



A New Breed of Tomato Farmers? The Effect of Transnational Supermarket Standards on Domestic Cultures of Production and Trade

JENNIFER WIEGEL

[Paper first received, 1 March 2012; in final form, 14 May 2013]

Abstract. Transnational supermarkets are entering and establishing themselves in distinct national contexts, yet their success depends on the effective localization of their operations in each new place. The establishment of local supply chains, vertically coordinated through the implementation of private standards, is a key localization strategy. Supermarket procurement practices introduce a wide array of standards that influence not just product quality, but how the product is produced and by whom as well as how it is procured and traded.

This research compares domestic suppliers of a fresh vegetable (tomato) across two types of retailers (wet markets and supermarkets) in a lower-income developing country (Nicaragua), to better understand the effects of supermarket procurement practices in developing countries. While economic geographers and others propose that in order to be successful in new countries supermarkets must adapt to local cultures of production and consumption, I found that a major transnational supermarket chain, instead of adapting to local cultures of production and trade, sidestepped them completely. Through the introduction of a broad range of novel procurement standards this supermarket chain induced changes not just in product attributes and production practices, but also in the organization of production in time and space and in how products are exchanged, including units of sale, payment methods, and coordination mechanisms. In order to better understand the effects of the transnational supermarket growth in developing countries, we need to expand the lens beyond product grades and standards to procurement practices and standards more generally.

Introduction

Transnational supermarket chains have spread rapidly across the developing world over the past two decades, expanding into new countries and increasing rapidly their store numbers and market share. Since 1990 supermarkets have expanded in developing nations by diversifying formats to serve middle and low-income neighbourhoods and moving beyond capital cities into smaller cities and towns. In doing

Jennifer Wiegel is Regional Representative for Central America and Haiti, Lutheran World Relief, De donde fue el Chaman, 1 c arriba y 1 c al lago, Managua, Nicaragua; email: <jenny.wiegel@gmail.com>.

so, supermarkets have increased their share of food retailing in developing countries from an average of 10–20% in 1990 to an average of 50–60% in some regions by 2000 (Reardon and Berdegué, 2002). Much of this growth comes from transnational supermarkets spreading into new countries, with Latin America and Asia leading the way, Africa and Eastern Europe following behind. In higher-income countries such as Argentina and Chile, supermarkets control over 60% of food retail, while in lower-income countries in Africa they control less than 10% (on ‘waves of supermarketization’, see Reardon et al., 2007; Timmer, 2008).¹

As transnational food retailers spread across the developing world transforming the way urban households shop for food, this globalizing process is made possible/ accompanied by strategies of production localization that allow retailers to source some of their wares locally. Transnational supermarkets are entering and establishing themselves in distinct national contexts, yet the literature suggests that their success depends on the effective localization of their operations in each new country (Coe and Lee, 2006). In order for transnational food retailers to establish themselves in a new host economy, researchers have argued that they must implement specific strategies to localize their operation, including the establishment of local networks for sourcing goods from farmers (Reardon et al., 2007).

In this article, I explore the effects of these localization strategies on domestic cultures of production and trade, meaning the way food is produced and marketed locally. This research compares domestic suppliers of a fresh vegetable (tomato) across two kinds of retailers (wet markets and a transnational supermarket chain) in a lower-income developing country (Nicaragua), to understand better the effects of supply chain localization by transnational supermarkets in developing countries. I show how, in establishing local supply for tomatoes in Nicaragua, a particular transnational food retailer sidesteps local cultures of production and trade to produce a wholly new procurement system with important implications for the farmers who supply them.

The article proceeds as follows. I describe the entry and growth of supermarkets in Nicaragua. I compare farmers supplying supermarkets with those producing for wholesale markets to show how the implementation of private procurement standards by supermarkets has radically reconfigured practices for the production and exchange of tomatoes in Nicaragua. I end with a discussion of the implications of these procurement practices for farmers in developing countries, focusing on how private procurement standards remove transactions from the market, make price comparisons difficult, and raise the costs of switching market channels – all affecting market competition.

Supermarkets in Developing Countries

As a phenomenon, this ‘supermarket revolution in developing countries’ has attracted attention within many disciplines – agricultural economics, economic geography, sociology, international business, and development studies as well as within policy circles (Barrientos and Dolan, 2006; Ruben et al., 2006; Burch and Lawrence, 2007; Swinnen, 2007; Vorley et al., 2007; Wrigley and Lowe, 2007; Farnworth et al., 2008; McCullough et al., 2008; World Bank, 2008; Reardon et al., 2009). While a major concern of this literature has been the impacts on or opportunities for farmers of supermarket growth, a sizeable portion of this work has focused on corporate strate-

gies for entering new host economies, i.e. their 'localization strategies'. Yet scholars are divided as to what this process means.

Economic geographers see the localization of transnational retailers as a process of adapting to the cultures of production in the places they do business. They view retailing as an activity that is highly embedded territorially in a particular place, arguing that because supermarkets source the majority of their products domestically, retailing requires connection to local supply chains and production networks (Coe and Lee, 2006; Coe and Wrigley, 2007; Dawson, 2007). Along similar lines, Humphrey argues that whether and how much supermarkets vertically coordinate supply chains (i.e. their localization strategy) depends on the local characteristics of consumers, wholesale markets, and production and the relative local costs of establishing vertically coordinated supply chains vs. other alternatives (Humphrey, 2007). For these scholars, localization is about adapting corporate strategies to the realities of the host economy. The local context, as they see it, shapes how supermarkets must operate in a new place.

In contrast, other scholars studying this phenomenon see the localization of transnational retailers as a process of transforming pre-existing business and production cultures to fit corporate practice. Busch (2007) argues that when supermarkets enter a new country they don't just play on the 'level' playing field they encounter, but attempt to reshape the field to their advantage using a variety of strategies under the umbrella of supply chain management (SCM). Using the imagery of mathematical manifolds, Busch argues that while neoclassical economics sees a level playing field in two dimensions, transnational retailers see it in three, and their strategies are focused on reshaping the field in its third dimension levelling it to their advantage. Similarly, agricultural economists who have studied the growth of transnational retailers in developing countries claim that supermarkets take local conditions not as exogenous conditions to which they must adapt, but as endogenous conditions 'they could alter for their own gain'. They argue that transnational retailers implement 'proactive fast tracking strategies' in order to alter local conditions in their favour and successfully enter new host markets (Reardon et al., 2007; Timmer, 2008). These proactive fast tracking strategies include procurement system modernization and local supply chain development.

