

Small Farmers, Big Retailers: Are New Sourcing Strategies a Path to Inclusion?

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Executive summary

- ▶ Rapid urbanization, population growth, and rising incomes in emerging economies are changing local and global food systems. Among these changes is increased demand for food in cities that is affordable and safe. As developing nations liberalize their markets and open their economies to foreign direct investment, international capital has been flowing on an unprecedented scale into the agrifood sector to meet this demand. A key feature of these investments is the transformation of agricultural marketing systems—the services and activities involved in bringing an agricultural product from the farm to the consumer.
- ▶ Large retailers increasingly have dual objectives within these new, retail-led agricultural marketing systems: 1) increasing efficiency, traceability, and coordination as well as 2) creating value along the food supply chain. Companies aim to accomplish these goals by sourcing “directly” from farmers.
- ▶ The opportunity for these developments to benefit small farmers in the developing world has appealed to regional and national governments in Asia, Africa, and Latin America as a strategy for fostering rural prosperity. New agricultural marketing systems with more direct sourcing could mean higher incomes for farmers, more resources for farm investment in new technologies and assets, and a pathway out of poverty. A number of large-scale food retail companies also see the new systems as a double win, beneficial for the bottom line and prudent for good relations with regional and national governments. To explore these issues, this report looks at the horticulture sourcing activities of Walmart in China and Nicaragua and their impact on smallholder farmers.
- ▶ Direct sourcing from farmers does not mean purchasing at the farm gate. Intermediaries in retail-led supply chains are not eliminated and may include nongovernmental organizations (NGOs) and private intermediary suppliers. The objectives and resources of market intermediaries in retail-led supply chains are crucial to determining which farmers participate and how they benefit from participation.
- ▶ New retail-led agricultural markets can also exacerbate inequalities between rural regions with profitable market opportunities and regions without such advantages. And even amid all the demonstrated and potential benefits for participating farmers, some risks remain.
- ▶ As these retail-led agricultural marketing systems in emerging economies continue to develop, govern-

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ments, NGOs, and companies can benefit from the experiences and examples to date. These lessons can help guide policy and practices moving forward in order to maximize the benefits to farmers and help realize the opportunities these systems offer for increasing food security and reducing rural poverty.

For governments

- ▶ Road access and water supplies for agricultural production are critical determinants of farmer participation in new supply chains, a fact that may exacerbate rural inequality.
- ▶ Infrastructure development can serve as a means to facilitate greater supply chain participation among small farmers.
- ▶ Maintaining small farmer access to land and credit is important to ensure that small farmers participate in new markets, especially women.
- ▶ Investments in the traditional market system may also offer a pathway to increasing small farmer outcomes. These investments could include expanding credit opportunities for rural traders or investing in traditional wholesale and wet markets by improving the condition of market buildings, storage, and water and sanitation.

For companies

- ▶ By paying farmers a purchase price between an agreed-upon minimum and maximum, companies can provide farmers with a measure of protection against the price volatility that vexes the traditional horticulture market.
- ▶ Price stabilization/insurance afforded to small farmers by supermarket buyers has been associated with increased small farmer investment in production scale and farm assets.
- ▶ Firms should be aware of opportunities to design sourcing strategies that encourage the participation of women in supply chains. For example, employing female extension officers or buyers could be an appropriate and impactful way to involve more women farmers.

For NGOs

- ▶ Projects designed to build farmer marketing capacity may prove to be a zero-sum game if

supermarkets or other supermarket supply chain buyers follow NGO projects (and NGO supply chain subsidies) when the NGO relocates to a new region or a new group of farmers.

- ▶ Farmer investment in productive assets during the supply relationship is likely to improve household welfare in lasting ways, especially once the supply relationship ends.
- ▶ Given high rates of exit from supply chains, NGOs should consider the implications for small farmers of an abrupt cessation to a retail-led supply relationship.
- ▶ Water and road access are critical for participation. Investments by NGOs may bring more marginal farmers into the retail-led supply chain, but these farmers may struggle to continue to participate in the market without NGO support and subvention.

Introduction

Rapid urbanization, population growth, and rising incomes in emerging economies are changing local and global food systems. Among these changes is increased demand for food in cities, including perishable goods such as fresh produce, that is affordable and safe. As developing nations liberalize their markets and open their economies to foreign direct investment, international capital has been flowing on an unprecedented scale into the agrifood sector to meet this demand.

A key feature of these investments is the transformation of agricultural marketing systems—the services and activities involved in bringing an agricultural product from the farm to the consumer. These activities include everything from planting, growing, and harvesting food to storing, processing, transporting, advertising and selling it. The objectives of retail-led transformation of agricultural marketing systems include increasing efficiency, traceability, and coordination as well as creating value along the food supply chain. One way companies increase traceability and create value is by reducing the number of intermediaries in the supply chain and sourcing “direct” from farmers.

