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**The Rapid Rise of Supermarkets in Developing Countries: Induced Organizational, Institutional, and Technological Change in Agrifood Systems**

Thomas Reardon

*Michigan State University <Reardon@msu.edu>*

Peter Timmer

*Center for Global Development, Washington DC <Ptimmer@cgdev.org>*

Julio Berdegue

*RIMISP (Latin American Center for Rural Development), Santiago, Chile <jberdegue@rimisp.cl>*

**Abstract**

*There has been extremely rapid transformation of the food retail sector in developing regions in the past 5 to 10 years, accompanied by a further consolidation and multi-nationalization of the supermarket sector itself. This organizational change, accompanied by intense competition, has driven changes in the organization of procurement systems of supermarket chains, toward centralized and regionalized systems, use of specialized/dedicated wholesalers and preferred supplier systems, and demanding, private quality standards. These changes in the system have in turn determined the very recent rise of the use of contracts between supermarkets and agrifood producers in these regions to cover provision of services and provision for risk management, as well as requirements for demanding quality and safety attributes, which require substantial investment in technological change and 'upgrading' at the producer level. This paper presents a brief discussion of these trends, followed by a conceptual framework to explain this phenomenon, illustrated with empirical evidence drawn mainly from Latin America.*

**Keywords:** supermarket chains, procurement systems, quality standards, agrifood producers

## 1. Introduction

Supermarkets<sup>1</sup> are traditionally viewed by development economists, policymakers, and practitioners as the rich world's place to shop. The three regions discussed here have the great majority of the poor on the planet. But supermarkets are no longer just niche players for rich consumers in the capital cities of the countries in these regions. The rapid rise of supermarkets in these regions in the past 5 to 10 years has transformed agrifood markets, albeit at different rates and depths across regions and countries. Many of those transformations present great challenges – even exclusion – for small farms, processing and distribution firms, but also potentially great opportunities. Development models, policies and programmes need to adapt to this radical change.

This paper describes this transformation of agrifood systems in Africa, Asia (excluding Japan) and Latin America. First, we describe the traditional retail and wholesale system in the midst of which emerged modern food retailing and its procurement system. Second, we discuss the determinants of and patterns in the diffusion of supermarkets in the three regions. Third, we discuss the evolution of procurement systems of those supermarkets, and consequences for agrifood systems from the perspectives of organizational, institutional and technological change. In the conclusions we suggest emerging implications for farms and firms in the developing regions.

## 2. The Spread of Supermarkets in Developing Regions<sup>2</sup>

### *Determinants of diffusion of supermarkets*

The determinants of the diffusion of supermarkets in developing regions can be conceptualized as a system of *demand* by consumers for supermarket services, and *supply* of supermarket services, hence investments by supermarket entrepreneurs.

On the demand side, several forces drive the observed increase in demand for supermarket services (and are similar to those observed in Europe and the United States in the twentieth century). The “demand incentives” side forces include urbanization, with the consequent entry of women into the workforce outside the home, which increased the opportunity cost of women's time and their incentive to seek shopping convenience and processed foods to save cooking time; and supermarkets, often in combination with large-scale food manufacturers, which reduced the prices of processed products.

On the “demand capacity” side, several variables were key. Real mean per capita income growth in many countries of the regions during the 1990s, along with the rapid rise of the middle class, increased demand for processed foods – the entry point for supermarkets, as they could offer greater variety and lower cost of these products than traditional retailers due to economies of scale in procurement. Rapid growth in ownership of refrigerators during the 1990s meant the ability to shift from daily shopping in traditional retail shops to weekly or monthly shopping. Growing access to cars and public transport reinforced this trend.

The supply of supermarket services was driven by several forces, only a subset of which overlap with the drivers of initial supermarket diffusion in Europe and the United States. On the “supply incentives” side, the development of supermarkets was very slow before (roughly) the early to mid-1990s, as only domestic/local capital was involved. In the 1990s and after, foreign direct investment (FDI) was crucial to the take-off of supermarkets. The incentive to undertake FDI by chains from

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<sup>1</sup> For simplicity, we use the term “supermarkets” to indicate all large-format modern retail (supermarkets, hypermarkets, discount and club stores, which typically constitute about 95 percent of the sales of modern retail in developing countries, the rest being chain convenience stores), distinguishing formats only where necessary.

<sup>2</sup> This section and the next draw on several publications, in particular on Reardon and Timmer (forthcoming) and Reardon et al. 2003a for overall trends; as well as: for Latin America, Reardon and Berdegue 2002, Balsevich et al. 2003 and Berdegue et al. 2004; for Central and Eastern Europe, Dries et al. 2004; for China, Hu et al. 2004; and for Africa, Weatherspoon and Reardon 2003 and Neven and Reardon 2004.

Europe, the United States and Japan, and chains in richer countries in the regions under study (such as Hong Kong, South Africa and Costa Rica), was due to saturation and intense competition in home markets and much higher profit margins to be made by investing in developing markets. For example, Carrefour earned three times higher margins on average in its Argentine compared to its French operations in the 1990s (Gutman 2002). Moreover, initial competition in the receiving regions was weak, generally with little fight put up by traditional retailers and domestic-capital supermarkets, and there are distinct advantages to early entry, especially occupation of key retail locations.