Competition between retailers is seen by these authors as competition between supply chains, shifting the unit of analysis from the firm to the supply chain. They argue that retailers increasingly use vertically coordinated supply chains as a way to optimize the supply chain as a whole, from production to consumption (Busch, 2007). While we often see retailers as competing for consumers, focusing on differentiation strategies, particularly the use of private product grades and standards with regards to consumers as the main drivers of retail behaviour, a SCM perspective highlights how retailers also implement strategies in relation to suppliers, not just to differentiate products, but also to attract and retain suppliers to ensure supply, to keep prices low and to keep quality high. They describe the establishment of vertically coordinated supply chains, or 'modern procurement systems', in developing countries as having three main pillars: first, the centralization and integration of procurement across space through the use of distribution centres; second, sourcing from preferred suppliers as opposed to in wholesale markets; third the increasing implementation of private standards for food quality and safety (Reardon and Berdegue, 2002; Boselie et al., 2003; Reardon et al., 2008; Timmer, 2008).

The SCM perspective highlights further how transnational retailer strategies seek not only to optimize returns relative to other supply chains, but relative to other actors in their supply chain as well (Busch, 2007). Distinct procurement practices distribute costs and benefits differently along a chain, with important implications for farmers. Much attention has been focused on the use of private product grades and standards by supermarkets and the implications for farmers in terms of production costs, investments, and inclusion in the chain (Balsevich, 2003; Neven and Reardon, 2004; Berdegué et al., 2005; Swinnen, 2007). Far less attention has been paid to the implementation of standards related to market transactions and the implications of these for farmers. The transformations brought about by supermarket procurement practices are not just in products and production in response to private product grades and standards. Important changes are occurring as well in how the product is traded, with much deeper implications for markets and competition. I argue here that a SCM lens applied to the growth of supermarkets in developing countries helps bring to the fore a host of practices supermarkets implement with regards to suppliers that have been otherwise overlooked.

Transnational Supermarkets and Supply Chain Localization in Nicaragua

In Nicaragua, the vast majority of food – and of tomatoes in particular – is sold through municipal markets. Around 74% of tomatoes were traded in municipal markets around the country in 2003 (Balsevich et al., 2004).² These open-air markets are run by municipalities and consist of vendor stalls organized by product category. The supply chain leading to municipal markets is comprised of producers, wholesalers and retailers, with occasional participation of intermediaries. Retailers who operate stands in municipal markets most frequently purchase their tomatoes on short-term (1–3 days) credit from wholesalers who buy them outright from farmers. Wholesalers often extend production credit to farmers for 45–120 days or act as investing partners in production. Wholesalers drive this chain, agglomerating supply from farmers in different regions of the country in different seasons and grading the product, by size, before selling it on to retailers.

In 2007, 22% of food was sold in supermarkets in Nicaragua. Over half of this was sold by Wal-Mart, a transnational food retailer (Planet Retail, 2009). While supermarkets have been around in Nicaragua since the 1960s, their growth has taken off since the late 1990s, with a serious spurt after the entry of Royal Ahold, the first transnational food retailer, in 2001. Ahold entered Nicaragua as part of the Central American Retail Holding Company (CARHCO), a regional joint venture with Corporación Supermercados Unidos (CSU) of Costa Rica and La Fragua of Guatemala (Berdegué et al., 2005; Balsevich et al., 2006). Between 2001 and 2003 CARHCO began centralization of procurement (previously done on a store-by-store basis), through the establishment of a distribution centre for imports. During this period CARHCO also initiated the development of private standards applied at their distribution centres (Berdegué et al., 2005). Between 2003 and 2005 CARHCO shifted from the use of wholesale markets towards the use of preferred suppliers to procure domestic produce, with tomatoes leading the way. This shift was accompanied by the implementation of private grades and standards for fresh fruit and vegetable products (Berdegué et al., 2005) and for procurement. In 2005 Wal-Mart bought out Ahold and by 2006 became the majority shareholder in what then became Wal-Mart Centroamérica. Since this time they have begun to harmonize and integrate procure-

ment within Nicaragua and across their stores in Central America (Interviews with procurement personnel, 2008) and since 2009 with operations in Mexico, becoming Wal-Mart Mexico and Central America (Walmart de México y Centroamérica, 2012).

Wal-Mart purchases tomatoes through its procurement arm from farmers' organizations in coordination with local NGOs. These farmers' organizations consolidate product across their members to meet supermarket demand for products, quantity and quality year-round. Farmers and farmers' associations collect, grade and standardize the product and the supermarket picks it up in the community three days per week. In the supermarket channel, retailers are the drivers of the chain, orienting other actors toward their demands.

Methods

This research uses the concept of commodity chain to delimit units for analysis by tracing a commodity from a retailer's shelves back into production as a way to compare across different commodity chains, in this case two domestic commodity chains for the same crop but ending in different retailers – a transnational supermarket chain and municipal markets. I chose tomato for a number of reasons. First, it is a crop that is widely produced and consumed within the country, so there are well-developed domestic market channels. Second, it is a crop for which there is no processing between producer and consumer, so retailers are the main influence on the chain, not processors. Finally, tomato is one of the most important fresh fruit and vegetable products for supermarkets in general, and for this supermarket in particular (Interview with procurement personnel, 2009), so procurement systems for this crop are well developed.

I documented and analysed the tomato commodity chain by conducting interviews with current and previous supermarket procurement personnel, including field buyers and distribution centre staff, wholesalers, retailers, intermediaries, and farmers, as well as NGO and government personnel, and farmers' organizations. Interview data were complemented by data from government and non-governmental organizations, as well as from several other studies of tomato supply chains for this supermarket in Nicaragua (Balsevich et al., 2004; Segur et al., 2004; Wiegel, 2006; Hernández and Reardon, 2012; Michelson et al., 2012).