But who will benefit from this improved efficiency and value creation? How will the new food marketing systems impact food security and the world’s rural poor, especially small farmers, millions of whom

depend on agriculture for their livelihoods—either as producers or laborers?

The opportunity for these developments to benefit small farmers in the developing world has appealed to regional and national governments in Asia, Africa, and Latin America as a strategy for fostering rural prosperity. New agricultural marketing systems with more direct sourcing could mean higher incomes for some farmers, more resources for farm investment

New agricultural marketing systems with more direct sourcing could mean higher incomes for some farmers, more resources for farm investment in new technologies and assets, and a pathway out of poverty.

in new technologies and assets, and a pathway out of poverty. A number of large-scale food retail companies also see the new systems as a double win, beneficial for the bottom line and prudent for good relations with regional and national governments. However, the risks and limitations of the new systems must also be understood.

For the promise of new agricultural marketing systems to be realized, policymakers and companies must understand their true impact in practice. With food supply chains transforming rapidly, practices adopted at this early stage can have a major impact on which farm constituencies benefit and how. Moreover, national and regional governments would do well to anticipate which farmers and other entrepreneurs along the value chain are less likely to prosper from these new market opportunities and understand the effects, positive and negative, on participants who drop out of these new arrangements.

To gain insight into these questions, this report looks at the horticulture sourcing activities of Walmart in China and Nicaragua and their impact on poor, smallholder farmers. Like many retailers, Walmart has been moving into food markets in Africa, Asia, and Latin America and is actively engaged in transforming agricultural markets in the developing world. The scale of Walmart's operations and the similarities of its activities to the strategies of other companies make Walmart a useful case study for shedding light on how poor producers will be impacted by broader transformation of the agrarian sector. Specifically, this report addresses the production and sale of fresh fruits and vegetables for domestic markets, though these exam-

ples are contextualized within the broader research on small farmers and participation in retail-led agricultural supply chains. The lessons from this paper can help policymakers better understand and respond to ongoing transformation of agricultural markets.

The transition to retail-led agricultural marketing systems

In many of the world's economies a major transition is under way, with rapidly transforming agricultural marketing systems coexisting with more traditional farm-product supply chains. In traditional systems there are normally numerous middlemen, or intermediaries, between the farmer and the consumer. For example, in a traditional marketing system a farmer sells to a local buyer. The buyer then sells to a trader in a regional retail or wholesale market. Invariably, a large and varied set of traders and other entrepreneurs participate in these wholesale markets, selling to retail markets and small shops.

In a traditional marketing system with spot markets in which commodities are bought and sold through cash transactions for immediate delivery, market intermediaries can provide important and sometimes complex logistics and services. For example, intermediaries can aggregate product and move it long distances and handle credit and quality grading along the supply chain.

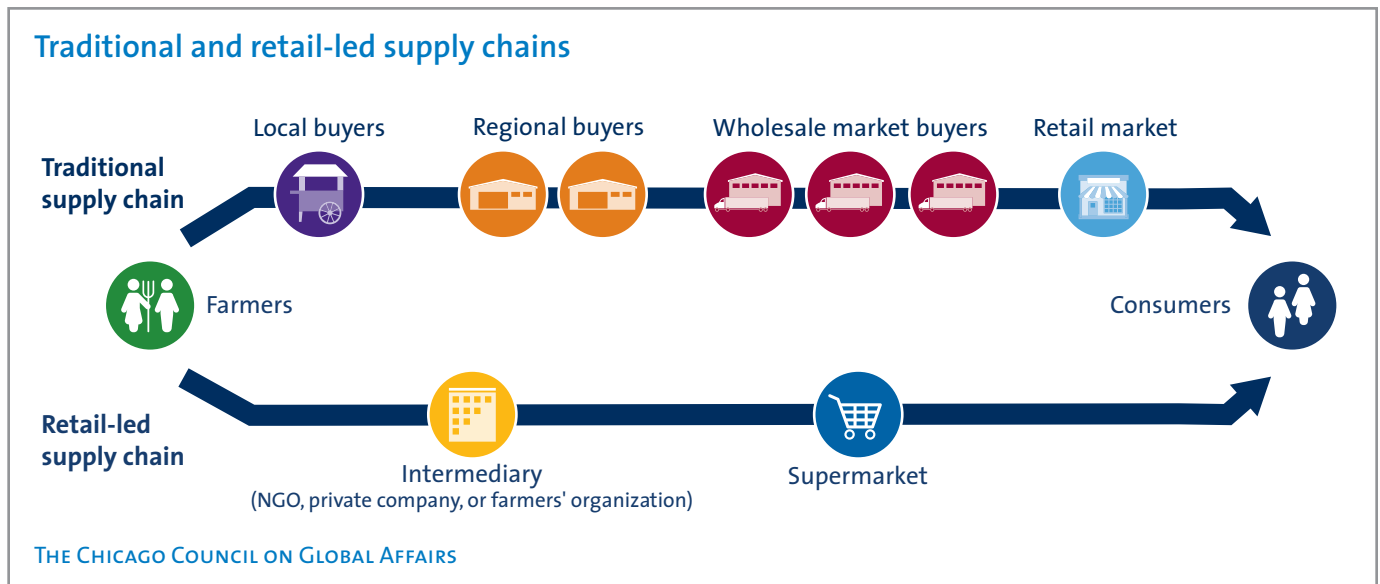
Even so, traditional supply chains in agriculture, especially for horticulture, are relatively costly in the local economy, with heavy expenses for coordinating buyers and sellers, acquiring goods, and moving them

