rural
Located in urban area[b]	12%	12%	20%
Sources of income	Agriculture and casual labor (often also in agriculture)	Mainly agriculture	Wage or casual labor, their own business, and some agriculture
Income level relative to the other two segments	Relatively lower	Relatively higher though still poor	Relatively higher though still poor
Main income source: Agriculture[c]	75%	85%	37%
Main income source: Wage labor[d]	4%	3%	10%
Agricultural production	For household consumption, with some surplus for sale	Cash crops for sale	For household consumption
Farm business mindset[e]	64%	85%	31%
Sales channel	Retail, cooperative, or middleman. No contract.	Wholesalers or processors. Seldom a formal contract.	Occasional local sales. No contract.
Contract to sell agricultural outputs[f]	4%	12%	3%
Land size relative to the other two segments[g]	Small to medium	Larger	Smallest
Average (ha)	4.2	5.3	3.1
Median (ha)	2.6	3.3	1.8
Financial tools	Some informal	Formal and informal	Mostly formal
Financially included[h]	30%	36%	34%
Use of informal financial services[i]	25%	29%	24%

a. The percentages in this table are the average percentages from the six countries by segment. While these averages are instructive, they can also mask significant variation between the six countries (e.g., see Figure 2 on financial inclusion).
b. Urban and rural areas are defined as per the respective national bureau of statistics in each country.
c. Question H2B, Multiple Respondent questionnaire: "Which of these has been your main source of income in the last 12 months?" Percentage of respondents by segment indicating that sale of crops and/or livestock is their main source of income.
d. Question H2B, Multiple Respondent questionnaire: "Which of these has been your main source of income in the last 12 months?" Percentage of respondents by segment indicating that waged employment, which entails a full employment contract with a monthly salary (i.e., not casual labor), is their main source of income.
e. Question A4, Multiple Respondent questionnaire: "Do you consider your farm to be a business?" Percentage of "Yes" answers.
f. Question A32, Multiple Respondent questionnaire. Percentage of smallholders by segment with a formal contract to sell their agricultural outputs. Buyers could include wholesalers and processors.
g. Includes land owned and rented to show the overall land size used for agricultural production.
h. Financial inclusion, in this calculation, includes an account in the respondent's name with a formal bank, microfinance institution, credit union, cooperative, more formal savings group (e.g., savings and credit cooperatives in Tanzania, Uganda, and Nigeria), or mobile money provider, as derived from questions F4, F19, and F33 in the Single Respondent questionnaire.
i. Informal financial services include less formal savings groups and village savings and loan associations, savings collectors, money lenders, and other informal savings or credit groups such as a xitiques or rotating credit and savings association—questions F46 and F47 in the Single Respondent questionnaire.

family. Any agricultural surplus is traded or sold through local markets, cooperatives, or middlemen, and contracts are almost never used. At times of high demand for agricultural labor, such as harvest, smallholders in this segment are helped by their family, friends, and neighbors on a reciprocal basis. Relative to the other segments, this segment has the lowest income and lowest use of formal and informal financial services.

Success in agricultural production varies across this segment. Some households are relatively lower-income subsistence farmers. Others are relatively less poor and more resilient; they can maintain their household, but there is little indication that they will transform their agricultural activities into a sustainable, commercial business.

Commercializing smallholder households

Smallholders in the Commercializing segment take a different approach to agriculture than those in the Subsisting segment. They consider farming to be a business and estimate that they earn most of their income from agriculture. At peak times of agricultural activity, the more successful farmers in this segment hire day laborers, often from the Subsisting segment. Compared to smallholder households in the Subsisting segment, those in the Commercializing segment are better connected to value chains and sell to wholesalers and retailers, but still only rarely through formal contracts (12 percent). They use a combination of formal and informal financial services and earn relatively higher incomes than those in the Subsisting segment, though they are still poor overall.

The most important distinctions between smallholder households in the Commercializing segment and those in the other two segments are their perception of farming as a business, their investment of additional resources into the production cycle, and their relatively higher use of formal sales contracts (though contracts remain rare overall). This segment includes both those who have already established a successful agricultural business and those who are still growing toward commercialization and are keen to develop an agricultural business. This business approach to agriculture distinguishes them from the other segments.