On the “supply capacity” side, there was a deluge of FDI induced by the policy of full or partial liberalization of retail sector FDI undertaken in many countries in the three regions in the 1990s and after (e.g. partial liberalization of retail trade in China in 1992, with full liberalization of the sector scheduled for 2004; Brazil, Mexico, Argentina in 1994; various African countries via South African investment after apartheid ended in the mid 1990s; Indonesia in 1998; India in 2000). Overall FDI grew 5- to 10-fold over the 1990s in these regions (UNCTAD 2001) and growth of FDI in food retailing mirrored that overall growth. In addition, retail procurement logistics technology and inventory management (such as efficient consumer response, ECR, an inventory management practice that minimizes inventories-on-hand, and use of internet and computers for inventory control and supplier–retailer coordination) were revolutionized in the 1990s. This was led by global chains and is diffusing now in developing regions through knowledge transfer and imitation and innovation by domestic supermarket chains.

These changes were in turn key to the ability to centralize procurement and consolidate distribution in order to “drive costs out of the system”, a phrase used widely in the retail industry. Substantial savings were thus possible through efficiency gains, economies of scale and coordination cost reductions. China Resources Enterprise (2002), for example, notes that it is saving 40 percent in distribution costs by combining modern logistics with centralized distribution in its two large new distribution centers in southern China. These efficiency gains fuel profits for investment in new stores, and, through intense competition, reduce prices to consumers of essential food products.

### *Patterns of diffusion*

The incentive and capacity determinants of demand for and supply of supermarket services vary markedly over the three regions, within individual countries, and within zones and between rural and urban areas at the country level. Several broad patterns may be observed.

One pattern is from earliest to latest adopter of supermarkets; the regions range from Latin America to Asia to Africa, roughly reflecting the ordering of income, urbanization and infrastructure and policies that favour supermarket growth. The first wave of supermarket diffusion hit major cities in the larger or richer countries of Latin America. The second wave hit in East/Southeast Asia and Central Europe; the third in small or poorer countries of Latin America and Asia (including, for example, Central America) and southern, then eastern, Africa. By this time, secondary cities and towns in the areas of the “first wave” were being hit. The fourth wave, just starting now, is hitting southern Asia and western Africa.

Latin America has led the way among developing regions in the growth of the supermarket sector. While a small number of supermarkets existed in most countries during and before the 1980s, they were primarily domestic capital firms, and tended to exist in major cities and wealthier neighbourhoods. That is, they were essentially a niche retail market comprising a maximum of 10 to 20 percent of national food retail sales in 1990. However, by 2000 supermarkets had risen to occupy 50 to 60 percent of national food retail among the Latin American countries, almost approaching the 70 to 80 percent share in the United States or France. Latin America had thus seen in a single decade the same development of supermarkets that the United States experienced in five decades.

The supermarket share of food retail sales for the leading six Latin American countries averages 30 to 75 percent: Brazil has the highest share, followed by Argentina, Chile, Costa Rica, Colombia and Mexico. Those six countries account for 85 percent of the income and 75 percent of the population in

Latin America. Other countries in the region have also experienced rapid growth of their supermarket sectors, but these started later and from a lower base. For example, supermarkets accounted for 15 percent of national food retail in Guatemala in 1994 and by 2002 accounted for 35 percent (Reardon and Berdegue 2002).

The development of the supermarket sector in East and Southeast Asia is generally similar to that of Latin America. The “take-off” stage of supermarkets in Asia started, on average, some five to seven years behind that of Latin America, but is registering even faster growth. The average processed/packaged food retail share over several Southeast Asian countries – Indonesia, Malaysia and Thailand – is 33 percent, but is 63 percent for the East Asian countries of the Republic of Korea and Taiwan (ACNielsen 2002). The supermarket sector in China is the fastest-growing in the world: it started in 1991, by 2003 had 55 billion dollars of sales and 30 percent of urban food retail, and is growing by 30 to 40 percent a year (Hu et al. 2004).

Supermarket diffusion is also occurring rapidly in Central and Eastern Europe (CEE). This is occurring in three waves, with the earliest (mid 1990s) takeoff of the sector in northern CEE (Czech Republic, Hungary, Poland and Slovakia), where the share of supermarkets in food retail now stands at 40 to 50 percent. The second wave is in southern CEE (such as Croatia, Bulgaria, Romania and Slovenia), where the share is on average 25 to 30 percent but growing rapidly. The third wave is in Eastern Europe, where income and urbanization conditions were present for a takeoff but policy reforms lagged, so that the share in, for example, Russia is still only 10 percent – but identified by international retailers as the number one retail FDI destination (Dries, Reardon and Swinnen 2004).