Retail-led marketing systems not only reduce the number of middlemen between the “farm gate” and the consumer, but increase coordination and traceability—and value creation—creating a “value chain” instead of simply a “supply chain.”

around. The supply chains also result in indirect and haphazard relationships between the farmer at one end of the chain and retailers and consumers at the other. With little to no interaction between them, communication about production practices and product variety and quality is limited.

To circumvent the challenges of these traditional systems, retailers, exporters, and processors seek to

FIGURE 1



purchase directly from farmers or from a single designated intermediary who takes on the work of aggregating and coordinating the supply. Retail-led marketing systems not only reduce the number of middlemen between the “farm gate” and the consumer, but increase coordination and traceability—and value creation—creating a “value chain” instead of simply a “supply chain.” Instead of working with the farm gate buyer and other intermediaries, the farmer often sells to a supermarket directly or through a farmer organization operating as a sole additional agent.

Retail-led supply chains value reducing intermediaries and “buying direct” from farmers for six primary reasons:

- ▶ lower overhead
- ▶ fewer delays
- ▶ better assurances of product safety and quality
- ▶ greater transparency and accountability in the supply chain
- ▶ better coordination with farmers
- ▶ enhanced public image

There is considerable variation across regions in the development and speed of transformation of agricultural marketing.¹ Retail-led transformation of agrifood systems in the developing world originated in the wealthier countries in Latin America and East Asia in the 1980s. Though the trend began somewhat later in China, Southeast Asia, and South Asia, changes have

moved more quickly in these regions. Sub-Saharan Africa is the newest site of retail-led agrifood marketing transformation. Despite differences in timing and scale, most developing countries have experienced fundamentally similar transitions. In particular, the fragmented networks of small firms that emerged with the global wave of economic liberalization in the 1980s have increasingly coalesced into more coordinated and efficient chains supplying a range of domestic and global retailers.

Retail-led agricultural marketing and smallholder farmers

Retail-led agricultural marketing in the developing world encompasses food sourcing for a number of markets, including export markets, in-country domestic retail markets, and processing markets. For small farmers lacking in capital and experience, domestic markets generally offer the most realistic opportunities because these markets tend to be characterized by less stringent quality controls, phytosanitary standards, and transport and payment risks than export markets. In addition, horticulture production can be an area of opportunity for small farmers in developing countries—provided that they can achieve access to credit, transport, appropriate technologies, and training—because it tends to be labor intensive rather than land intensive. Since small farmers rely primarily on their own family for labor, they may be able to compete with larger operations that have to pay for costly supervi-

Women farmers within retail-led agricultural marketing systems

Research on the role of women in recent retail-led marketing opportunities finds some instances in which women participate. But in general, women have been found to have little direct participation in new retail-led marketing opportunities, largely due to limited access to land and credit.²

A less explored determinant of women's participation in these markets is what the firm or intermediary involved prefers. An NGO may have program objectives that include reaching female small farmers, or a firm or intermediary company may find it easier to work with men exclusively. In some cases, women may work as hired labor, picking, cleaning, and packing produce. Research suggests that when households adopt contract farming, there is a concurrent change in production strategies within the family that shifts farm labor and resources.³ The implication is that women in households that begin to sell into retail-led supply chains are likely to be affected whether or not they are the primary agricultural decision maker in the household. In some cases women will benefit from these shifts, but the net impact will depend on the degree of bargaining power women have within the household.

sors. Small farmers may also be relatively attractive partners for retailers because they lack the bargaining power of larger-scale farm operations, which tend to have greater access to alternative markets and fewer concerns about defaulting on contracts.