The farmer data reported here were collected from interviews conducted during 2008, with samples of 20 farmers within each supply chain. Key informant interviews were used to establish the universe of farmers in the supermarket supply chain, from which to select farmers to interview. Agricultural census data (INEC, 2001) were used to establish the universe of farmers producing for wholesale markets. Farmers were selected through a two-stage process: communities were selected first, and then a sample of 10 farmers within each community for interviews. Farmers were asked about the history and current situation of their farm, agriculture, employment, income, and family. Interviews also explored former and current production systems, marketing practices, and perceptions of market options for tomatoes.

Results: A New Breed of Tomato Farmers

The two groups of farmers, those selling to wholesalers and those selling to supermarkets, exhibit important differences in their characteristics, production systems

and marketing practices. They have, in fact, evolved as separate communities of practice (following Wenger, 2000), almost in isolation from each other; hence, the reference to a 'new breed of tomato farmers'.

Different Communities, Different Farmers

In comparing farmers across these two retail channels, important differences at the level of community and farmer characteristics are revealed. At the time the research was conducted the transnational supermarket was sourcing 80–90% of their tomatoes from two communities in northern Nicaragua where they began buying in 2005. Neither of these communities is a traditionally tomato or vegetable producing community, nor are they located in traditional tomato-producing regions.³ For these reasons, tomato buyers do not visit these communities on a regular basis. Most of these farmers had never even grown tomatoes before supplying supermarkets. Farmers in both communities had initiated tomato production one to three years previous to my interviews with strong support from an NGO that also supported the creation of farmer organizations in these communities focused on marketing to supermarkets. In contrast, the communities supplying wholesalers are historically tomato producing communities and the majority of farmers had planted tomatoes regularly over the previous 20 years in one community and 15 in the other. Buyers are ever-present in these communities and actively promote tomato production. NGO presence in agriculture in one of these communities is very low, and in the other is focused on other crops (papaya and eggplant).

Though all farmers producing for both channels classify as small farmers, comparing data on farmers across these groups reveals important differences in farm assets and experience with tomatoes. Wholesaler suppliers are compared to supermarket suppliers at the time they began selling to supermarkets to control for the effects of supermarkets on these factors. Table 1 shows that supermarket suppliers owned on average 20% less land and were much less likely to have irrigation or to have planted tomatoes in the year previous to their first sale to supermarkets. Only 21% of supermarket suppliers had planted tomato in the year prior to supplying supermarkets, and those who did planted much smaller areas than farmers supplying wholesalers. Seventy-five per cent of supermarket suppliers had not planted tomatoes in the previous five years, and 65% had never planted tomatoes at all.

Table 1. Differences in farmer characteristics between wholesaler and supermarket suppliers.

	Wholesaler suppliers (n=22)	Supermarket suppliers (n=20)
Landholdings (mz)*	6.2 (9.8)†	5.3 (7.2)
Own a vehicle	0%	5%
Have irrigation	100%	32%
Grew tomatoes in the previous year	100%	21%
Area planted in tomato previous year (mzs, of those who planted)	2.1 (1.3)	0.5 (0.2)

Notes: * 1 mz = 0.7 hectare; † numbers in parentheses are standard deviations.

Between 2004 and 2008, Wal-Mart went from sourcing 10–90% of its tomatoes year-round from preferred suppliers adhering to private grades and quality standards (Interviews with procurement personnel, 2008). While they had arguably been successful in ‘localizing’ their supply channels, they had done so, not by sourcing from the over 4,000 existing tomato farmers in the country (INEC, 2001), but by working with farmers who, for the most part, were new to tomato production.

Different Production Practices

The production system of supermarket suppliers differs in several ways from that of farmers supplying wholesalers. Farmers supplying wholesalers plant larger tomato areas in a year as well as larger plots at a time (see Table 2). They also plant with a marked seasonality, which varies by region as a function of rains or other priority crops they plant. As a result, wholesalers’ sourcing regions also shift seasonally. Supermarket suppliers, on the other hand, plant half as much area in tomatoes during a year and cultivate much smaller plots at a time.⁴ They also plant throughout the year, with no marked seasonal pattern to production. Supermarkets source in the same places and from the same farmers year-round.

Key production technologies, such as seed variety and seedling production, are also different across these two groups of farmers. Wholesale market suppliers most frequently use Butte, Shanty and Peto seed varieties, and produce their own seedlings on-farm in seedbeds in the ground or in seedling trays in home-made greenhouses. Supermarket suppliers, on the other hand, use overwhelmingly Comanche, then Shanty varieties, and purchase their seedlings in seedling trays from commercial greenhouses (see Table 2). While these results align with other studies of farmers supplying different retail channels showing differences in production practices associated with different quality standards (Flores and Reardon, 2006; Hernández et al., 2007; Berdegué and Reardon, 2008), here I highlight differences in production practices related to the establishment of stable procurement routes, in addition to practices related to quality standards

Different Marketing Practices

The most significant area of difference between these two groups is in marketing relationships and sales transactions, including units of sale, prices, forms of payment, and coordination mechanisms. The units of sale, including the grades and standards

Table 2. Differences in production between wholesaler and supermarket suppliers.

	Wholesaler suppliers (n=22)	Supermarket suppliers (n=20)
Area grown in a year (mz)	2.1 (1.32)	0.98 (0.63)
Field size	1.25 (1)	0.43 (.21)
Seasonality	Marked	None
Seed varieties	Butte (45%) Shanty (40%) Peto (35%)	Comanche (79%) Shanty (47%)
Seedling production	Produced on-farm (100%)	Purchased (100%)

Notes: * 1 mz = 0.7 hectare; † numbers in parentheses are standard deviations.

as well as the units of measurement are different. Prices are different, as is the way they are negotiated. The form of payment, as well as how and where transactions are negotiated and conducted, also varies.

Farmers sell to wholesalers by the *cajilla*, a volume-based measure referring to one full plastic crate. Tomatoes are graded into three size categories, which determine price. The wholesaler generally both grades the product and measures out the number of units. Price is negotiated per crate for each size category. Measurement is visually verified by both parties at the time of sale.⁵

Farmers sell to supermarkets by the *estándar*, a weight-based measure referring to a crate filled with exactly 25 lb of Roma tomatoes meeting specified weight, size, shape and appearance standards. Farmers are responsible for selecting tomatoes which meet the quality standards and standardizing their tomatoes into these units using a scale before the supermarket picks them up. Prices are negotiated by pound (lb) of tomatoes. The buyer verifies measurement by checking the scale used and by weighing a sample of *estándares* (see Table 3).

