

The Rise of Supermarkets in Central America: Implications for Private Standards for Quality and Safety of Fresh Fruits and Vegetables¹

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Introduction

Standards for fresh fruits and vegetables (FFV) applied to producers in developing countries have recently figured prominently in the literature in two ways, both focused on trade as opposed to domestic markets. On the one hand, as FFV exports from developing to developed countries have burgeoned over the past decade since trade liberalization, the literature has focused on the application of safety (regarding pesticide and microbial residues) and phytosanitary (pest and diseases) standards by developed countries to developing country exports. The literature has treated both public standards applied by the US and Europe to imported FFV (e.g., Unnevehr, 2000) as well as the recent rise of private FFV safety standards such as EUREPGAP applied by European supermarket chains (Codron et al. 2002). Some work has focused on company-specific standards and their effects on FFV from growers in a given country, such as UK supermarkets and Kenyan FFV exporters, in Dolan and Humphrey (2000).

On the other hand, some studies have focused on how the consumer-driven demand for high quality FFV translated into developed country supermarkets quality standards (in terms of appearance, size, shape, etc.) for FFV from developing country producers – which in turn translated into the need for substantial chemical use by those producers to produce those quality attributes. In her 1995 book “Bittersweet Harvests for Global Supermarkets,” Lori Ann Thrupp noted that the standard of quality demanded by consumers of fresh fruits and vegetables from supermarkets in the US and Europe had as its counterpart in Central America the heavy use of pesticides to achieve the needed quality for these non-traditional agricultural exports, and that the pesticide use hurt local consumers (who consumed the “seconds” rejected from export, on the domestic market) and farm workers who applied the pesticides in Central America. She thus focused the debate on how the standards of supermarkets in developed countries are a key direct determinant of farming practices in Central America and indirectly created a tradeoff between quality for exports and local food and worker safety.

Continuing to confine the above discussion to the imposition of standards by foreign buyers on developing country producers is today, however, to miss a major new determinant of standards faced by those producers. As this paper is focused on Central America, we illustrate here that point from that region. In the Central America of a decade ago on which Thrupp’s book was based, export standards were indeed by far the most important determinant of evolution of the FFV sector away from the traditional conditions. The FFV sector was neatly divided into the export sector – under the rules of US and European public standards for imports and private standards of supermarkets and agro-processors – and the traditional FFV sector, a system of wholesale markets, mom and pop stores, and open-air markets with essentially no quality or safety standards. Whatever farmers and intermediaries brought to the markets was roughly

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graded and sold. There were only a few score domestic supermarkets on the scene at that time, a niche so minor as to be justifiably ignored.

However, a major change has occurred in the past decade in food retailing and by extension in FFV markets in Central America, which causes us to revisit Thrupp's theme of supermarket standards – but this time focusing on the standards of local supermarkets in this region. The latter have risen very fast from a negligible niche to a major force in food markets in only a decade. Supermarkets' share in overall food retail in Guatemala went from 15% in 1994 to 34% in 2001; that figure is already 50% in Costa Rica and 37% in El Salvador. As we note below, the share in FFV retail has lagged behind their overall penetration of food retail, but the trends are parallel. There are 600 supermarkets today in the five countries on which we focus here (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua), up from at most a hundred or so in the early 1990s.

As surprising as is local supermarket growth, even more relevant here is the fact that local supermarket purchases of local FFV are now approaching the importance of the non-traditional exports from the region. FAOSTAT data for 2001 for fresh FFV exports (excluding bananas) from these five countries totals around 600 million dollars² – while a rough estimate of local supermarket sales of fresh FFV is 180 million. Remove export-powerhouse Costa Rica (349 of 599) from the set and the comparison shows exports are double supermarket sales (FFV exports are 260 million and supermarkets sales are 116 million. Below we show that the gap is closing quickly because supermarket sales are growing much faster than exports.

Despite the fact that local supermarkets have now risen to equal or exceed the importance of non-traditional exports in the Central American FFV sector, there has been no exploration in the literature of Central American supermarkets FFV procurement systems and standards. That gap is important because it is possible that the rise of supermarkets locally is creating anew a strong trade-off between quality and safety – or is creating elements of a resolution of that dilemma.

On the one hand, supermarkets tend to emphasize the marketing of FFV of high quality as a way of competing with traditional markets, and this quality tends to be defined mainly in terms of appearance (i.e. spotless, uniform fruits and vegetables in terms of size, shape, color, firmness, ripeness...). Those quality standards, when applied locally just as Thrupp notes in the export market, creates an incentive for an increase in the use of insecticides, fungicides, and other production and post-harvest technologies that can harm people.