Diversifying smallholder households

Smallholder households in the Diversifying segment have a multidimensional livelihood strategy. They earn some income from agriculture, though their primary income source is more likely their own business or regular or casual employment. Smallholders in this segment farm smaller plots than the other two segments (1.8 hectares at the median) and consume most of their agricultural outputs. Though most are in rural areas, they are more likely to be found in peri-urban or urban areas (20 percent) than those in the other two segments. This increases their proximity to markets and facilitates livelihood diversification, both out of and into agriculture.[8] Their income tends to be as high or higher than those in the Commercializing segment; they also use formal financial tools such as bank accounts and mobile money.

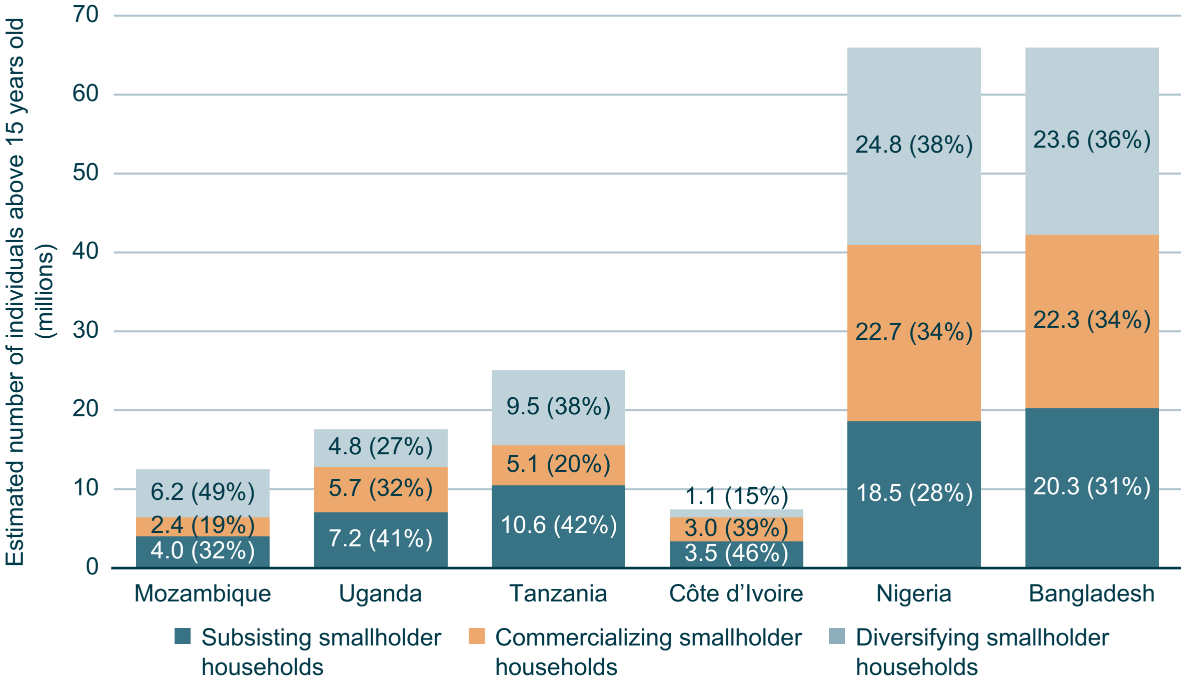
Each country in the study shows meaningful proportions of all three segments of smallholder households (Figure 1). Nigeria and Bangladesh show relative balance between the three segments, with each comprising roughly one-third of the smallholder household population. In Mozambique, the Diversifying segment is the largest (49 percent). In Côte d'Ivoire, Tanzania, and Uganda, the Subsisting segment represents slightly less than half of the market (46 percent, 42 percent, and 41 percent, respectively).