Average prices and price variability also differ across these two groups. Farmers selling to wholesalers reported a much broader range of prices, with a much higher high price and a much lower low price received for tomatoes as compared to supermarket suppliers (see Table 4). Michelson et al. (2012) analysed weekly price data for 2007 (also in Table 4) from supermarket receipts and prices collected from wholesalers by the Ministry of Agriculture to calculate average prices paid by these two buyers. They found a significant difference in prices between these two channels with average prices paid by wholesalers being higher and more variable than those paid by Wal-Mart, consistent with my own findings.

Wholesalers pay farmers directly, in cash, on delivery, and without deductions. Grading, taxes or fees are paid for separately by the wholesaler. Payments by supermarkets, on the other hand, are paid through farmers' organizations by bank transfer up to 20 days after the transaction has taken place. Deductions are made from the established price for sales tax and product grading (see Table 5).

How farmers coordinate with buyers also differs across these two groups. Farmers supplying wholesale markets generally negotiate sales when the harvest is ready. The wholesaler agrees to buy all tomatoes ready to be picked on a given day at a given price for each quality. Farmers negotiate prices directly with the buyer before harvesting and volumes to be transacted depend on the farmer's yields. Wholesalers drive the chain, spot transactions dominate, and the costs of switching buyers are low (see Table 6).⁶

Farmers supplying supermarkets generally negotiate sales before planting. The supermarket agrees to buy all tomatoes that meet their quality standards, up to their quota for any given day. A representative of the farmers' organization negotiates with the buyer on the farmers' behalf. The price range is known before harvest, but not the exact price. Volumes to be produced are determined by the buyers projected demand, but at the time of sale only those tomatoes that meet the buyer's standards and demand are purchased. Retailers drive the chain, coordinated transactions dominate, and the costs of switching buyers are high.⁷

Farmers who sell to supermarkets, along with their production and marketing practices are very different from farmers selling to wholesale markets. These differences go beyond production techniques needed to meet supermarket product quality standards most often described in the literature. The differences begin with the type of farmer, and include production practices to meet supermarket preferences

Table 3. Units of sale used in transactions by wholesalers and supermarkets.

	Wholesalers	Supermarkets
Unit used to purchase from farmers	<i>Cajilla</i> (full plastic crate)	Lb (crate with 25 lbs of tomatoes)
Kind of unit	Volume	Weight
Grades and standards	Size grades (affects price)	Size, weight, appearance (determines sale)
Who measures / grades	Buyer	Seller
Method of verification	Visual	Instrument
Source of dispute	How full the crates are	Which scale to use
Unit used to sell on	<i>Cajilla</i>	Lb

Table 4. Differences in prices between wholesaler and supermarket suppliers.

	Wholesaler suppliers (n=22)	Supermarket suppliers (n=20)
High price*	4.9	3.3
Low price*	1.5	2.2
Average price (Sébaco)†	5.2	3.4
Average price (Ocotal)†	6.3	4.2

Notes: * Reported by farmers in interviews; † from Michelson et al., 2012.

Table 5. Differences in how payments are made between wholesaler and supermarket suppliers.

	Wholesaler suppliers (n=22)	Supermarket suppliers (n=20)
Payment method	Cash (100%)	Bank transfer (100%)
When payment made	On delivery (86%)	Delayed (100%)
Who is paid	Individual	Collective
Adjustments	No deductions	Deductions for sales tax and grading

Table 6. Differences in coordination mechanisms between wholesaler and supermarket suppliers.

	Wholesaler suppliers (n=22)	Supermarket suppliers (n=20)
When sales agreement made	At harvest	Before planting
Negotiation	Direct	Intermediated
When exact price is known	Before harvest	After harvest
Volume transacted	Everything the farmer harvests	Only what meets buyer's standards and quantity demands
How chain is driven	Wholesaler Spot transactions Costs of switching low	Retailer Coordinated transactions Costs of switching high

for volume and procurement route, in addition to quality standards and marketing practices. Supermarkets elected to work with inexperienced tomato farmers using a particular set of procurement practices. This, in turn, produced a very different kind of tomato farmer.

Discussion

Ahold/Wal-Mart, in this case, did not adapt to existing cultures of production and trade in order to localize their operations in a new host economy. Instead, this transnational food retailer, upon entering Nicaragua, began working with farmers who were not involved in tomato production at all. Through the introduction of a broad range of novel procurement practices, it created a new culture of production and trade, one that fit better with supermarket preferences for procurement.

The findings I present here extend the debate on supermarket localization strategies in two ways. First, I highlight contradictions between my findings and that of other research on supermarket localization, suggesting alternative explanations. Second, I explore how a supply chain management lens helps highlight elements of supermarket localization strategy vis-à-vis suppliers that have important implications for markets and competition.

Supermarket Localization Strategies Revisited

There are several aspects of the supermarket localization debate that this research speaks to, challenging, reaffirming or extending assumptions. In particular, this research raises questions about the assumptions that transnational supermarkets will supply from more capitalized farmers where they exist; that private product quality standards are the main driver of supermarket procurement strategies and impacts on small farmers; and that supermarkets seek to adapt to local cultures of production and trade. These are discussed in turn below.

Supermarkets Will Supply from More Capitalized Farmers

Multiple studies have asked what kind of farmers supermarkets prefer to source from, with overwhelming evidence of a preference for larger, more experienced, and more capitalized farmers (top third of small farmers, per Berdegué and Reardon, 2008). The reason, they explain, has to do with the requirements supermarkets impose on suppliers including volumes, quality, consistent supply, and post-harvest processing. Yet in this case, supermarkets did not establish sourcing relationships with existing larger, more experienced and more capitalized tomato farmers; quite the opposite. Here I find supermarkets choosing smaller, poorer, less experienced tomato farmers to source from. This directly contradicts economic geographers' suggestion that transnational retailers would seek high levels of territorial embeddedness, including in local production and supply networks (Coe and Wrigley, 2007) and findings of others that transnational supermarkets prefer sourcing from larger, more capitalized and more experienced farmers where they exist (Berdegué et al., 2005; Flores and Reardon, 2006; Natawidjaja et al., 2006; Berdegué and Reardon, 2008).