On the other hand, local supermarket demand could also have created the incentives to put in practice new technologies and investments that have resulted in major improvements toward the eradication or control of important health problems, such as fatal diarrhea among children in the region caused by E. coli. In fact, as informal, traditional FFV market participants do not typically have the incentive to apply and enforce food safety standards, and it is difficult for governments to enforce such standards in that sector, it may be that the formal, supermarket sector may well have the greatest capacity and incentive to implement safety standards – public or privately formulated – to domestic marketing of FFV. The literature does not yet reveal which of either quality or safety standards local supermarkets apply, and thus what public health and safety issues are emerging from this major new change in food markets.

² Note that this figure includes intra-regional exports, and many of the latter go to supermarkets (for example, a significant amount of Guatemala's substantial exports to El Salvador of vegetables go to supermarkets either directly or via the wholesale market), and thus from the point of view of comparison of exports with supermarket sales, the export figure is over-stated.

In this paper we focus on what standards the local supermarkets are imposing on suppliers in Central America, and how they are doing it, that is, how they organize their procurement system for FFV. The results focus on changes in standards and procurement systems of supermarkets and specialized wholesalers, and do not measure actual changes in farm-level practices occasioned by these system changes, which is a topic left for future research.

The findings are a synthesis of recent case studies from Costa Rica, Guatemala, El Salvador, Honduras, and Nicaragua – the range being in decreasing order of household income, share of supermarkets in overall food retail, and from strongest to weakest domestic public health standards. The research is based on fieldwork by a team of researchers in November 2002 - May 2003, including rapid reconnaissance surveys of supermarket chains, wholesalers, and suppliers. The questions focused on procurement practices and application of standards, including private enforcement of public standards, and application of private standards.

The paper is organized as follows. It begins with a brief description of the rapid expansion of supermarkets in the overall food and FFV markets in Central American countries. The next section presents a conceptual model of the changing organization and functioning of FFV procurement systems of supermarket chains in Central American countries, describing centralization as the dominant trend. It is this shift from decentralized to centralized procurement systems that both creates the need, from the supermarket point of view, for standards to work well, and that simultaneously also gives supermarkets the incentive and capacity to impose standards. The next section discusses different modalities in which this general model is being implemented in the region, using specific examples. The last section discusses development implications for farmers of these standards and an agenda for further research.

Diffusion of Supermarkets in Central America and Penetration of FFV Markets

Patterns of Diffusion of Supermarkets in Central America

Several characteristics of diffusion can be remarked based on the data presented in Table 1 and interviews.

First, there has been surprising growth in little time in the supermarket sector in Central America: there are nearly 600 supermarkets today in the five study countries (Costa Rica, Guatemala, El Salvador, Honduras, and Nicaragua). The implied “store-rate” is of approximately 17 supermarkets per million people -- still lower than that of the richer and larger countries of South America where supermarket growth started earlier and where the store rate is roughly double that of Central America (for example Argentina has 34 stores per million people).

The population-weighted average of the share of supermarkets in food retailing is 55% in South America (Reardon and Berdegúe, 2002), versus 36% over the five Central American study countries; that 36% is the same as today’s Colombia, or Argentina a decade ago. Note also that only five years ago, the supermarket share in Central American food retail was only 28%. Note the case of Guatemala, where the current share is 34%, was 25% in 1997 and 15% in 1994. That is an illustration of the very recent rise of supermarkets, from roughly a tenth of food retail at the start of the 1990s, to a third a decade later. Another indicator of the speed of supermarket growth is to compare store growth (20% in five years) to fresh fruit and vegetable export growth, as a proxy for non-traditional exports growth, 15% over the past five years. New stores area are

bigger, hence the number of stores falls short of reflecting the impact of the bigger size of new stores.

That proportional growth is thus roughly that of South America's, but starting from a much lower base, as one would expect in a much poorer region. As in South America, while there was a tiny base of domestic supermarket chains or independents at the beginning of the 1990s, the lion's share of growth occurred with the influx of foreign direct investment (FDI) in the mid 1990s on, which also induced competitive investment by domestic chains. A great deal of the growth in supermarkets has thus occurred in the past five-seven years.

Second, the supermarkets in Central America have spread over the past decade from a tiny niche at the end of the 1980s focused on the richest consumers in the capital cities, to gradually penetrate in the 1990's the intermediate cities (at speeds roughly correlated with the income of the country, hence fastest in Costa Rica and slowest in Nicaragua and Honduras), and today beginning to penetrate small towns of 10-25,000 inhabitants. In 2003, there are supermarkets in essentially every provincial capital in Central America, even in the poorest countries. A third to a fourth of the stores of the main chains are outside the capital cities in most countries.