Agriculture's role in financial inclusion

Agriculture appears to have limited influence on financial inclusion for smallholder households. There are clear differences in overall financial inclusion between the six countries; Bangladesh and Tanzania show greater financial inclusion and

8 See Livingston, Schonberger, and Delaney (2014).

Figure 1. Estimated number of all individuals over 15 years old in smallholder households by country and segment (millions) and in-country proportion of that segment (percentage)



Source: CGAP national surveys of smallholder households, 2016 and 2017.

together pull up the average (Figure 2). Looking within each country, however, there are only somewhat modest differences in financial inclusion between the three segments. Despite their distinct livelihoods and the varying roles of agriculture, the segments show relatively similar levels of financial inclusion within each country. This indicates that, while agriculture is an important thread running through smallholder households and can exert a strong influence on their identity and income, the financial inclusion of smallholder households is not primarily determined by their agricultural livelihood profile, the driver of this segmentation.

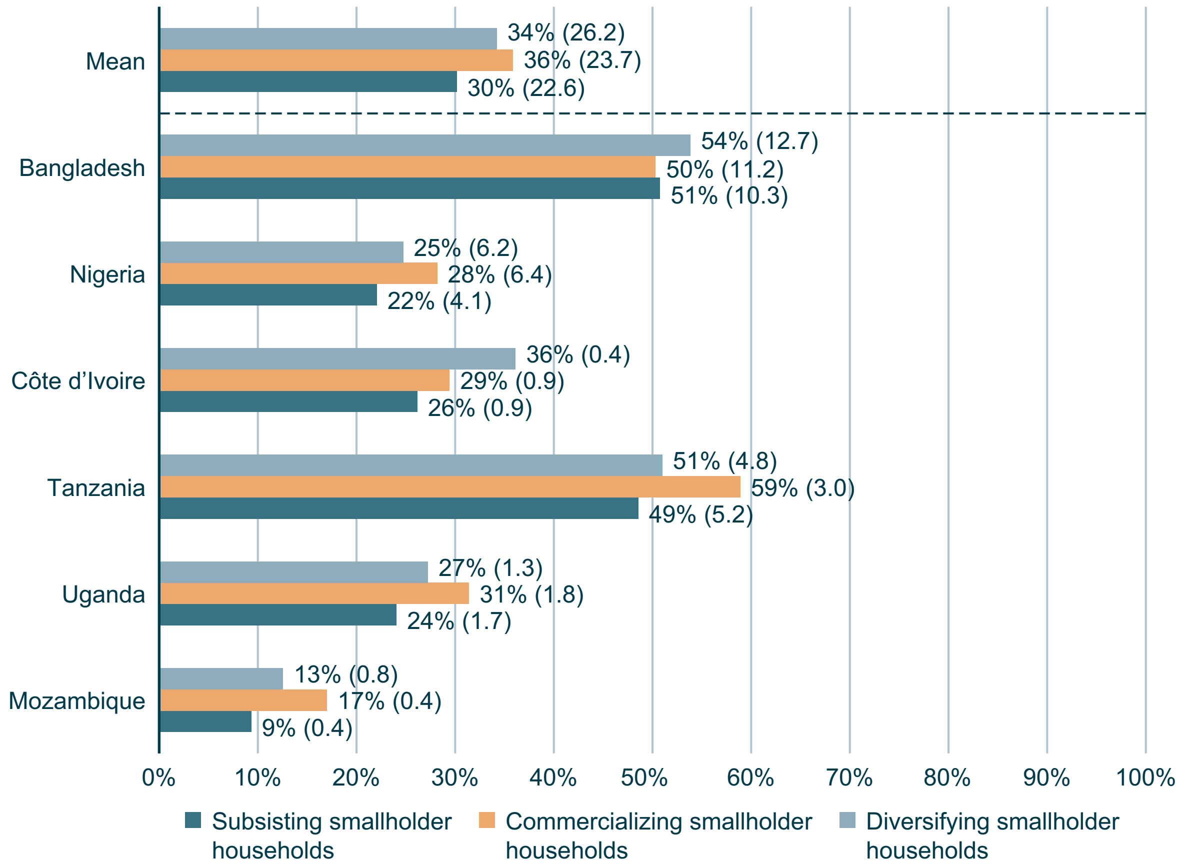
This finding resonates with results from the 2016 and 2017 CGAP segmentation, discussed earlier, which segmented by the drivers of financial inclusion. Each resulting segment had a distinct profile and their levels of financial inclusion varied greatly, but none of the key variables driving their financial inclusion was directly related to agriculture. Indeed, their financial inclusion was most influenced by their poverty level, educational attainment, mobile phone ownership, and resilience.