The reason, in this case, is not because these farmers did not exist, but because they were unwilling to comply with supermarket requirements. The supermarket

procurement arm attempted on several occasions between 1998 and 2005 to source from existing tomato farmers, but they were unsuccessful, explaining that farmers were unwilling to comply with supermarket procurement requirements, and/or were too loyal to existing buyers. This suggests not only that a farmers' ability to comply, in terms of resources, experience and farm size are important for selecting suppliers, but that *willingness* to comply with (or ability to impose) supermarket procurement practices is equally important. In understanding supermarket procurement strategies, particularly with regards to farmer selection, I suggest considering willingness to comply as well as capacity to comply with supermarket procurement requirements. In this case, being unable to get existing, experienced, more capitalized tomato farmers to comply with their procurement preferences, supermarkets employed an alternative strategy to find new farmers on whom they could impose these requirements.

Product Quality Standards Are the Main Driver of Supermarket Procurement Strategies

A heavy focus in the supermarkets and small farmers literature has been on product quality standards, with the question being whether or not supermarkets will implement private product quality standards, and what kind they will implement as a way to predict the impacts on small farmers in developing countries. The expectation for poorer developing countries, where public standards are low and poorly enforced and consumers' priorities focus on price not quality, is that supermarkets will not implement private standards or only very basic ones. Humphrey (2007), for example, predicts procurement systems that are not so vertically coordinated, or that supermarkets would simply purchase in wholesale markets, resulting in fewer requirements and challenges for small farmer participation in the chain. In this case, quality standards were predictably basic, focused on appearance, with no expensive tests or certification costs associated. Yet, despite minimal quality standards, radical impacts on practices of suppliers suggests that for developing countries transnational supermarkets procurement preferences related to stable sourcing routes, volumes, and payment mechanisms, for example, may pose much more important challenges to small farmers than portrayed in the literature. While Berdegúe and Reardon (2008) mention transactional requirements of supermarkets, more work is needed to detail what this refers to and the implications of these for supermarket suppliers and small farmers in particular.

Supermarkets Seek to Adapt to Local Cultures

In sourcing from farmers who were uninitiated with regard to tomato production, the supermarket shaped their production and marketing practices in ways that conform to supermarket demands. With little competition from other buyers, the farmers from whom supermarkets sourced became tomato farmers under the tutelage of supermarkets and, as a result, became a very different kind of tomato farmer. Drawing on Wenger's (2000) definition of communities of practice as having the following three things in common: a domain of interest, a community where they interact and learn together, and a shared practice; we can understand these groups to be distinct communities of practice. While they may have a common domain of interest, producing tomato, there is little or no interaction between these groups and little shared practice has developed as a result. This 'new breed' of tomato farmer not only organizes production on their farm differently to produce a slightly different tomato, but they have a very different social organization of production. This

includes the social organization of production on the farm including differences in the use of labour and financial resources.

A still more significant difference is the social organization of production within the community requiring coordination with other farmers through a legally constituted organization around production practices, planting dates and areas, harvesting and marketing, and payment practices. While organizing often brings opportunities for greater negotiating power and collaboration, it also brings new costs and risks. Farmers must invest in the establishment and maintenance of the organization, which effectively becomes a new intermediary along the chain. Aside from their high risks of failure (Berdegué and Reardon, 2008), these organizations become primarily marketing organizations, where the business of the organization (selling a product) becomes more closely related to the business of the buyer (buying a product) than that of farmers (improving household incomes). Conflicts of interest can arise particularly as financial operations of the farmer organization become tied up with sales through the cooperative to a buyer, and these organizations struggle to enforce requirements for buyers, and ensure that farmers sell through the cooperative and not independently.

While it might seem strange to suggest that supermarkets promote or require farmers to organize when they are so often portrayed as pitting suppliers against each other, here, supermarkets do not engage with individual farmers but with farmer organizations as suppliers. It is at this level that supermarkets pit suppliers against each other. In the case at hand, supermarkets actively pit farmer organizations against each other, vying for volumes and lowering prices. The farmers' organizations saw themselves in active competition with other farmer organizations.

The Supply Chain Management Lens

Supermarket procurement practices have sought to coordinate supply chains back into production. The objectives of this have been understood as the ability to impose product quality standards on producers in order to differentiate their products to consumers as a key competitive strategy, shifting competition away from price. Yet a supply chain management (SCM) lens broadens that focus to the whole supply chain, and suggests that enrolling suppliers maybe as important as capturing consumers. Supply chain management allows supermarkets to manage many aspects of the supply chain that contribute to profits, including costs and finance, as well as product quality and availability. For this case, I point to three elements of this supermarket's strategy to enrol and retain suppliers: removing transactions from the market, making price comparisons difficult, and increasing the costs of switching buyers.

Removing Transactions from the Market

Goods are procured in the proverbial market where buyers and sellers come together to exchange goods and money. Market transactions are regulated by conventions of product definition and quality, rights and responsibilities of buyers and sellers, and delivery and payment methods. Prices are a function of supply and demand as well as the relative power of buyers and sellers in the market. Supermarket procurement practices, however, have removed transactions from the market, coordinating supply chains back into production.

Tomato farmers who sell in wholesale markets in Nicaragua carry out their sales in the context of a market where there are multiple buyers and sellers with whom they interact in the process. Farmers who sell to transnational supermarkets, however, carry out their transactions outside of markets. Not only are transactions negotiated and carried out far from wholesale markets,⁸ they are carried out in places that are not frequented by buyers as they are not traditionally tomato producing communities. When Ahold/Wal-Mart entered Nicaragua, this strategy allowed them, at least initially, to establish relationships with farmers in a competition-free environment. They were able to establish the terms of trade as farmers not only had no contacts with alternative buyers, but most had no previous experience with tomato markets. This allowed supermarkets to establish their own conventions for quality, negotiate prices with reference to something other than the market price, in this case effecting a lowering and stabilization of procurement prices, and to push tasks and costs down the chain onto suppliers, establishing a new distribution of costs, risks and benefits.