It is telling that supermarkets have begun to open in relatively small towns, as in other countries that has been a sign of "takeoff" of supermarket growth: for example, a SuperSelectos store recently opened in Lourdes, a town of 25,000 in El Salvador. In Honduras, the La Fragua chain (based in Guatemala) has used smaller-format Paico stores to penetrate smaller towns as an initial strategy of supermarket penetration; the same occurs in El Salvador where the "Salas de Todos" convenience-store format is used by Selectos to penetrate small towns of less than 25,000 inhabitants. The penetration of smaller towns is still in general behind what one observes in South America, but the trend is the same.

Moreover, supermarkets are spreading beyond their traditional (minor) niche focused on the upper and middle class to spread in recent years into poorer neighborhoods. An immediate rough indicator is that the share in food retail 36% is already beyond the middle class share of population. This is same path that supermarkets took in South America with a head start of roughly a half decade. The fastest growth in the main chain in Central America (CARHCO)³, is by far fastest in the formats focused on the poorer consumer segments (e.g., the "no frills" Palí or Despensa Familiar). It is telling that according to a top manager of a major chain in Guatemala, supermarkets in that country are assuming that only 17% of the population (the poorest, rural, most hinterland) is "out of reach" of supermarkets over the next decade.

Third, there is substantial concentration in the supermarket sector in the five countries. The population-weighted average of the share in total number of supermarkets in the countries, of the top chain in the supermarket sector in a given country, is 54% (this is 58% if it is total supermarkets-weighted average, 54% if population weighted average). This is a rough proxy for sales share. However, in Costa Rica and Guatemala the shares are 63 and 75% respectively, and that is most likely the range that the other countries will move to over the next few years, as only recently have the major chains moved from those leading countries into El Salvador, Honduras,

³ The Central American Retail Holding Company (CARHCO) is a joint venture among the giant multinational retailer Royal Ahold, La Fragua based in Guatemala, and CSU based in Costa Rica, with 253 stores in all five countries, formed in January 2002.

and Nicaragua, acquiring key domestic chains and expanding quickly, partly by further acquisition and partly by organic growth.

The results of the concentration are stunning: 1 of each 4 quetzales spent by Guatemalans on food are spent in a CARHCO supermarket today; that figure in Costa Rica is 1 of each 3 colones. It is inevitable that retailers with such presence have a major effect on the trajectory of development of the agrifood systems of these countries.

Moreover, there is substantial “multi-nationalization” of the supermarket sector in Central America: today (not so just two years ago) all of the major chains in the five countries are part of CARHCO, and are thus in joint venture with Ahold, the Dutch chain that is number three (after Wal-mart and Carrefour) in the world.

Supermarket penetration of FFV retail in Central America

First, Table 1 shows that supermarkets’ share in FFV retail lags significantly behind their share in overall food retailing. The population-weighted share of supermarkets in FFV retail is only 10% (versus 36% in overall food retail). This is a similar pattern, if not more acute, than what is found in South American countries, where the share of supermarkets in FFV retail is usually 2-3 times smaller than supermarkets’ share in overall food retail. Moreover, even customers of supermarkets tend to rely relatively little on the FFV section of the supermarket for their fresh fruits and vegetables: in Costa Rica for example, only a fifth to a quarter of the clients who enter a supermarket, buy FFV at the stores. We found similar and sometimes lower figures in other chains in other countries, such as 15% in the leading Guatemalan chain.

The figure of 10% penetration reflects the fact that traditional FFV retailers (central wholesale markets in which there is also retail, street markets, municipal markets, farmers’ markets, and even fruit and vegetable street vendors), remain a formidable competitor of supermarkets in the FFV sector, and still have the lion’s share of this market in all countries.

Why is there such a lag in supermarkets’ penetration of FFV retail relative to penetration of other product categories? There is one simple but powerful reason: until recently and to a large extent even today, most supermarkets in Central America have basically offered similar quality FFV, at significantly higher prices. This is for the following reasons. (1) Until recently, supermarkets did not have procurement systems (discussed below) that even had the promise of gradually cutting costs and arriving at competitive prices relative to those of the traditional, informal sector that does not pay taxes and has low overhead. Supermarket prices for FFV are still on average roughly 15%-60% above traditional retailers, according to our interviews. That difference is crucial in countries with very low average incomes and many poor. In other products it appears that supermarkets have been more successful in driving down costs through high-volume procurement. (2) Until recently, supermarkets in Central America have not had procurement systems that allowed them to differentiate quality from traditional retailers, as both relied mainly on the traditional wholesale markets for sourcing FFV. The supermarkets formerly would just buy the best quality they could find in the wholesale market and then apply high margins. (3) As a result, until recently the only clear advantage of supermarkets over traditional markets was convenience, safety and cleanliness, with a very clear disadvantage in terms of price and no obvious product quality advantage. It is not surprising that such a strategy was useful to penetrate only in the middle-high and high income strata of these countries.