Therefore, focusing too narrowly on the agricultural activities of smallholder households may overlook more influential drivers of their exclusion and opportunities to provide the financial and nonfinancial services they need. Farm and nonfarm aspects of smallholder livelihoods need to be considered together to effectively build resilience and capture opportunities in each segment. This wider lens, including but beyond agriculture, is essential to understanding the financial, economic, and social exclusion of rural households and to striving for their inclusion.

What can providers do?

All smallholder households face financial inclusion challenges, including the often-inadequate infrastructure in rural areas, the limitations of informal financial mechanisms, the lack of widespread payments solutions, and the scarcity of merchants that accept digital payments. In addition to addressing these general barriers, providers should consider their clients' specific profiles. Providers can use the analysis and estimated market

Figure 2. Financial inclusion of smallholder households by country and segment
(percentage of segment, estimated population of adults over 15 years old in millions)



Source: CGAP national surveys of smallholder households, 2016 and 2017.

sizes presented in this paper to make inroads into understanding their smallholder customers, according to their mandate and objectives.

Meeting the needs of Subsisting smallholder households

Smallholders in the Subsisting segment farm for household subsistence and, relative to the other two segments, are the most poor and vulnerable. Government and nongovernment organization (NGO) partners play a strong role in helping these families meet their basic needs and build resiliency. Subsisting smallholder households need safety net programs (e.g., cash and in-kind transfers) to protect them from economic shocks, natural disasters, and other crises. Government and NGO partners often work to address the immediate food security of these households while enhancing their agricultural productivity and strengthening farm and nonfarm income-generating activities (i.e., graduation programs).[9]

For their part, FSPs can explore and adopt business models that use technology and partnerships to reach more smallholder households in this segment. The relatively straightforward financial needs of this segment could be met with a modest suite of financial services—savings and credit groups, pay-as-you-go (PAYGo) financing models, a mobile wallet—closely linked to basic financial literacy support.[10] The government bodies, development

9 See Hashemi and de Montesquiou (2016) and de Montesquiou and Sheldon (2014).
10 See Zollman et al. (2017) and Sotiriou et al. (2018) on business models and customer value in PAYGo solar.

organizations, and social enterprises working to stabilize and enhance household livelihoods could be partners that help to aggregate smallholders for FSPs. These collaborations could help FSPs lower outreach and onboarding costs and offer customers more meaningful combinations of financial and nonfinancial services.

Smallholders in the Subsisting segment face big challenges, but they are also a big market. Across the six countries in our study, there are an estimated 64 million adults over 15 years old in this segment (Figure 1), and some already use formal financial services. In Tanzania, for example, 5 million adults (49 percent) of Subsisting smallholder households are considered financially included, largely driven by the widespread ownership of mobile money accounts (Figure 2).

Meeting the needs of Commercializing smallholder households

Smallholders in the Commercializing segment have a relatively successful agricultural business or are building toward one, and of course, they also have general household needs and aspirations. They are the target audience for providers that offer financial solutions related to agricultural goals. These smallholders need one or more products tailored to on-farm investments (e.g., asset financing, layaway), risk mitigation and income protection (e.g., crop insurance), and more efficient payments, both from agricultural buyers and to suppliers of inputs and labor (e.g., mobile wallets). These could be stand-alone products or part of tailored packages that offer a menu of inputs, training, information, and market access that combine financial and nonfinancial services.

The Commercializing segment is large, and its needs are only partially met. In Nigeria, for example, there are an estimated 23 million adults over 15 years old in this segment (Figure 1). Only about one-quarter of them already use formal financial services (Figure 2), meaning that there is a large and unserved market. Commercializing smallholder households are keen to expand their agricultural activities, and they look for innovative FSPs and financial solutions to help them do so.