Making Price Comparisons Difficult

The introduction of public standards for products and product qualities, including units of sale, simplify and facilitate market exchanges by controlling for qualities and quantities such that negotiations can focus on price. The introduction of private grades and standards, however, create a multiplicity of standards, complicating market exchanges by making products difficult to compare and shifting the focus from price to product attributes (Busch, 2000). In the case at hand, the different standards for size, quality, and units of sale used by supermarkets made price comparisons across channels practically impossible. By how many pounds (lb) should one multiply the supermarket price to establish a price comparable to that of a crate as sold in the wholesale market where crates weigh between 45 and 70 lb? Size grades for wholesale markets are small, medium and large, while size grades for supermarkets are based on a minimum size that is in between the wholesalers' small and large such that some 'medium' tomatoes fall above the threshold and some below. Additionally, tomatoes sold to wholesale markets include blemished, deformed, and very ripe tomatoes, all of which are rejected by supermarkets, so price comparisons require some estimate of the level of rejects by supermarkets and the price obtained for those in other markets. Differences in what is or is not included in prices and deductions from them, as well as arrangements used for transactions, further complicate direct price comparisons. Farmers selling to supermarkets must deduct the cost of grading and standardizing and tax withholdings from the supermarket price; farmers selling to wholesalers must deduct the cost of transport from the wholesaler price such that, in either case, exact costs per unit of tomato are not known until the time of sale.

With different methods of measuring the product and incomparable grades and standards, the wholesale markets do not serve as a good reference for supermarket suppliers in assessing the terms of trade being offered by the buyer, and vice versa. When considering product sale prices, farmers tended to compare prices received from the same buyer in the past, rather than prices paid by other kinds of buyers at that time. Discontent was expressed not by selling to a different buyer, but by negotiations with the supermarket buyer. For supermarkets, this serves to shift conflict from price to quality standards or other parts of the relationship that are easier for supermarkets to modify.

Increasing the Costs of Switching Market Channels

Insofar as buyers impose chain-specific investments on farmers, they increase the farmers' costs of switching buyers. Supermarket procurement practices impose different requirements on a farmer's production system than wholesalers do. The organization of production for supermarkets (smaller areas throughout the year as opposed to larger areas seasonally for wholesalers) imposes different requirements in terms of irrigation equipment, water and labour needs, and cash flow. Selling to supermarkets requires coordination with other nearby farmers, including investments in organizational strengthening, processing facilities, and accounting systems. Wholesaler suppliers think twice about making these kinds of investments, while supermarket suppliers think twice about letting such investments go to waste once made.

Different production systems also shape how farmers view and are viewed by different kinds of buyers. Farmers who produce for supermarkets plant small areas throughout the year and sell what does not meet supermarket standards or demand to local wholesalers and retailers as small volumes do not merit transport to national wholesale markets. Yet local markets are thin, and because they are selling the rejects from supermarket production they receive a discounted price (Balsevich et al., 2004). Compared to supermarket buyers, local wholesalers and retailers buy small volumes and pay similar or lower prices; therefore, farmers who produce for supermarkets prefer them. From a wholesaler's perspective, these farmers have little to offer in the way of volume, and do not plant preferred varieties.

Farmers who sell primarily to wholesalers, on the other hand, tend to plant larger areas seasonally. They market their tomatoes in the national or regional wholesale markets where they can sell whatever volumes they produce and receive full price for their tomatoes. Compared to supermarket buyers, these buyers require less or no grading, no group arrangement with other farmers, buy unlimited quantities, and pay a similar or higher price, in cash; wholesalers are preferred. From a supermarket's perspective, these farmers cannot offer year-round supply, deferred payment or their preferred variety, and are unwilling to grade the product.

As farmers orient their production system to one kind of buyer, they become more attractive to that buyer and less so to other kinds of buyers. This reinforces the market choice, also making it difficult to switch from one to another. For one group of farmers it took six months to switch between the supermarket and national wholesalers. This helps explain why, in interviews, farmers expressed more interest in other buyers of the same kind than other buyers of a different kind. But for supermarket suppliers, the number of alternative buyers is limited. One group of supermarket suppliers successfully switched to the domestic supermarket chain, but it took six months to establish a relationship and required significant changes to production systems, quality standards, and even units of sale. Supermarket suppliers also explored restaurants and independent supermarkets, but since few buy directly options were limited. For wholesaler suppliers, however, with five wholesale markets around the country there are many alternative buyers.

The creation of vertically coordinated supply chains by transnational supermarkets produces not only a differentiated product, but also a differentiated set of costs and benefits of insertion in the chain, making it difficult to compare across chains, as well as to switch from one to another. This can be understood best as the emergence of a supply chain management strategy where retailers compete to enrol actors into their chains, while promoting coordination between actors within the chain by mak-

ing switching or participation in multiple chains difficult. This reduces competition between farmers in different chains by reducing the competition supermarkets face from other buyers for a suppliers goods. Yet at the same time, supermarkets actively promote competition between suppliers within the chain, in this case farmer organizations, actively enrolling new suppliers, but in a context of multiple sellers to a single buyer. Once within the supply chain, as the ease of switching decreases, incentives for suppliers to cooperate with the retailer within the chain increase. This limits market alternatives for farmers and therefore bargaining power, even within the current context of strong alternative markets in Nicaragua.

Implications for Farmers in Developing Countries

I would like to highlight three clear implications of these findings for farmers in developing countries. First, this research supports the argument that supermarkets are actively seeking to implement vertically coordinated supply chains that provide the level of control and competitive edge supermarkets seek to have as gatekeepers between producers and consumers. For small farmers in developing countries who seek to supply supermarkets, this means being competitive not just in production, but with a series of other supply chain services that supermarkets demand: delayed payment, compliance monitoring, financial services, quality control, supply and price stabilization, among others. This often requires joining a farmer organization, which poses new costs and risks for farmers, as well as new social forms at the community level that require time to mature (Berdegué and Reardon, 2008).