The transformation of agricultural markets also affects medium-sized and commercial farmers. In addition, even small farmers who are not direct partic-

For small farmers lacking in capital and experience, domestic markets generally offer the most realistic opportunities.

ipants will likely be impacted through labor and land markets. For example, those who make their living as laborers can benefit from the increased demand for skilled, year-round agricultural labor to support production and postharvest packing and cleaning for retail-led supply chains. Increased demand for land by farmers in the supply chain who want to expand production could increase rental and sale prices for

land. The degree to which small farmers benefit from increases in land prices will depend on local land tenure rights.

The downsides for companies sourcing from small farmers are cost and risk. Small-farmer sourcing can be relatively expensive if a buyer has to pay the costs of the transaction (negotiating the quantity, quality, and price; setting up the logistics of purchasing and payment). In addition, small farmers may not have the

As retail-led agricultural marketing systems develop, policymakers must better understand the challenges and opportunities they present.

capital or production scale to consistently reach contracted quantities or quality standards that food companies require.⁴ Additional costs for buyers include the overhead of establishing and managing a sourcing system and confirming and maintaining relationships with numerous small farmers. This supplier cost-risk tradeoff is a persistent tension in the transformation of agricultural supply chains in the developing world.

As retail-led agricultural marketing systems develop, policymakers must better understand the challenges and opportunities they present. Six key observations explored in this paper are critical to this understanding.

- ▶ Retailers design supply chains to minimize market intermediaries. However, intermediaries in these retail-led supply chains are not eliminated completely and may include NGOs and private intermediary suppliers.
- ▶ The objectives and resources of market intermediaries in retail-led supply chains are crucial to determining which farmers participate and how they benefit from participation.
- ▶ Road access and water supplies for agricultural production are critical determinants of farmer participation in retail-led supply chains. This may exacerbate rural economic inequality.
- ▶ Farmers can benefit in a range of ways from participation in new retail-led supply chains, including through lower transaction and transport costs and agreements that reduce market price volatility (relative to the traditional market).

- ▶ Even so, new retail-led supply relationships require that farmers assume new risks, including payment default and transaction fulfillment risks.
- ▶ High rates of dropout/voluntary exit from supply chains further confirm that new markets are currently benefitting only a subset of farmers in a given region.

Walmart in China and Nicaragua

In the context of global agricultural transformation, the innovations and impact of Walmart loom large because of the sheer scale of the company's wealth and operations. Walmart is the world's largest company in terms of revenues and also the world's biggest retailer. In 2015 Walmart was operating 11,526 stores in 28 countries. In its food supermarket operations, Walmart recently reported direct purchase arrangements with farmers in Costa Rica, Nicaragua, Honduras, Guatemala, El Salvador, Mexico, India, China, and Brazil.⁵

The sourcing strategies adopted by Walmart in these countries resemble strategies of other international retailers and of existing domestic retail chains. For example, Carrefour—the fourth largest retail group in the world in terms of annual revenues—reports sourcing products directly from Chinese farmers through farming cooperatives since 2007 and representing nearly 1.2 million farmers in 2015.⁶ Tesco, the second largest global retailer by revenues, has a similar direct sourcing program.⁷ Such direct sourcing is not confined to supermarket retail buyers. Nestlé reports direct sourcing for coffee and milk, and Unilever claims to directly source palm oil, cocoa, cashews, and other products from farmers located in 19 countries across the world.⁸ Moreover, Walmart's importance in American international food policy is already clear: Walmart has become a major partner of the US Agency for International Development (USAID) in its Feed the Future program under a Memorandum of Understanding ratified in 2013.⁹

To better understand this massive global undertaking, two nations—Nicaragua and the People's Republic of China—serve as useful case studies. Although the challenges and opportunities are quite different, important and instructive parallels are nonetheless clear.¹⁰

Small both in land area and population, Nicaragua has only one major urban center (Managua) and a low per-capita GDP (US\$1,800 per capita in 2014).

Infrastructure in the countryside is rudimentary, and there is considerable variation in the land area of individual farm operations. China, on the other hand, is an emerging world power with a massive population and the world's second largest economy. It has been undergoing rapid development, has a rapidly growing middle class, and has by far the largest urban population in the world. With a strong centralized government, China has a record of ample resources for investment and a well-developed infrastructure.

Walmart entered Nicaragua in 2005 when it purchased a stake in the Central American Retail Holding Company (CARHCO), the region's largest supermarket chain. After Walmart purchased a controlling stake in 2006, the chain has since grown rapidly in Nicaragua and the rest of Central America. By 2015 Walmart had become the largest retailer in Nicaragua and Central America, with 695 stores in the region.¹¹

In China, Walmart was among the first foreign supermarkets to begin operations after the central government opened up to foreign investment within specific circumscribed economic zones. Opening its first store in Shenzhen in 1996, the company initially established itself throughout China's southeast. Thanks in part to a liberalization of China's investment policies, Walmart had 416 stores across China by 2015.