Meeting the needs of Diversifying smallholder households

Smallholders in the Diversifying segment are in transition. Some may be moving out of agriculture to nonfarm employment in peri-urban and urban areas; others may be expanding into agriculture after working in other sectors. They want financial solutions that providers already offer, and they do not seek financial solutions related to their limited work in agriculture.

This diverse segment presents more questions than answers, but its size makes those questions worth asking. In Bangladesh, for example, there are 24 million adults over 15 years old in this segment (Figure 1). About half of them are already financially included (Figure 2) and are likely to be familiar with financial services. They pose less of a risk to providers because their mixed livelihood profile is more familiar to FSPs than the profiles of typical agricultural households.

What this means for providers

To serve these segments, providers should identify and understand the customers in the segments they consider most relevant and then design and deliver appropriate financial solutions. The agri-tech referenced at the beginning of this paper is a good example of how providers can use segmentation to achieve their business goals.

The agri-tech's business model focuses on Commercializing smallholder households that are looking for farm-related solutions. The agri-tech must find more cost-effective ways to differentiate these potential customers and to convert them into actual customers. It also needs to be able to communicate with these smallholders using channels and messages that are tailored to their entrepreneurial aspirations in agriculture. To reduce staff recruitment and training costs and turnover, the agri-tech should create a suitable profile of front-line staff who would interact with these customers.

Furthermore, to expand its business model to serve customers beyond the Commercializing segment, the agri-tech should use aggregating partners and higher-touch approaches to reach smallholders in the Subsisting segment. Leveraging technology is crucial, particularly in their collaborations with government and development partners. They could use the agri-tech's smart phone app, for example, to facilitate the aggregation, on-boarding, and ongoing service of the Subsisting segment, while farmers in the Commercializing segment may be more likely to access the app directly.

Sector specialists and data scientists can play a crucial role in helping the agri-tech generate and embed customer insights into its operations. These technical specialists also work for FSPs, government bodies, research organizations, financial sector development programs, private sector groups, and funders. Their experience with smallholder households can help FSPs design targeted qualitative customer research to generate deeper, more specific insights for strategic guidance.

Several other resources can support technical specialists who use segmentation to answer strategic questions. These include CGAP data on smallholder households and the Customer Segmentation Toolkit, which presents segmentation methods and how FSPs can apply them.[11]

In addition to understanding the differences between segments and specifically how they manifest in each market, it is important to understand how households change over time and how they might move between segments. Those working with smallholder families—government bodies, FSPs, agricultural development organizations, and other private sector and community partners—should also identify how they can best facilitate positive, transformative changes. More research and experimentation can identify which segments are most relevant to which partners and interventions, the specific needs and preferences of each segment, and how stakeholders can work together to foster more stable, resilient livelihoods, both inside and outside of agriculture.

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11 See the CGAP website (https://www.cgap.org/) and the CGAP Smallholder Families Data Hub (http://www.cgap.org/sites/default/files/small_holders_data_portal/. See also, the CGAP Customer Segmentation Toolkit (http://www.cgap.org/publications/customer-segmentation-toolkit), which is part of CGAP's Customer-Centric Guide: An Online Handbook (https://customersguide.cgap.org/).

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No. 111
April 2019

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CGAP
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Washington, DC
20433 USA

Tel: 202-473-9594
Fax: 202-522-3744

Email:
cgap@worldbank.org

The authors of this Focus Note are Jamie Anderson, Ramesh Karuppusamy, Paul Enrico Neumann, Howard Miller, and Ram Tamara. The authors wish to thank Clara Colina (Rural and Agricultural Finance Learning Lab), Aude De Montesquiou (World Bank Group), Peter Hazell, Anne Maftei (Rural and Agricultural Finance Learning Lab), Rachel Sberro-Kessler (World Bank Group), Matthew Shakhovskoy (ISF Advisors), Iris van der Velden (IDH), and Dan Zook (ISF Advisors) for their valuable input and guidance throughout this research and the development of this paper.

Suggested citation:
Anderson, Jamie, Ramesh Karuppusamy, Paul Enrico Neumann, Howard Miller, and Ram Tamara. 2019. "Smallholder Households: Distinct Segments, Different Needs." Washington, D.C.: CGAP.

ISBN: 978-1-62696-083-1