The most recent<sup>3</sup> venue for supermarket take-off is in Africa, especially in eastern and southern Africa. South Africa is the front runner, with roughly a 55 percent share of supermarkets in overall food retail and 1700 supermarkets for 35 million persons. The great majority of that spectacular rise has come since the end of apartheid in 1994. To put these figures in perspective, note that 1 700 supermarkets is roughly equivalent to 350 000 mom and pop stores, or “spazas,” in sales. Moreover, South African chains have recently invested in 13 other African countries as well as India, Australia and the Philippines. Kenya is the other front-runner, with 300 supermarkets and a 20 percent share of supermarkets in urban food retail (Neven and Reardon 2004). Other African countries are starting to experience the same trends: for example, Zimbabwe and Zambia have 50 100 supermarkets (Weatherspoon and Reardon 2003).

Second, within each of the four very broad regions there are large differences over sub-regions and countries. Usually, these can be supermarket-growth-ranked according to the variables in the supply and demand model presented above. In Latin America, for example, Brazil with a 75 percent share of supermarkets in food retail store sales can be contrasted with Bolivia with at most 10 percent; in developing Asia, Korea with 60 percent can be contrasted with India with 5 percent; and in Africa, South Africa with 55 percent can be contrasted with Nigeria with 5 percent; Hungary or Poland with shares of 40 to 50 percent can be contrasted with Russia with 10 percent.

Third, the take-over of food retailing in these regions has occurred much more rapidly in processed, dry, and packaged foods such as noodles, milk products and grains, for which supermarkets have an advantage over mom and pop stores due to economies of scale. The supermarkets’ progress in gaining control of fresh food markets has been slower, and there is greater variation across countries because of local habits and responses by wetmarkets and local shops. Usually the first fresh food categories for the supermarkets to gain a majority share include “commodities” such as potatoes, and sectors experiencing consolidation in first-stage processing and production: often chicken, beef and pork, and fish.

A rough rule of thumb, applicable from Latin America, is that the share of supermarkets in fresh foods is roughly one-half of the share in packaged foods. For example, in Brazil, where the overall food retail share of supermarkets is 75 percent, the share in Sao Paulo of fresh fruits and vegetables is

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<sup>3</sup> South Asia is poised at the edge of a take-off, with the share of supermarkets in India at 5 percent, but identified as number 2 in the top 10 destinations for retail FDI today (Burt 2004).

only 50 percent; in Argentina, the shares are 60 and 25 percent, respectively. This kind of rough “2 or 3 to 1” ratio appears to be typical in the regions. This difference is also common in developed countries: in France, supermarkets have 70 percent of overall food retail, but only 50 percent of fresh fruits and vegetables. The convenience and low prices of small shops and fairs, with fresh and varied produce for daily shopping, continues to be a competitive challenge to the supermarket sector, with usually steady but much slower progress for supermarkets requiring investments in procurement efficiency.

Despite the slower growth in the supermarket share of the domestic fresh produce market, it is very revealing to calculate the absolute market that supermarkets now represent, even in produce, and thus how much more in other products where supermarkets have penetrated faster and deeper. For example, Reardon and Berdegue (2002) calculate that supermarkets in Latin America buy two and a half times more fruits and vegetables from local producers than all the exports of produce from Latin America to the rest of the world.

Fourth, the supermarket sector in these regions is increasingly and overwhelmingly multinationalized (foreign-owned) and consolidated. The multi-nationalization of the sector is illustrated in Latin America where global multinationals constitute roughly 70 to 80 percent of the top five chains in most countries. This element of “FDI-driven” differentiates supermarket diffusion in these regions from that in the United States and Europe. The tidal wave of FDI in retail was mainly due to the global retail multinationals Ahold, Carrefour and Wal-Mart, smaller global chains such as Casino, Metro and Makro, and regional multinationals such as Dairy Farm International (Hong Kong) and Shoprite (South Africa). In some larger countries domestic chains, sometimes in joint ventures with global multinationals, have taken the fore. For example, the top chain in Brazil is Pão de Açúcar (in partnership with Casino, of France, since 1999), and the top chain in China is the giant national chain Lianhua (based in Shanghai), with some 2 500 stores, in partial joint venture with Carrefour.

The rapid consolidation of the sector in those regions mirrors what is occurring in the United States and Europe. For example, in Latin America the top five chains per country have 65 percent of the supermarket sector (versus 40 percent in the US and 72 percent in France). The consolidation takes place mainly via foreign acquisition of local chains (and secondarily by larger domestic chains absorbing smaller chains and independents). This is done via large amounts of FDI: for example, in the first eight months of 2002, five global retailers (British Tesco, French Carrefour and Casino, Dutch Ahold and Makro, and Belgian Food Lion) spent 6 billion bhat, or US\$120 million in Thailand (Jitpleechep 2002). Wal-Mart spent US\$660 million during 2002 in Mexico to build new stores.