Second, despite the “slow start” in FFV, it is surprising how large in absolute terms the “supermarket-market” has become in Central America. While “all eyes” (in government as in international development circles) are focused on the rapid growth in non-traditional exports, the fact is that supermarkets in the five countries sell a substantial quantity of FFV that is about half of exports at present and growing. Given that the supermarket sector is growing much faster than non-traditional exports, in a few years supermarket local sales of FFV will equal non-traditional exports. In particular, exports grew 15% during 1997-2001 (in total, not in annual terms), while the total growth of supermarket sales over 1997-2001 was 36%. At the very least, the intense - and justified - attention in the literature (e.g., Barham et al. 1992) as to how non-traditional exports affect local food systems should be shared with the effects of local supermarkets. This confirms the general trend in Latin America, where supermarkets buy 2.5 times more FFV from local farmers than Latin America exports to the rest of the world (Reardon and Berdegúe, 2002)!

From the point of view of development policy, although the direct and immediate impact of supermarkets on the broad FFV sector in Central America is relatively small still compared with the traditional FFV sector, policymakers should be keenly interested in the supermarkets effects for two reasons.

On the one hand, not only the direct, but also the *indirect* impacts of the supermarkets should be taken into account in judging the current effects on suppliers and consumers. The sudden and rapid rise of supermarkets have imposed strong competitive pressure on traditional markets to upgrade their own *de facto* standards in order to staunch the loss of consumers and, more important, of those consumers with greater purchasing power, to the supermarkets.

On the other hand, the attention of development policy-makers should focus not so much on the current degree of penetration of supermarkets in FFV retail, because supermarkets have shifted away from only constituting a minor retail niche recently; it is the trend and dynamics that are most important, especially viewed in terms of the major and very recent changes, in particular centralization with the application of demanding standards, in supermarket FFV procurement systems. These changes promise to have major effects in the next years on the balance between supermarkets and traditional retailers in Central America. Our hypothesis is that the dominance of the traditional markets in FFV will start to be eroded as the quality gap increases and the price gap closes. Those dynamics of the procurement systems of Central American supermarkets are discussed next.

Supermarket FFV Procurement Systems and Standards in the Study Countries

Objectives and Standards of Supermarkets

It is frequently assumed in the literature and by development practitioners that quality and safety standards are the almost natural, automatic response of retailers, and hence supply chains, to consumer preferences. In general, the argument goes, consumers are becoming more educated about quality issues and are willing to pay a premium for foodstuffs that meet their preferences. This consumer willingness to pay more for better quality food creates a powerful incentive to deliver such goods, which is then transmitted along the food system all the way to producers and even input manufacturers.

Yet, most retailers and specialized wholesalers we interviewed in Central America agree on the following. (1) Throughout Central America, the concept of fruit and vegetable ‘quality’ among retailers and consumers is restricted only to the cosmetic and flavor characteristics of the FFV. (2) Public health and safety standards in FFV are effectively missing in Central America, so that incentive does not hang over the heads of the supermarkets to institute safety standards. Only in Costa Rica and Guatemala are there regulations on this, and that of Guatemala was enacted in 2001, and all agree that both are not monitored or enforced for FFV by the government. (3) Only in Costa Rica is there a more or less widespread consumer awareness of the importance of other dimensions of FFV quality, in particular those related to human safety and health, and to the environmental consequences of the production processes. (4) Most Central American consumers today readily assume that the nice-looking FFV offered by clean and tidy supermarkets, are surely much safer to eat when compared with the FFV offered in most of the dirty, messy, traditional markets⁴. (5) In fact, most Central American consumers already assume that the hefty (15% to 60%, with an average of around 30-35%) price premium they pay for FFV bought in the supermarkets, is explained precisely by this difference. They are not willing to pay a further premium for additional quality assurances, as exemplified by the disappointing sales of certified, top-quality organic products sold in some of the supermarket stores, such as some of the MásxMenos (“More for Less”) in Costa Rica. All store managers we interviewed agreed that in fact, the current price gap with the traditional markets is *the* major barrier to higher FFV sales.