Direct sourcing from farmers does not mean purchasing at the farm gate

Though differences between Nicaragua and China are dramatic, the similarities are instructive. First, in neither country is "direct purchasing" by Walmart

Box 2

Food safety and supply chains in China

Recent food safety crises have given a special urgency to supply chain transformation among retailers in China. Companies are working to gain greater control over their own sourcing to protect their operations and brands from additional problems and scandals. The central Chinese government has enacted policies over the past two decades to promote vertical integration and coordination in agricultural supply chains and initiated a program in 2008 to encourage retailers to establish direct relationships with growers.¹²

generally a direct transaction with the farmer. Instead, a small array of institutions—much reduced from the traditional market structure—operate between the farmer and the retail buyer. These actors may include NGOs, farmer organizations, and new specialized wholesalers or supply companies.

For example, Walmart in Nicaragua sources horticulture from small farmers through its own dedicated wholesaler, which manages farmer relationships and logistics and works directly with growers on quality standards and crop planning. In this way Walmart purchases from individual farmers, but also from farmers working in associations, often with the assistance of NGOs who facilitate technical training and help aggregate production. Several of the NGOs involved in the Nicaraguan Walmart supply chains were funded through a USAID project established in 2006 to build the capacity of small farmers in the region.¹³

China's vast land area and the extreme fragmentation of landholdings are two factors that increase the cost and complexity for a multinational of sourcing directly from farmers and farmer groups. Furthermore, international NGOs of the sort that have facilitated small farmer participation in other countries are largely absent from rural China. Instead, Walmart China relies on a group of important new actors—third-party Chinese supplier companies.

These companies either source from small farmers through contracts or employ small farmers on supply company farms or through supply company sub-leases of aggregated land. These new, well-capitalized and geographically diversified intermediary companies handle logistics and supply chain management for Walmart, including relationships with farmers. Understanding how these new retail-led supply chain intermediaries operate and how they identify and compensate farmers will be critical to understanding agricultural transformation in China.

Intermediaries that remain play a central role in determining farmer outcomes

The intermediary institutions that remain in retail-led supply chains have been insufficiently studied given their central role. Perhaps not surprisingly, existing research suggests that these new intermediaries have enormous influence on which farmers participate in

new marketing opportunities and how farmers benefit from that participation.

Nicaragua and China showcase the role that intermediary institutions can play in determining which small farmers participate and the terms (contractual requirements, risks, and remuneration) of that participation. Even though NGOs and NGO-assisted farmer

New intermediaries have enormous influence on which farmers participate in new marketing opportunities and how farmers benefit from that participation.

organizations act as intermediaries in Nicaragua, while private, well-capitalized supply companies play this role in China, some of their roles are similar—coordinating production schedules and varieties with farmers, sorting for quality and private label standards, and selling products that do not meet standards into the traditional market system.

Though these intermediary institutions often go unnoticed in analyses and policy initiatives related to small farmer participation in transforming agricultural markets, these midstream actors must be recognized and better understood. Below are some examples of the specific ways that supply chain intermediaries impact small farmer participation in new retail-led markets in Nicaragua (as NGOs) and China (as private supply companies). Despite similar roles, these actors have different motives for participation in retail-led supply chains, and these differences also inform the outcomes. Intermediary supply companies are profit driven, with a measure of regard for local political realities and complexities. NGOs, on the other hand, may be motivated to reach the poorest of their constituents or may be responding to pressures from their funders to reach a target number of farmers or achieve a specified project scale.

NGOs pick winners and subsidize their participation

As noted, NGOs are playing an important role in Nicaragua's supply chain transformation. Research has found that NGO involvement is instrumental in bringing small, capital-constrained farmers into the new system. In addition, farmers working with NGOs in Nicaragua have limited experience with horticulture, as most of the NGO-affiliated farmers had previously cultivated maize and beans.¹⁴ New supply chains are

nonetheless willing to source from such small and resource-poor farmers when NGOs are involved because NGOs subsidize the high costs of transacting with such farmers and mitigate some of the risks through training, product aggregation, transport or credit.