These trends of multi-nationalization and consolidation fit the supply function of our supermarket diffusion model. Global and retail multinationals have access to investment funds from their own liquidity and to international credit that is much cheaper than the credit accessible by their domestic rivals. The multinationals also have access to best practices in retail and logistics, some of which they developed as proprietary innovations. Global retailers adopt retailing and procurement technology generated by their own firms or, increasingly, via joint ventures with global logistics multinationals, such as Carrefour (France) does with Penske Logistics (United States) in Brazil. Where domestic firms have competed, they have had to make similar investments; these firms either had to enter joint ventures with global multinationals, or had to get low-cost loans from their governments (e.g. the Shanghai-based national chain) or national bank loans.

Fifth, again as predictable from the diffusion model above, the inter-spatial and inter-socioeconomic group patterns of diffusion have differed over large and small cities and towns, and over richer, middle and poor consumer segments. In general, there has been a trend from supermarkets occupying only a small niche in capital cities serving only the rich and middle class, to supermarkets spreading well beyond the middle class in order to penetrate deeply into the food markets of the poor. They have also spread from big cities to intermediate towns, and in some countries, already to small towns in rural areas. About 40 percent of Chile’s smaller towns now have supermarkets, as do many small-to-medium sized towns even in low-income countries like Kenya. And supermarkets are now

spreading rapidly beyond the top-60 cities of China in the coastal area and are moving to smaller cities and to the poorer and more remote northwest and southwest and interior.

### 3. Supermarkets' Transforming Procurement Systems

We have found that supermarket chains have a dual objective – one qualitative (to increase quality and eventually safety of the product) and one quantitative (to reduce costs and increase volumes procured). Supermarket chains have a difficult time meeting those objectives by using the traditional wholesale sector to procure their products. Here is a statement from Javier Gallegos (2003), the head of marketing for Hortifruti (a specialized/dedicated wholesaler for the CARHCO chain in Central America), enumerating the deficiencies of the traditional market in the face of a supermarket's needs:

The realities and problems of our growers and markets are as follows. The market is fragmented, unformatted, unstandardized. The growers produce low quality products, use bad harvest techniques, there is a lack of equipment and transportation, there is deficient post-harvest control and infrastructure, there is no market information. There are high import barriers and corruption. The informal market does not have: research, statistics, market information, standardized products, quality control, technical assistance, infrastructure.

Driven to close the gap between their supplies and their needs, supermarket chains in developing regions have been shifting over the past few years away from the old procurement model based on sourcing products from the traditional wholesalers and the wholesale markets, toward the use of four key pillars of a new kind of procurement system: (1) specialized procurement agents we call “specialized/dedicated wholesalers”; (2) centralized procurement through Distribution Centers (DCs), as well as regionalization of procurement; (3) assured and consistent supply through “preferred suppliers”; and (4) high quality and increasingly safe products through private standards imposed on suppliers.

The first three pillars (organizational change in procurement) together make possible the fourth (institutional change in procurement – that is, the rise of private standards first for quality and increasingly for safety of FFV). Below we lay out a conceptual framework for understanding that shift, and then discuss the four pillars.

#### *Determinants of change in supermarket procurement systems*

Technology change in the procurement systems of supermarkets in developing regions is a key determinant of change in the markets facing farmers. Technology (defined broadly as physical production practices as well as management techniques) diffusion in the supermarket sector in developing countries can also be conceptualized as a system of demand and supply for new technology. Here we focus on technology for retail product procurement systems as these choices most affect suppliers.

Demand for technology change in food retailer procurement practices is, in general, driven by the overall competitive strategy of the supermarket chain. However, specific choices are usually taken by procurement officers, e.g. in the produce procurement division. Hence it is crucial to understand the objective function of these officers in supermarkets in developing countries. We present a working hypothesis based on numerous interviews with these individuals.

The decisions related to purchasing products for retail shelves rests with the procurement officers in supermarket chains. Whether in the United States, Europe, Nicaragua, Chile or China, they are under several common “pressures” from supermarket managers, operating under intense competition and low average profit margins. They are caught between the low-cost informal traditional retailers

selling fresh local products on one side, and efficient global chain competitors like Wal-Mart on the other side. The procurement officers strive to meet this pressure by reducing purchase and transaction costs and raising product quality. Reflecting the varied demand of consumers, procurement officers seek to maintain diversity, year-round availability and products with assured quality and safety levels.

Based on those objectives, we outline a rough model for demand (by procurement officers) and supply (by the supermarket chain to those divisions) of change in procurement systems (technology, organization, institutions).

We begin with the demand function incentives and capacity variables. Incentives include the ability of the traditional wholesale system to meet procurement officer objectives without the chain having to resort to costly investments in an alternative system. Usually procurement officers find this ability low, as Boselie (2002) shows in the case of Ahold for fresh produce in Thailand. Compared with the North American or the European market, produce marketing in these regions is characterized by poor institutional and public physical infrastructure support. Private infrastructure, such as packing houses, cold chains and shipping equipment among suppliers and distributors is usually inadequate. Risks and uncertainties, both in output and in suppliers' responsiveness to incentives, are high. The risks may arise due to various output and input market failures, such as inadequacies in credit, third-party certification and market information. A second incentive is the need to reduce costs of procurement by saving on inputs, in this case purchased product costs and transaction costs with suppliers; and finally, the incentive to increase procurement of products that can be sold at higher margins – that is, diversify the product line into “products” rather than mere commodities (bulk items).