Second, in the same way others have observed that supermarkets work actively to avoid price competition with other retailers for consumers, supermarkets seek the same with suppliers. Supermarkets work to integrate suppliers into their supply chain, promoting competition among suppliers within the chain, and collaboration between actors along the chain. In this process, supermarkets actively seek to stabilize prices paid to farmers and to engage suppliers around issues other than price. This makes it increasingly difficult for farmers to evaluate alternative market options and limits their flexibility with regards to market choices. Chain specific investments also lock farmers into the chain. For farmers accustomed to marketing decisions where price is the key factor, this is a huge transition. Competition for supermarket suppliers, then, is more intense between farmers in the supermarket channel than farmers in a different supply chain. How much competition a given farmer faces depends on how successful buyers are in bringing new farmers into the chain.

Finally, while economic geographers tend to focus on host economies and domestic supermarket operations, I question whether the interest of the transnational retailer is to establish domestic operations, or to expand their transnational operations. While this might be particular to the Central American context where host economies are very small, compatibility and integration of operations across host economies seems to be equally important for transnational retailers. Regional integration of procurement was on the table as soon as Ahold joined the joint venture in 2001, but after Wal-Mart joined in 2005 this process accelerated both expanding volumes for products brought from outside the region, as well as sourcing of FFV and other products more flexibly within the region. How fast this proceeds in any given product will depend on price, logistics, border issues and the level of procurement integration the supermarket achieves. What I hope to suggest is that the current ar-

rangements may not be very stable at all, though further research would be needed to confirm this.

Conclusion

The localization of supply for transnational supermarkets is not just about figuring out how to buy tomatoes and get them on supermarket shelves; it is about establishing coordinated supply chains. Because existing supply chains in Nicaragua are not heavily coordinated, this requires the introduction of a large number of new standards and practices, not just for product quality and production, but for how the product is exchanged: units of sale, prices, payment methods and coordination mechanisms, among others. These practices require radical changes in how most farmers in Nicaragua produce and market their goods, producing a new culture of production and trade.

Participation in supply chains coordinated by transnational supermarkets requires that farmers implement chain-specific procurement standards. In this case they organize their production calendar and practices, as well as how they market their tomatoes, around supermarket procurement practices: stable procurement routes and supply relations year-round, commitment only to purchase a part of the harvest, requirements that farmers do the sorting and measuring of the product, delayed payments using bank transfers, to name a few. For a variety of reasons, these practices differ from those of wholesalers, meaning that these investments only pay off if farmers sell to supermarkets. Collectively, these practices remove transactions from the market, make it difficult for farmers to compare across buyers and make it costly to switch between buyers when one is offering a better deal. This reduces competition between supermarkets and wholesalers for a farmer's product in a way that favours supermarkets in a market context dominated by wholesalers.

Notes

1. In this article I use the term 'supermarket' interchangeably with 'transnational food retailers'. There is a local supermarket chain as well as independent supermarkets in Nicaragua but these implement distinct procurement practices not under discussion here.
2. Many consumers buy their tomatoes from small household grocery stores which, in turn, purchase their tomatoes for the most part from municipal markets.
3. The municipalities where these communities are located placed 81st and 85th in numbers of farmers growing tomatoes out of 141 total municipalities in the 2001 farm census.
4. Comparing supermarket suppliers who did plant tomatoes before selling to supermarkets we can see that areas planted in tomato in the year doubled. I did observe gradual increase in size of plots planted in tomatoes by supermarket suppliers from 0.25 to 0.5 to 0.75 mz over time. But even after a few years, they still only plant half as much on average as wholesaler suppliers.
5. *Plantío* is a less common, though still used, unit of sale referring to a field of tomato ready to harvest. Farmers and the wholesaler will agree on a price for the field. The entire harvest then belongs to the buyer, though the farmer may still be responsible for irrigating, caring for and possibly spraying the field until the harvest is finished.
6. Even in cases where farmers were planting in partnership with wholesalers they reported having sold their harvest, with the wholesaler's consent, to a different buyer who was offering a better price.
7. For two groups of farmers it took six months to shift their productions systems to produce for a different buyer after the transnational supermarket decided to stop buying from them.
8. The distance is 119 km to the nearest wholesale market, 222 km to the major wholesale market.