One complication of NGO involvement, however, is that when NGO funding or project cycles end and NGOs move on to other communities or activities, the costs of sourcing from the farmers who had been working with the NGO rise. In Nicaragua, Walmart buyers have been found to withdraw after a few seasons and move on to other locations, in some cases following the new project activities of the NGO.¹⁵ Because the retail-led market sector is at a nascent stage in Nicaragua, few other supermarket or other nontraditional market buyers exist to purchase from these small farmers once Walmart relocates. As a result, small farmers in these abandoned regions often return to selling into traditional markets. This is not necessarily bad from a farmer welfare perspective, as farmers may return to the traditional market with new technologies or marketing experience that could change the quantity, quality, or timing of their sales. There is insufficient research, however, on this topic. The Nicaraguan experience suggests that NGO investments in small farmer training and capacity building do not necessarily lead to durable post-NGO supply relationships between small farmers and supermarkets.

Supply companies in China identify and manage relationships with farmers and farm workers

Intermediary supply companies sourcing fresh produce in China face special challenges in securing sufficient year-round quantities due to the fragmentation of Chinese landholdings. Small landholdings limit the amount that each farmer can supply. To help reduce the costs of sourcing, produce supply companies in China selling to Walmart and other supermarkets have begun to work with groups of farmers rather than transacting with a host of individual farmers. Recent research finds that supply companies are intimately involved in the process of organizing land and labor in farm communities, though companies vary in the degree to which they have moved to aggregate land and the degree to which they manage agricultural production.¹⁶

Supply intermediaries selling to Walmart in China have organized production in two primary ways. First, companies are using a wage-worker model in which the company aggregates land by renting it from municipal governments and villages and hiring farm workers, sometimes imported from other regions of China, to do the farming. Second, they use a sublease model in which they rent land from local farmers or village leaders and then rent the land back to farmers through fixed-price rental or sharecropping contracts.

In some cases the company leases the land back to the same farmers from whom the land was rented. The result is that the farmer subsequently rents a different plot, a bigger plot, or a plot on which the company has made improvements or investments such as greenhouses or irrigation. In other cases, however, the land is leased to farmers who are new residents in the area or actively recruited and relocated by the company.

The supply company may combine these models, using both a wage worker and a sublease model on the same farm. While this sort of farm operation—involving land consolidation and a range of production models—is new for agricultural produce and new in China, it resembles models for sourcing production for processing studied in Latin America in the 1980s and 1990s.¹⁷

In a few cases and for a limited number of crops, supply companies have reported purchasing relationships that do not rely on land consolidation—contract farming or outgrower schemes—purchasing from farmers cultivating their own individual family plots. Nevertheless, sourcing relationships involving land consolidation were found to predominate in a 2014 study of Walmart’s fresh fruit and vegetable sourcing in China.¹⁸ The details of these land and labor arrangements matter, as they determine who manages farm production, investment, and profits and ultimately the impact on small farmers.

Road access and water supplies are important determinants of farmer participation

Participation in retail-led supply chains is limited to small farmers with particular geographic and agro-ecological endowments. These include altitude and climate, proximity to major roads that allow easy transport to retail outlets, and availability of water resources to support year-round (or at least off-season)

production of produce. Farmers with the access to finance to support capital investments in necessities like irrigation, greenhouses, and transport may also be able to participate.

In 2008 nearly all farmers supplying supermarkets in Nicaragua lived within one kilometer of the country's primary road.¹⁹ While NGOs played a role in establishing sourcing relationships in communities near the northern border that are further away from the centralized sorting and packing facilities in the center of the country, these locations still had good access to the primary road network. This critical point is often overlooked by policymakers and researchers—not all farmers will participate in new retail-led market opportunities because participation is conditional on geographic endowments that distinguish winners from losers, at least in the near term.

Location and access to water and infrastructure are also crucial to farmer participation in retail-led

Box 3

Small farmers and communications technology

Much as roads enable small farmers to access retail-led value chains by reducing transportation costs, mobile phones and other forms of information communications technology (ICT) facilitate market access by reducing information costs. Farmers depend on many types of information, for instance price information to identify the best sales opportunities, and weather information to adjust their agronomic practices. Research shows that under the right conditions, access to ICT can improve the efficiency of agricultural produce markets, reduce price volatility, and increase farmer income.²⁰

Access to ICT is especially important for small farmers attempting to sell their produce to retail-led supply chains. Unlike traditional buyers, big retailers require products in precise quantities that meet specific quality standards. Orders can be subject to last minute changes. When these changes are not communicated in time, the results can be devastating. ICT is a tool to avoid such losses since farmers with mobile phones and similar devices can quickly and cheaply receive order updates. Increasing access to ICT among small farmers can thus be an invaluable tool in profitably linking small farmers to big retail. As with access to water and roads, living in areas with good cellular phone network access is likely to determine farmer participation in retail-led supply chains. Those without access may be left out.

supply chains in China. Intermediary companies provide year-round supplies of produce in two important ways. First, they ensure year-round supplies through geographic diversification in sourcing, establishing farms in the north and the south. Second, intermediary supply companies make investments in production technologies that support out-of-season horticulture such as irrigation and greenhouses and

Participation in retail-led supply chains is limited to small farmers with particular geographic and agroecological endowments, proximity to major roads, and availability of water resources—or to farmers with the access to finance to support capital investments.

then rent plots back to farmers for cultivation or bring in farm workers as labor. This is a critical difference between China and Nicaragua. In China, the well-capitalized private intermediaries make the capital investments needed for retail-led supply chains rather than the farmers themselves.