Capacity to demand includes the consumer segment served by the chain – this is crucial because higher-value products cannot be marketed to poorer consumers and only cost considerations are paramount; and the resources of the procurement office. The latter include the number of staff to manage procurement and thus the ability to make organizational and institutional changes in procurement systems such as operating a large distribution center. A variable that reflects both incentive and capacity is the size of the chain and thus product throughput in the procurement system. Usually retailers have a “step level” or threshold throughput where they move from per-store to centralized procurement as economies of scale permit and require.

The supply of procurement technology by the chain as an overarching enterprise, to the specific product category procurement office or offices, such as the fresh foods categories, is an investment and is a function of several variables. The incentive variables include the importance of the product category to the chain's profits and marketing strategy. For example, we observed a small chain in an intermediate city in China that invested in building a distribution center (DC) for processed/packaged foods but continues to buy fresh foods from the spot market (traditional wholesalers); while a national chain invested in a large DC for packaged/processed foods and has recently built a large DC for fresh foods as throughput has attained a critical mass, and these products have attained a threshold importance in profits and chain marketing strategy. A second incentive variable is the need for assurance of various product attributes in order to meet customers' demands (expansion of product choice, attribute consistency over transactions, year-around availability, quality and safety); and a third is the costs of the technology, such as costs of transport, construction, logistics services, etc.

The capacity variables include the size of the chain and/or access to financial capital to make the investments; and the capacity of the chain to manage complex and centralized procurement systems.

The incentive and capacity determinants of demand for and supply of changes in procurement system technology vary markedly over the three regions and countries, and within countries, over chains and zones. Several broad patterns are observed in the procurement technologies that result.

#### *First pillar of change: Toward centralization and regionalization of procurement*

There is a trend toward centralization of procurement (per chain). As the number of stores in a given supermarket chain grows, there is a tendency to shift from a per-store procurement system, to a distribution center serving several stores in a given zone, district, country, or a given region (which

may cover several countries). This is accompanied by fewer procurement officers and increased use of centralized warehouses. Additionally, increased levels of centralization may also occur in the procurement decision-making process and in the physical produce distribution processes. Centralization increases efficiency of procurement by reducing coordination and other transaction costs, although it may increase transport costs by extra movement of the actual products.

The top three global retailers have made or are making shifts toward more centralized procurement system in all the regions in which they operate. Wal-Mart uses a centralized procurement system in most of its operating areas. Having centralized its procurement in France, Carrefour has been moving quickly to centralize its procurement system in other countries. For example, in 2003 and 2004 Tesco and Ahold have established large distribution centers in Poland, Hungary and the Czech Republic. In 2001 Carrefour established a distribution center in São Paulo to serve three Brazilian states (with 50 million consumers) with 50 hypermarkets (equivalent to about 500 supermarkets) in the Southeast Region. Similarly, Carrefour is building a national distribution system with several distribution center nodes in China, while Ahold centralized its procurement systems in Thailand (Boselie 2002). The list goes on.

Regional chains, such as China Resources Enterprises (CRE) of Hong Kong – with Vanguard stores in southern China, are also centralizing their procurement systems. CRE is tenth in retail in China and has 17 large stores in the provinces of Shenzhen and Guangdong. In anticipation of growth following its planned \$680 million investment in China over the next five years, a shift from store-by-store procurement to a centralized system of procurement covering each province is underway. Two large distribution centers were completed in 2002. The distribution center in Shenzhen is 65 000 square meters and will be able to handle 40 department stores and 400 superstores/discount centers.

Moreover, the regional (over several countries) chains are moving toward sourcing regionally. We hypothesize that this will be, over the next decade, a factor inducing greater intra-regional trade and economic integration in regions. For example, in January 2002, a regional chain called Central American Retail Holding Company (CARHCO) was formed, composed of a Costa Rican chain (CSU Supermarkets) that had expanded into Honduras and Nicaragua, a Guatemalan chain (La Fragua) that expanded into El Salvador and Ahold. The chain started with 253 stores in five countries and 1.3 billion U.S. dollars of sales, a large operation with about two-thirds of the supermarket sector in those countries. It started by sourcing only locally (the chain in each country mainly sourcing from local producers). However, over the past year, and with plans to increase this in the near future, the chain is starting to source regionally: for example, sourcing from Nicaragua most of the dry beans for the whole chain.

#### *Second pillar of change: Shift toward use of specialized wholesalers and logistics firms*

There is growing use of specialized/dedicated wholesalers. They are specialized in a product category and dedicated to the supermarket sector as their main clients. The changes in supplier logistics have moved supermarket chains toward new intermediaries, side-stepping or transforming the traditional wholesale system. The supermarkets are increasingly working with specialized wholesalers, dedicated to and capable of meeting their specific needs. These specialized wholesalers cut transaction and search costs and enforce private standards and contracts on behalf of the supermarkets. The emergence and operation of the specialized wholesalers has promoted convergence, in terms of players and product standards, between the export and the domestic food markets. Moreover, there is emerging evidence that when supermarket chains source imported produce they tend to do so mainly via specialized importers. For example, hypermarkets in China tend to work with specialized importers/wholesalers of fruit, who in turn sell nearly half of their imported products to supermarket chains (McClafferty 2002). Similarly, Hortifruti functions as the buying arm of most stores of the main supermarket chain in Central America, as does Freshmark for Shoprite in Africa.