As a result, Central American supermarkets in general currently are not emphasizing health and safety issues when they define their FFV quality standards. There are two important exceptions to this rule, Hortifruti-CSU in Costa Rica and La Fragua in Guatemala (two of the three joint venture partners of CARHCO), who have or are developing quality assurance schemes that include health and safety issues, at least for a subset of the FFV they market. These are discussed in more detail below.

Yet, despite the weakness or even absence of any significant effective consumer demand for higher quality fruits and vegetables beyond basic cosmetic and flavor characteristics, quality standards are beginning to play a role in the supply chains because they serve a key objective of supermarket manager’s objective, which is to increase their market share in the FFV market.

Our interviews pointed overwhelmingly to the primary objective of supermarket chains (taken as a whole, abstracting from inter-chain competition) in Central America with respect to FFV, is to increase market share through increased sales, which in turn depends on widening the quality gap and narrowing the price gaps with traditional markets.

To meet that dual objective, supermarket chains in Central America have been shifting over the past few years away from the old procurement model based on sourcing FFV 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 wholesalers” and away from traditional wholesalers; (2) centralized procurement through Distribution Centers (DCs); (3) assured and consistent supply through “preferred suppliers”; (4) high quality and increasingly safe product through private standards imposed on suppliers.

⁴ Although there are notable exceptions, such as in the case of the Farmers’ Market in Tegucigalpa, Honduras, or throughout Costa Rica, which consumers identify with fresh, more natural or less processed FFV.

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). That relationship explains why the effective rise of standards has taken place only over the past year or at most two among the leading chains of Central America – because standards were waiting for centralized procurement systems using specialized wholesalers and preferred suppliers to implement them. In turn, all four pillars are used by the supermarkets to start the slow, long, but probably steady march toward closing the price gap and widening the quality gap with traditional retailers of FFV.

Below, we retake each of these and then discuss how the four pillars have worked together as a powerful new system to pursue the dual objective.

First, there has been a substantial shift by supermarkets in the study countries away from reliance on traditional wholesale markets for procurement of FFV. This shift has occurred in periods usually of less than two years in each chain. The shift is away from traditional wholesalers toward the use of specialized wholesalers (either centralized or based in the growing regions) who classify product collected from suppliers, sometimes have their own production, and often have semi-contractual relations with “lead suppliers” who have the capacity to implement the supermarkets’ standards. The specialized wholesaler specifies for the lead suppliers the requirements of the final buyers (the supermarkets) for quality and safety standards, and sometimes also gives technical assistance and credit.

The shift occurred away from traditional wholesalers and wholesale markets towards specialized wholesalers because the traditional wholesalers: (1) Lack quality standards and, in particular, lack consistency in standards. The traditional wholesalers who used to supply most supermarkets, did serve these demanding clients with the best FFV they could find on a given date; such “very best” was too often of “below acceptable” quality, according to the procurement officers of the leading supermarket chains that we interviewed. Since traditional wholesalers do not get involved in any sort of production support programs, do not enter into long term commercial relationships with selected producers (out-grower schemes), and in general buy and sale on a day-to-day basis (spot market), they often lack the capacity to define, monitor, or enforce a quality or safety standard which goes beyond the norm for the wholesale market (e.g., no rotten FFV, basic grading of FFV according to size and appearance, weights and measures). Since the vast majority of their sales are done with clients who in turn have no particular quality demands, traditional wholesalers also lack the incentive to develop, monitor, and enforce standards from which they will gain little benefit, if at all. (2) An objective of supermarkets’ FFV procurement officers is to not find themselves as the weak party in the negotiation process. This is more difficult to achieve with wholesalers than with individual producers, as wholesaling is usually quite concentrated per product rubric.

As a result, supermarkets tend to continue to procure from wholesale markets only where they cannot make adequate arrangements direct with producers through their own Distribution Centers (DCs) and/or specialized wholesalers. Most supermarket chains starting recently in Central American only resort to purchase from traditional wholesalers when: (1) it is convenient; (2) they wish, as a temporary manoeuvre, to weaken the bargaining position of another supplier; (3) there is an important difference between the current wholesale market price of a given

product and the reference price that has been agreed upon with a given supplier⁵; or (4) where new types of specialized wholesalers have not yet emerged to meet their needs.

Second, as an alternative to traditional wholesale markets, supermarket chains in Central America are setting up their own Distribution Centers (DCs) to have centralized procurement of FFV. Of course this is implemented only when the chain has passed a certain size in terms of number of stores or throughput to justify this shift. In Brazil that amount is noted by de Souza et al. (2002) as 2000 tons a month as a minimum of FFV pass-through in a chain. La Fragua in Guatemala has gone from 32% centralized in 2001, to 78% in 2003. CSU is almost 100% centralized in Costa Rica.