Given the importance of geography and water to supermarket supply chains and farmer participation in both Nicaragua and China, it is clear retail buyers will favor regions where agriculture already tends to be more profitable because of access and resources. Retailers setting up supply chains are unlikely to favor building such systems in regions with longstanding infrastructure, resource, and climate challenges. New retail-led agricultural markets therefore may actually exacerbate inequalities between rural regions with market opportunities and profitable options and regions without such advantages.

For participating farmers, retail-led agricultural market transformation can increase productive assets and reduce poverty

A retail-led marketing system's impact on rural poverty depends on a number of factors, including the source of and the ownership of the investment in land, technologies, and other productive assets. Research in Nicaragua established that involvement in supplier contracts with Walmart increased small farmer productive asset stocks.²¹ One interesting aspect of this is the impact of reduced price volatility for farmers rather than higher sale prices. While there is evi-

dence that farmers have not received a mean price discernibly higher than they would have received in the traditional market, Walmart has instead offered purchase prices that fluctuate within a narrow range.²² Because the company has guaranteed to pay a specific

In Nicaragua, involvement in supplier contracts with Walmart increased small farmer productive asset stocks.

price between an agreed-on minimum and maximum, farmers operate with a measure of protection against the price volatility that vexes the traditional horticulture market.²³ These volume-based contract incentives are consistent with Walmart's well-known strategy with suppliers of other commodities, favoring high sales volumes over high per-item profits.²⁴ Small-scale farmers who have continued in Walmart Nicaragua's supply chains have increased their investment in agricultural production and in productive household assets.

A body of economic research has found both that asset accumulation can positively impact future income and that there is a strong inverse relationship between household asset stocks and vulnerability to poverty.²⁵ Because asset accumulation has proved to be a primary household pathway out of poverty, improvements to the household productive asset stock that are not channel specific—in other words, that are available to households for activities beyond supplying the supermarket or other buyer—could be transformative.

Such assets, including irrigation, transportation equipment, and other technologies, can benefit households by increasing the productivity of other

Participation in a retail-led marketing channel can transform household production fundamentals in ways that help these households grow their way out of poverty.

income-generating pursuits. For these reasons, participation in a retail-led marketing channel, when associated with investment in new technologies and productive assets, can transform household production fundamentals in ways that help these households grow their way out of poverty.

In the case of China, it is not yet clear if and how farmers benefit from these arrangements. Intermediary suppliers exhibit important differences

in how farmers and farm workers are compensated, depending on the type of production model the company is using. On farms run by a supplier intermediary using hired farm workers, laborers are compensated in one of three ways: on an hourly basis, with a fixed monthly salary, or at a rate dependent on productivity and output. Even on a single farm compensation rates have varied based on the perceived difficulty of the job. In cases where companies have employed migrant wage-workers from other parts of China, supply companies have provided dormitories and board as part of the compensation.

In situations where supply companies are making the production investments and hiring farm workers or subleasing land back to farmers, small-scale farm-

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ers might still benefit in important ways. The benefit depends on the farmers' alternatives to working with the company, the conditions under which they are participating, and the possibilities to learn about new technologies that might change their own future livelihood opportunities. For example, farmers working on large-scale farms could learn about new crops and seed varieties, new production practices and technologies, and postharvest strategies essential for new markets, including better ways of cleaning, packing, and sorting the harvested produce.

Risks remain for participating farmers

Amid all the demonstrated and potential benefits, the risks for participating farmers remain substantial and need to be considered in policy decisions. Retail-led supply chains often require farmers to countenance

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the possibility of payment default, transport failures, and contractual breach by buyers. Such risks can be higher for farmers producing perishable crops, new crops, or varieties with limited or uncertain demand among retail buyers in evolving markets. When the

objective is to address rural poverty in these new markets, it is important to consider who is called upon to bear risk along the supply chain.