Moreover, there is a trend toward logistics improvements to accompany procurement consolidation. To defray some of the added transport costs that arise with centralization, supermarket

chains have adopted (and required that suppliers adopt) best-practice logistical technology. This requires that supermarket suppliers adopt practices and make physical investments which allow almost frictionless logistical interface with the chain's warehouses. The "Code of Good Commercial Practices" signed by supermarket chains and suppliers in Argentina illustrates the use of best-practice logistics by retail suppliers (Brom 2002). Similar trends are noted in Asia. For example, Ahold instituted a supply improvement programme for vegetable suppliers in Thailand, specifying post-harvest and production practices to assure consistent supply and improve the efficiency of their operation (Boselie 2002).

Retail chains in the three regions increasingly outsource (sometimes to a company in the same holding company as the supermarket chain) logistics and wholesale distribution function, entering joint ventures with other firms. An example is the Carrefour distribution center in Brazil, which is the product of a joint venture of Carrefour with Cotia Trading (a major Brazilian wholesaler distributor) and Penske Logistics (a United States global multinational firm). Similarly, Wu-mart of China announced in March 2002 (CIES 2002) that it will build a large distribution center to be operated jointly with Tibbett and Britten Logistics (a British global multinational firm). Ahold's distribution center for fruits and vegetables in Thailand is operated in partnership with TNT Logistics of the Netherlands (Boselie 2002).

### *Third pillar: Toward preferred supplier systems*

Many supermarket chains are undertaking institutional innovation by establishing contracts with their suppliers – in particular via their dedicated, specialized wholesalers' managing a preferred supplier system for them. This trend is similar to that in agroprocessing during the past decade (Schejtman 1996). The contract is established when the retailer (via their wholesaler or directly) "lists" a supplier. That listing is an informal (usually) but effective contract<sup>4</sup> – in which delisting carries some cost, tangible or intangible. We have observed such contracts in all the regions under study. Contracts serve as incentives to the suppliers to stay with the buyer and over time make investments in assets (such as learning and equipment) specific to the retailer specifications regarding the products. The retailers are assured of on-time delivery and the delivery of products with desired quality attributes.

These contracts sometimes include direct or indirect assistance for farmers to make investments in human capital, management, input quality and basic equipment. Evidence is emerging that for many small farms these assistance programmes are the only source of such much valued inputs and assistance – in particular where public systems have been dismantled or coverage is inadequate. In some cases, the assistance is indirect – such as the case of Metro supermarket chain (a German chain) in Croatia intervening with the bank (noting that the suppliers would have contracts) to provide a "collateral substitute" so would-be strawberry suppliers could make needed greenhouse investments (Reardon et al. 2003b).

This constitutes resolution by retailers or their wholesaler agents of idiosyncratic factor market failures facing small producers – such as credit, information, technical assistance and so on. There is evidence of this in the processing sector also, for example in the CEE (Gow and Swinnen 2001; Dries and Swinnen 2004). Some cases of this are remarkable in their extent and nature. Codron et al. (2004) note a case of a Turkish retailer MIGROS which contracts with a whole village nearby its Antalya market to grow 1000 tons of tomatoes during the summer. Hu et al. (2004) describe the case of Xincheng Foods in Shanghai, acting as a specialized wholesaler for the top two chains in China. Xincheng long-term leases (from townships) 1000 hectares of prime vegetable land, hires migrant labour, installs greenhouses and uses tractors and drip irrigation (thus changing production technology), and produces in-house large quantities of high quality vegetables for the supermarket chains and export. It also has contracts with 4500 small farmers to add to its own production. This kind of operation can be described as a major "agent of change" in the Chinese agrifood economy.

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<sup>4</sup> "Contracts" is used in the broad sense of Hueth et al. (1999), which includes informal and implicit relationships.

While the contracting is quite recent for produce, it has been a practice for a half decade or more among chains sourcing from processed product suppliers. Manufacturers of private label processed fruit and vegetable and meat and cereals products typically operate under formal contract with the supermarkets. Supermarket chains have contracts with processing firms, who in turn may sign contracts with producers. For example, the processing firm IANSAFRUT supplies processed vegetables to supermarkets in Chile under such an arrangement (Milicevic, Berdegue and Reardon 1998). Similarly, processed fruits and vegetables are sold under the label SABEMAS for the supermarket CSU in Costa Rica, and various firms produce under contract the products for the private label. As retail sales of private label products continue to grow, such contract arrangements are expected to increase in Latin America and Asia.