The main reasons for this procurement centralization are as follows. (1) There are cost savings from reduced coordination costs, including reducing congestion at stores of many suppliers delivering, and from spending less time ordering and tracking. (2) There are inventory management cost savings, as chains can implement best-practice logistics; centralization creates economies of scale and so justifies investments too expensive for small chains with decentralized distribution -- such as centralized computer systems, cold chambers, shift from hand trucks to mechanized forklifts, centralized PLU sticker application, upgrading crates and pallets, remodelling docks so that large trucks can more easily deliver and the cold chain not be interrupted, and so on. (3) There are supervision cost savings as it is cheaper and more effective for the chain to monitor deliveries at only one point rather than per store⁶. (4) There are savings in transport and other transaction costs for suppliers who formerly had to make the rounds of widely dispersed stores on deliveries. Centralization also allows suppliers to adjust rapidly to the results of the quality control. (An FFV manager of La Fragua in Guatemala told us, "A supplier now comes with 120 units, even though we only asked for 100, so that he/she can replace on the spot those that we reject, which is then sold that same day in the wholesale or other traditional market.") . (5) Centralization helps chains by upgrading their supplier base, as being able to deal in larger volumes without the bother of delivering to many stores makes it more attractive (in sales less transaction costs) for bigger suppliers to sell to the chain. (A large tomato producer in Honduras told us he decided to start selling to one of the main chains only after they centralized purchases as he had tried but disliked delivering over the stores.) (6) Centralization can bring substantial product cost savings: buying in one place in bulk can mean economies of scale and better bargaining with suppliers.

These savings can be substantial. We know of no calculation of cost savings for shifting from decentralized to centralized procurement in a supermarket chain in Central America, but it is reasonable to assume that these are in the order of magnitude of such savings found elsewhere. For example, Belik (2000) cites evidence in Brazil that cost savings of 30% are gained by supermarket chains moving to centralized procurement.

Third, in Central America the main supermarket chains and/or their dedicated, specialized wholesalers or buying arms, are switching to lists of preferred suppliers. In the relationships with

⁵ In one country, a group of growers had achieved a tomato contract with a supermarket chain, at a relative price of 100, which was 12% higher than the 'average' wholesale price. The farmers complain that when the wholesale price of tomatoes went below 78 or so, the supermarket would frequently increase the rate of rejection of their product and instead purchase more tomatoes from the wholesalers.

⁶ Interviewees familiar with the traditional procurement systems of supermarkets noted that per store deliveries subjected suppliers to arbitrary and inconsistent monitoring and even the need for payments to product receivers. These hurt both the supermarket and the supplier and reduce product quality and ability to enforce standards, and raised costs.

these suppliers they use new commercial practices vis-à-vis suppliers that reward consistently high performance in delivery. The reasons for shifting to preferred suppliers are as follows. (1) Supermarket chains need to reduce risk of coming up short on a given item, and want to minimize the costs of putting in place a procurement system that reduces that risk. Having a list of preferred suppliers falls short of issuing contracts, but is not so “loose” as to merely engage in spot markets and find whatever is on offer and whoever is selling on a given day. (2) Constituting the list of preferred suppliers requires an initial act of selection, and that selection screens farmers who cannot meet supermarket requirements (cost, volume, consistency, safety, quality, ease of transaction), and thus reduces search costs. (3) The information exchange linked to a preferred supplier relationship means that the suppliers can “internalize” the requirements and so supervision costs, and the counterpart, costs of product rejection, can be minimized. (4) In what we call in the next section “active relationships” with preferred suppliers, supermarket chains can resolve problems of generalized or idiosyncratic market failure in factor markets for its suppliers; for example, it can help with credit and agronomic advice. In the sense of Eswaran and Kotwal (1985), the chain can also resolve the problem of the missing market for management services by helping the supplier establish crop calendars and undertake commercial planning, even planning for income diversification. This function is particularly important in Central America, as Javier Gallegos (2003a), the marketing head of Hortifruti, notes:

“The realities and problems of our growers and markets are as follows. The market is fragmented, unformatted, unstandardized. The growers FFV low quality products, use bad harvest techniques, there is a lack of equipment and transportation, there is deficient post-harvest control and infrastructure, and 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, and infrastructure.”