References

- BALSEVICH, F. (2003) Supermarkets and produce quality and safety standards in Latin America, *American Journal of Agricultural Economics*, 85, pp. 1147–1154.
- BALSEVICH, F., REARDON, T., BERDEGUÉ, J.A., HERNÁNDEZ, R. and JANO, P. (2004) *Acceso de Pequeños Productores de Tomate a los Supermercados en Nicaragua*, Report to USAID, DFID, and the Common Fund for Commodities. East Lansing, MI: Michigan State University.
- BALSEVICH, F., BERDEGUÉ, J. and REARDON, T. (2006) *Supermarkets, New-Generation Wholesalers, Tomato Farmers, and NGOs in Nicaragua*, Agricultural Economics Staff Paper 2006-03. East Lansing, MI: Michigan State University.
- BARRIENTOS, S. and DOLAN, C. (2006) *Ethical Sourcing in the Global Food System*. London: Earthscan.
- BERDEGUÉ, J.A. and REARDON, T. (2008) Impacts of the supermarket revolution and the policy and strategic responses, in: C. FARNWORTH (ed.) *Creating Food Futures: Trade, Ethics and the Environment*. Aldershot: Gower Publishing.
- BERDEGUÉ, J.A., BALSEVICH, F., FLORES, L. and REARDON, T. (2005) Central American supermarkets' private standards of quality and safety in procurement of fresh fruits and vegetables, *Food Policy*, 30, pp. 254–269.
- BOSELIE, D., HENSON, S. and WEATHERSPOON, D. (2003) Supermarket procurement practices in developing countries: redefining the roles of the public and private sectors, *American Journal of Agricultural Economics*, 85, pp. 1155–1161.
- BURCH, D. and LAWRENCE, G. (eds) (2007) *Supermarkets and Agri-Food Supply Chains: Transformations in the Production and Consumption of Foods*. Cheltenham: Edward Elgar Publishing.
- BUSCH, L. (2000) The moral economy of grades and standards, *Journal of Rural Studies*, 16, pp. 273–283.
- BUSCH, L. (2007) Performing the economy, performing science: from neoclassical to supply chain models in the agri-food sector, *Economy and Society*, 36(3), pp. 437–466.
- COE, N. and LEE, Y. (2006) The strategic localization of transnational retailers: the case of Samsung-Tesco in South Korea, *Economic Geography*, 82(1), pp. 61–88.
- COE, N. and WRIGLEY, N. (2007) Host economy impacts of transnational retail: the research agenda, *Journal of Economic Geography*, 7(4), pp. 341–371.
- DAWSON, J. (2007) Scoping and Conceptualising Retailer Internationalisation, *Journal of Economic Geography*, 7(4), pp. 373–397.
- FARNWORTH, C., JIGGINS, J. and THOMAS, E.V. (2008) *Creating Food Futures: Trade, Ethics and the Environment*. Aldershot: Gower Publishing.
- FLORES, L. and REARDON, T. (2006) *Supermarkets, New-Generation Wholesalers, Farmers Organizations, Contract Farming and Lettuce in Guatemala: Participation by and Effects on Small Farmers*, Staff Paper 2006–07. East Lansing, MI: Department of Agricultural Economics, Michigan State University.
- HERNÁNDEZ, R. and REARDON, T. (2012) *Tomato Farmers and Modern Markets in Nicaragua: A Duration Analysis*, Staff Paper 2012-03. East Lansing, MI: Department of Agricultural, Food and Resource Economics, Michigan State University.
- HERNÁNDEZ, R., REARDON, T. and BERDEGUÉ, J.A. (2007) Supermarkets, wholesalers and tomato growers in Guatemala, *Agricultural Economics*, 36(3), pp. 281–290.
- HUMPHREY, J. (2007) The supermarket revolution in developing countries: tidal wave or tough competitive struggle?, *Journal of Economic Geography*, 7, pp. 433–450.
- INEC (INSTITUTO NACIONAL DE ESTADÍSTICAS Y CENSOS DE NICARAGUA) (2001) *III Censo Nacional Agropecuario*. Managua: INEC.
- JOURNAL OF ECONOMIC GEOGRAPHY (2007) Special Issue on Transnational Retail and the Global Economy, *Journal of Economic Geography*, 7(4).
- MCCULLOUGH, E.B., PINGALI, P.L. and STAMOULIS, K.G. (eds) (2008) *The Transformation of Agri-Food Systems: Globalization, Supply Chains and Smallholder Farmers*. London: Earthscan.
- MICHELSON, H., PEREZ, F. and REARDON, T. (2012) Small farmers and big retail: trade-offs of supplying supermarkets in Nicaragua, *World Development*, 40(2), pp. 342–354.
- NATAWIDJAJA, R.S., PERDANA, T., RASMIKAYATI, T., INSAN, S., BAHRI, S., REARDON, T. and HERNÁNDEZ, R. (2006) *The Effects of Retail and Wholesale Transformation on Horticulture Supply Chains in Indonesia: With Tomato Illustration from West Java*, Report for the World Bank. Bandung: Center for Agricultural Policy and Agribusiness Studies, Padjadjaran University and East Lansing, MI: Michigan State University), November.
- NEVEN, D. and REARDON, T. (2004) The rise of Kenyan supermarkets and the evolution of their horticulture product procurement systems, *Development Policy Review*, 22, pp. 669–699.
- Planet Retail (2009) Published online <<http://www1.planetretil.net/home>>, accessed 2 February 2009.
- REARDON, T. and BERDEGUÉ, J.A. (2002) The rapid rise of supermarkets in Latin America: challenges and opportunities for development, *Development Policy Review*, 20, pp. 371–388.

- REARDON, T., HENSON, S. and BERDEGUÉ, J.A. (2007) 'Proactive fast-tracking' diffusion of supermarkets in developing countries: implications for market institutions and trade, *Journal of Economic Geography*, 7(4), pp. 399–431.
- REARDON, T., TIMMER, P. and BERDEGUÉ, J. (2008) The rapid rise of supermarkets in developing countries: induced organizational, institutional, and technological change in agri-food systems, in: E.B. McCULLOUGH, P.L. PINGALI and K.G. STAMOULIS (eds) *The Transformation of Agri-Food Systems: Globalization, Supply Chains and Smallholder Farmers*. London: Earthscan, pp. 47–66.
- REARDON, T., BARRETT, C.B., BERDEGUÉ, J.A. and SWINNEN, J.F.M. (2009) Agrifood industry transformation and small farmers in developing countries, *World Development*, 37(11), pp. 1717–1727.
- RUBEN, R., SLINGERLAND, M. and NIJHOFF, H. (eds) (2006) *The Agro-Food Chains and Networks for Development*. Dordrecht: Springer.
- SEGUR, A., GORIS, I., HABACHY, T., HOOVER, S., ALVAREZ-ROLDAN, P. and THORNTON, C. (2004) *From Farm to Fork: Helping Small Producers of Fresh Fruits and Vegetables Access the Supermarket Industry in El Salvador and Nicaragua*, Report of SIPA Consulting Team. New York: Columbia University.
- SWINNEN, J. (ed.) (2007) *Global Supply Chains, Standards and the Poor: How the Globalization of Food Systems and Standards Affects Rural Development and Poverty*. Wallingford: CABI.
- TIMMER, P. (2008) Food policy in the era of supermarkets: what's different?, in: E.B. McCULLOUGH, P.L. PINGALI and K.G. STAMOULIS (eds) *The Transformation of Agri-Food Systems: Globalization, Supply Chains and Smallholder Farmers*. London: Earthscan, pp. 67–86.
- VORLEY, W., VORLEY, B., FEARNE, A. and RAY, D. (eds) (2007) *Regoverning Markets: A Place for Small-Scale Producers in Modern Agri-food Chains?* Aldershot: Gower Publishing.
- WALMART DE MÉXICO Y CENTROAMÉRICA (2012) *Historia: Línea de Tiempo*. Published online <http://www.walmartmexico.com.mx/linea_de_tiempo.html>, accessed 20 October 2012.
- WENGER, E. (2000) Communities of practice and social learning systems, *Organization*, 7(2), pp. 225–246.
- WIEGEL, J.R. (2006) *Unlikely Bedfellows? Small Farmers and Supermarkets in Nicaragua*. Masters Thesis, University of Wisconsin-Madison.
- WORLD BANK (2008) *Agriculture for Development: World Development Report 2008*. Washington, DC: World Bank.