#### *Fourth pillar: The rise of private standards*

While food retailing in these regions previously operated in the informal market, with little use of certifications and standards, the emerging trend indicates a rapid rise in the implementation of private standards in the supermarket sector (and other modern food industry sectors such as medium/large scale food manufactures and food service chains). The rise of private standards for quality and safety of food products, and the increasing importance of the enforcement of (otherwise virtually not enforced) public standards, is a crucial aspect of the imposition of product requirements in the procurement systems. In general, these standards function as instruments of coordination of supply chains by standardizing product requirements over suppliers, who may cover many regions or countries. Standards specify and harmonize the product and delivery attributes, thereby enhancing efficiency and lowering transaction costs. In turn, the implementation of these standards depends crucially on the establishment of the new procurement system organization noted in the three pillars above.

The general adoption framework can be applied to “institutional adoption” such as the adoption of private standards by supermarket chains’ procurement arms or agents in developing regions. The incentives include the following.

First, the chain has an incentive to implement private standards where there are missing or inadequate public standards – so that private standards are a substitute for the missing institution. As the large chains (and processing firms) competed in national and regional markets and attempted to differentiate their products to protect and gain market share, they found that: the public standards needed for that differentiation did not exist (common in developing regions, see Stephenson 1997); or relatively undifferentiated public standards existed, inherited from the protected, homogeneous commodity markets that were common before market liberalization and structural adjustment. The latter were inadequate either to meet consumer demand for product differentiation and quality differences, or to reward producers for their investments in quality and safety (Reardon et al. 2001; Reardon and Farina 2002). As noted above, governments in these regions tend to have the incentive and capacity to implement public standards mainly for the export market interface, and much less so for domestic markets. Moreover, public standards tend to be applied where they are “public goods” such as for plant and animal health. At the opposite extreme are quality standards that are typically private goods – differentiating products – and are the first and foremost domain of private standards.

Between the two are food safety standards. In principal, these should be considered public goods and set and enforced by governments. The issue here is not conceptual but rather practical – governments might occasionally establish regulations but usually do not have the capacity to monitor and enforce them (for the case of Guatemala, see Flores 2003). Yet supermarket chains have incentives to set private safety standards, at least for “at risk” products such as leafy greens, berries and other products where pesticide residuals and bacteria can produce short-medium run health problems among their clientele. In some countries there are liability laws that make this a legal issue. Yet even where there are not laws, there are two other reasons to have such standards. On the one hand, as noted above, most of the chains are global or regional, and a health crisis caused by an unsafe product in one

country can hurt sales and stock prices in the region or globally. On the other hand, safety standards – and the belief on the part of the consumer that chains are able to actually monitor and enforce them – gives a big advantage to supermarkets over traditional retailers, and thus is a major competitive instrument.

Of course, where there are public standards for safety, private standards can meet or exceed the stringency of public standards thus affording “domain defense”, limiting exposure to penalties from public regulations (Caswell and Johnson 1991). Communicating to the urban or developed country consumer that the private standards exceed the stringency and enforcement of public standards encourages consumers to buy products from countries that they may see otherwise as having lax quality and safety regulations.

Second, private standards are used to increase profits through facilitating product differentiation – and thus provide incentives to suppliers to make asset-specific investments, and to consumers to satisfy their desire for product diversity by shopping at the chain. Supermarkets (as well as large-scale processors and fast-food chains) use private standards to differentiate their product lines (adding SKUs and thus product diversity) and differentiate their products from each other and from traditional actors. Private standards make product differentiation easier and more flexible, allowing companies to take advantage of new market opportunities (“domain offense”, Caswell and Johnson 1991). Consistent implementation of private standards, plus certification, labeling and branding systems that link high quality and safety standards to the product and the company in the consumer’s mind, produces reputation and competitive advantage. One sees this in the application of the Carrefour Quality Certification programme and labels for meat and produce in Mexico, China, Brazil and elsewhere.

Third, chains use private standards to reduce cost and risk in their supply chains. The main cost reduction comes from using process standards to coordinate chains. Farina (2002) and Gutman (2002) illustrate these cost savings in the case of supermarkets and dairy products in Brazil and Argentina. Chains complement private standards with other elements of a “metasystem of quality control” (Caswell et al. 1998), adding elements such as branding to the system governance structure. Building trust and reputation around the visible symbol of a brand name and label make standards systems credible to consumers (Northen and Henson 1999). To build consumer confidence (and thus build market volume and reduce market risk) by consistency in standards implementation, tight vertical coordination is needed, especially for process standards – hence the use of the organizational structure of procurement, plus contracts, noted above.

An important element of this is the reduction of coordination costs in procurement systems that become progressively broader in geographic scope, as the discussion of the first pillar above establishes as a trend. Regional and global chains want to cut costs by standardizing over countries and suppliers as this occurs – which induces a convergence with the standards of the toughest market in the set, including with European or United States standards. One sees this in Wal-Mart between Mexico and the United States, one sees this in the Quality Assurance Certification used by Carrefour over its global operations that include developing countries, one sees this in the regional chains such as CARHCO discussed above. In some cases this has meant that global chains actually apply public standards from their developed country markets as private standards to suppliers to their local developing country markets, such as the use of FDA standards for some products by United States chains. The chains might also use private standards from the developed country portions of their markets, such as European chains using EUREPGAP standards for some produce and meat items applied to suppliers in developing country markets.