Fourth, via the above “procurement system” or combination of the first three pillars, leading Central American supermarket chains are very recently starting to apply tougher and effectively enforced quality standards. The specifics of those standards, in the context of the specific procurement systems of the chains in Central America, are discussed below

A Typology of Current Practices across chains in Procurement System and Standards

The degree, to which this overall model of centralized procurement systems is being implemented, varies across the region. In this section we examine different modalities and, for each, discuss the issue of quality and safety standards. The sequence here is from the “traditional procurement system” of Central American supermarkets (decentralized, relying on traditional wholesalers), to modern systems with an emphasis on the four pillars discussed above.

Type 1: Total reliance on traditional wholesalers delivering to individual stores. A few relatively small chains and all the independent supermarkets (often in smaller cities or towns), such as Unisuper in Guatemala (12 medium-sized and 12 relatively small supermarkets) in Guatemala or La Colonia in Nicaragua (5 stores) and up until 8 months ago, a separate chain from the latter one, La Colonia in Honduras (11 stores) – all continue to rely on the traditional system in which traditional wholesalers deliver FFV to each individual store. In these chains, quality standards are low (basically relying on what is available that day in the wholesale market) and their control is based on rejecting high proportions of wasted FFV after it can no longer be sold. In this

system, the client is paying more for a FFV of a quality equivalent to that found in the traditional market, the only benefit being convenience, personal security, and store cleanliness.

Type 2: Outsourced and decentralized procurement system. This is a system utilized by small-medium chains, such as Megasuper in Costa Rica (with 15% of the supermarket-market) or PriceSmart (based in California) in Costa Rica, Honduras and El Salvador (with a few stores in each country). These chains lack the critical mass in terms of FFV sales, to justify a centralized operation. Instead, they rely on one or two specialized wholesalers, who in turn source mostly from the central wholesale markets and, in some products, from individual growers. For example, PriceSmart relies on Interfrutd (for one set of stores) and Fruta Internacional (for the other, similar clientele, stores) in Costa Rica. Megasuper sources exclusively from Interfrutd.

Quality standards are higher in this system than in the previous one, both because the chains are larger and, in some cases, are focused on a middle-high to high income clientele (e.g., that of PriceSmart), and because the specialized wholesalers are also stronger and fully formal firms, as compared to the traditional wholesalers that are common in Type 1 procurement systems. Yet, quality standards in this type 2 are still strictly limited to cosmetic and flavor characteristics, as much of the supply is coming from the central markets as opposed to from preferred suppliers-growers, and it thus becomes impossible to control for variables other than those that can be appreciated rapidly by simply looking at the product.

One of the main chains in Costa Rica (Megasuper, with 15% of the supermarket-sector) has taken a step in the past two years forward in an intermediate position between the second and third types of system, by agreed with its specialized wholesaler it uses (Interfrutd) set up a "preferred suppliers" system for most of their FFV procurement. It is apparent that they did this as a response to the main competition's (CSU's) move to deepen its preferred supplier system (see below). This is a case of diffusion of organizational change induced by competition. To ensure access to these suppliers, Interfrutd in a few cases has entered into strategic alliances with organizations of small and medium producers; an example is their alliance with PROGUATA, an organization of Taiwanese guayaba producers in Punta Arenas, Costa Rica. Interfrutd supplies the Collection Center and Packing House, and PROGUATA guarantees supply of quality fruit. Similar alliances are being built by Interfrutd with banana, mango, and sweet pepper producer organizations.

Type 3: Decentralized mixed procurement system. This type of arrangement can be found in chains which are about to make the switch to a centralized procurement system. An example is that of SuperSelectos in El Salvador (which is tied for first place with La Fragua, with about 55 supermarkets and a chain of small format stores). The chain still is largely reliant on one or two specialized wholesalers. From one very entrepreneurial wholesale company, Gladys de Alvarado which has grown with the chain, it gets 70% of its regional produce, nearly all from Guatemala (the same source from which the traditional retailers get nearly all their produce); Gladys de Alvarado has, in turn, a system of preferred suppliers in Guatemala and also buys from the wholesale market there and from other specialized wholesalers there. SuperSelectos gets all its international fruit, mainly from Chile and the US, from another wholesaler. These first two follow a common pattern of differentiation of specialized wholesalers into geographic source: local/regional or imported.

However, SuperSelectos itself still has a significant complement of direct sourcing from individual growers and from preferred wholesalers/suppliers in the central wholesale markets.

Relying on more than one supplier gives more leverage to the chain to demand higher quality and lower price from the main specialized wholesaler.

Thus, quality standards tend to be higher than in the more standard “type 2” system and the type 1 system, but again limited to those characteristics that can be evaluated rapidly and simply by expert observation.