Dropout rates suggest that retail-led agricultural supply chains are currently benefitting only a subset of farmers

It is important to note that numerous farmers dropped out of supply chains after several seasons of affiliation.²⁶ Purchasers frequently drop farmers because of problems with quality and contract fulfillment. Other farmers exit retail-led agricultural supply chains as a choice of their own. In Nicaragua more than 50 percent of farmers who had ever supplied Walmart between 2001 and 2008 had exited the supply chain by 2008. In China, when Walmart's horticultural team worked to restructure its horticultural procurement in 2013, the company sought to concentrate its supply chain on a smaller number of intermediary suppliers who could supply larger year-round quantities at competitive prices. This restructuring dropped a large number of supplier intermediaries—and as a consequence, their farmers—from the supply chain.

Lessons for policymakers, companies, and NGOs

As retail-led agricultural marketing systems continue to develop, NGOs, companies, and governments can benefit from the experiences and examples to date. These lessons can help guide policy and practices moving forward to maximize the benefits to farmers and help realize the opportunities these systems offer for increasing food security and reducing rural poverty.

For governments

- ▶ Road access and water supplies for agricultural production are critical determinants of farmer participation in new supply chains, a fact which may exacerbate rural inequality.
- ▶ Infrastructure development can serve as a means to facilitate greater supply chain participation among small farmers.
- ▶ Maintaining small farmer access to land and credit is important to ensure that small farmers participate in new markets, especially women.

- ▶ Investments in the traditional market system may also offer a pathway to increasing small farmer outcomes. These investments could include expanding credit opportunities for rural traders or investing in traditional wholesale and wet markets by improving the condition of market buildings, storage, and water and sanitation.

For companies

- ▶ By paying farmers a purchase price between an agreed-upon minimum and maximum, companies can provide farmers with a measure of protection against the price volatility that vexes the traditional horticulture market.
- ▶ Price stabilization/insurance afforded to small farmers by supermarket buyers has been associated with increased small farmer investment in production scale and farm assets.
- ▶ Firms should be aware of opportunities to design sourcing strategies that encourage the participation of women in supply chains. For example, employing female extension officers or buyers could be an appropriate and impactful way to involve more women farmers.

For NGOs

- ▶ Projects designed to build farmer marketing capacity may prove to be a zero-sum game if supermarkets or other supermarket supply chain buyers follow NGO projects (and NGO supply chain subsidies) when the NGO relocates to a new region or a new group of farmers.
- ▶ Farmer investment in productive assets during the supply relationship is likely to improve household welfare outcomes in lasting ways, especially once the supply relationship ends.
- ▶ Given high rates of exit from supply chains, NGOs should consider the implications for small farmers of an abrupt cessation to a retail-led supply relationship.
- ▶ Water and road access are critical for participation. Investments by NGOs may bring more marginal farmers into the retail-led supply chain, but these farmers may struggle to continue to participate in the market without NGO support and subvention.

Conclusions and next steps

There is still much to learn about whether and how retail-led transformation of agricultural supply chains affects poverty in the developing world. In absolute terms, and also as a share of the rural population in both China and Nicaragua, the number of small farmers directly involved in these relationships remains small. Given the importance of rural poverty in any serious thinking about the world's economic, political, and environmental future, we know far less than we should about these evolving systems and their prospects to make a difference for the good. Calculating the full effects of these supply chains is a real challenge. What will happen, for example, to the many nonparticipants? How will traditional markets and traders respond, both immediately and in the long term? What will the consequences be for agricultural laborers, especially for farmers who transition from owning their farm production to laboring on the farms of others? Will rural employment opportunities diminish as the number of intermediaries along the supply chain shrinks? How will rural economies change as a result? Pragmatic public policies, founded on accurate information and solid theory, could assure that new market forces will benefit the largest portion possible of the smallholder farmers in developing countries.

About the author

Hope Michelson is an assistant professor in the Department of Agricultural and Consumer Economics at the University of Illinois, Urbana-Champaign, and nonresident fellow, global food & agriculture, at The Chicago Council on Global Affairs. Michelson earned her PhD in applied economics at Cornell and completed a postdoctoral fellowship with the Agriculture and Food Security Center at Columbia. Her research in the developing world centers on relationships among agriculture, poverty, and market institutions. One specific interest is the evolving impact on small-scale farmers of new large-scale market systems for agricultural products. She has studied supermarket supply chains for fresh fruits and vegetables in China and Nicaragua and their implications for farmer participation and welfare. Other interests include interconnections among soil fertility, the use of agricultural inputs, and local and regional food security. Ongoing projects include an evaluation of the impact of soil testing and management recommendations with regard to farmer production decisions in Tanzania; a multiyear study of an integrated soil fertility management (ISFM) project and improved market access in Central Malawi; and research on agricultural inputs suppliers and mineral fertilizer quality in eastern Tanzania.

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