The capacity variables involved in the diffusion of private standards are as follows. First, the chains, or their specialized/dedicated wholesalers, must have the requisite degree of buying power to impose private standards on suppliers – either because the chain has some oligopsonistic power, or because it offers higher producer prices, or it offers other assistance to producers. The size of the frontrunner chains (the same ones that are the main implementers of private standards) relative to the urban market certainly gives them the buying power (for example, Carrefour has about 25 percent of all food retail in Argentina).

Large chain size is necessary but not sufficient – as chains need the procurement organization changes noted above, in particular distribution centers that allow the product procurement to be centralized allowing efficient standards monitoring, and implicit contracts (via the preferred supplier systems) which allow traceability and a delivery vehicle for the standards.

Sometimes chains also offer prices higher than the wholesale market prices to producers who meet their standards; little systematic information exists about this point, but in general we have found that the premium is around 10 to 15 percent, just enough to meet additional costs implied by meeting the standards. But sometimes no price premium is offered: what then is the incentive for the producer to meet the (usually more stringent) private standards? The answer is related to the discussion of the preferred supplier systems above: chains (or their specialized/dedicated wholesalers) sometimes offer technical assistance, input credit or collateral substitutes in the form of a contract, and transport to their suppliers. An example is Hortifruti's technical assistance and credit to vegetable suppliers in Costa Rica. The technical assistance and credit resolve idiosyncratic factor market failures that often plague producers after public systems for these items were dismantled during the structural adjustment period – and one can hypothesize that public systems were never nor are now adequate to meet the kinds of upgrading needs that face suppliers to supermarkets.

Second, all of the above is necessary but not sufficient to implement private standards; the final ingredient is the capacity of producers to meet the standards. A poignant illustration of this was the limitation felt by the La Fragua chain in Guatemala to implement broadly its new "Paiz Seal" quality and safety certification system in the past two years. They found the following: (1) for key bulk items such as Roma tomatoes, there were simply not enough producers with the capacity to supply over the full year or sufficient volume to meet the chain's needs, and so the chain has to rely on traditional wholesalers to bulk the product from many small producers – obviating traceability and imposition of safety standards and quality consistency; (2) for key "at risk" items such as leafy greens and berries, the chain has been forced to take a gradual approach of approving suppliers, at a rate much slower than it wanted, simply because few producers can make the needed investments, and those producers have export market alternatives. Because of these limitations on finding enough suppliers that can meet the private standards, some chains take a position in between no application of standards and full, rigorous application. For example, CSU Supermarkets/Hortifruti in Costa Rica monitors standards compliance, but then is loathe to "delist" suppliers who violate standards, even safety standards. Instead, when a problem is identified, they increase technical assistance combined with warnings, with some eventual delisting (hence, the combination of a carrot and stick approach, but not too stern so as to find themselves with inadequate supply) (Berdegue et al. 2004).

#### **4. Implications for Producers and Agricultural Development**

Meeting transaction requirements implied by the organizational change in supermarket procurement systems, and the product requirements implied by institutional change in the form of private standards, can present clear opportunities for producers. Adopting the new practices can open the door to suppliers of selling through supermarket chains that are "growing" the market in terms of volume, value added and diversity. A supplier can move from being a local supplier to a national, regional or global supplier. Moreover, private process standards can increase efficiency of firm operations and raise profitability. The market scope could also increase, compensating for per-unit profit decreases arising from costs incurred to meet the standards.

However, meeting these non-traditional market requirements implies changes in production practices and investments, such as coordinating to aggregate volumes, reducing pesticide use, or investing in "electric eyes" in packing sheds and cooling tanks in dairies. Some of these investments are quite costly, and are simply unaffordable by many small firms and farms. It is thus not surprising that the evidence is mounting that the changes in standards, and the implied investments, have driven

many small firms and farms out of business in developing countries over the past 5 to 10 years, and accelerated industry concentration.

The supermarket chains, locked in struggle with other chains in a highly competitive industry with low margins, seek constantly to lower product and transaction costs and risk – and all that points toward selecting only the most capable farmers, and in many developing countries that means mainly the medium and large farmers. Moreover, as supermarkets compete with each other and with the informal sector, they will not allow consumer prices to increase in order to “pay for” the farm-level investments needed. Who will pay for wells with safe water? Latrines and hand-washing facilities in the fields? Record keeping systems? Clean and proper packing houses with cement floors? The supplier does and will bear the financial burden. As small farmers lack access to credit and large fixed costs are a burden for a small operation, this will be a huge challenge for small operators. It is thus inevitable that standards demanded by consumers are increasingly a major driver of concentration in the farm sector in developing regions. Retail concentration will cascade, sooner or later, into supplier concentration.

To help many small farmers grasp the opportunities these changes imply in the short to medium run, and those that cannot to transition into other employment in the medium to longer run, development programmes will have a challenge and a mandate to assist small farmers to make the transition.

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