Type 4: Centralized passive procurement system. This arrangement allows the chain to define and enforce much stricter quality as well as safety standards, including, for example, standards on pesticide residues or presence of pathogens such as E. coli. The best example in the region is that of La Fragua in Guatemala.

La Fragua, with its various formats has 65% of the supermarket-sector in Guatemala. La Fragua has also moved in the past three-four years to centralize its FFV procurement through its buying arm (owned by and part of the supermarket chain) “Disfruve”. Disfruve uses a “preferred supplier” registry of several hundred farmers and wholesalers. Most of these suppliers are medium/large grower/packers.

A typical example of the latter is La Carreta, a medium-sized grower/packer that has greenhouses, drip irrigation, its own trucks, and sells under its own label in Guatemala, El Salvador, and Honduras – and exports vegetables to the US. This is a typical combination (and one that supermarkets prefer) – the combination of exporter, with the experience, physical production and post-harvest assets, and level of quality that implies. La Carreta supplies La Fragua stores in Guatemala and now La Fragua’s recently acquired chain in El Salvador, Despensas de Don Juan, and even sells a line of six items to La Colonia in Honduras. It is thus a small regional multinational as well as an exporter, following the regionalization of supermarket chains themselves in the same way that Hortifruti or Frutas Internacionales followed the chains’ expansion over the region.

These medium/large suppliers pack the product ready for supermarket shelves (just as Hortifruti requires in Costa Rica), and deliver either to the Disfruve’s DC or to specific La Fragua stores. Disfruve also procures some items from specialized wholesalers. Some of the latter are regional multinational specialized wholesalers, such as Frutas Internacionales that supplies mainly imported fruit to La Colonia, and to La Fragua. Other specialized wholesalers include heads of grower groups like the Distribuidora de Fresas San Francisco (strawberries).

For La Fragua’s recently (January 2003) acquired chain in El Salvador, a large-scale Guatemalan grower/packer/shipper (Disvegua) will continue to supply 80% of Despensas de Don Juan supermarket chain’s FFV needs, with overall coordination now supplied by the Disfruve office in Guatemala, hence the effective beginning of regionalization of the procurement system, discussed further below. Note that the system used by Disfruve is similar to that of Hortifruti (discussed below) in that it is a preferred-supplier system, but Disfruve has not yet reached the degree of technical assistance and support for its grower group, and thus is reliant on the suppliers’ capacities if they are to meet La Fragua’s quality standards.

La Fragua supplies its stores from a centralized Distribution Center built just two years ago, where 78% of all FFV are received and processed before being distributed to its stores. Less than two years ago, only 32% of La Fragua’s FFV went through the Distribution Center. With the DC, it has become possible for La Fragua to enforce a more stringent quality standard. The

standard has been formalized in writing for each product, and a well-trained group of employees receives and inspects each shipment. Those with the highest rates of compliance get rewarded with orders for increased volumes of FFV during the next weeks, and the opposite happens to those suppliers who perform less well.

We call this a passive system because from the point of view of La Fragua, it is up to the supplier to meet its rules and to find the best way to do so. The chain simply sets out clear rules and a monitoring, enforcement and incentive system. Our interviews at La Fragua revealed that the FFV procurement office feels this system is practicable, because they are in a “buyer’s market” with a large number of grower/packers to choose from – and many of the latter are even involved in export and so their overall operations meet at least quality and sometimes, if they are exporting to Europe or the US, safety standards.

Here is the point in this continuum of development of procurement organization and institutions where FFV safety standards make their first appearance. La Fragua has seen the incentive (which is in turn encouraged by its partner Ahold) to move one step further and establish in June 2003 a formal quality and safety seal, the “Paiz Seal” (after its main chain, Paiz). Interestingly, this retailer FFV safety seal is conferred on producers who agree to sell the products with the seal only to La Fragua, and who pass the test of the third-party certification scheme, PIPAA.

PIPAA is an innovative, public-private entity formed as a joint activity of the Guatemalan Ministry of Agriculture, AGEXPRONT (a private association of exporters) and the Association of Agrochemical Firms. PIPAA is the Spanish acronym for the Agricultural and Environmental Integrated Protection Program. This entity was formed as a certification body to certify that producers meet export standards; it emerged as a response to crises that constrained or stopped exports to the US (pesticides on snowpeas in 1991-93, and *Cyclospora* bacteria on raspberries from 1996). PIPAA inspects farms and participates in phytosanitary pre-clearance programs with the U.S. Department of Agriculture in melons, mango, and papaya.

In the past year, the idea emerged at PIPAA and among suppliers of the need for the application of PIPAA’s expertise acquired in the export market to local and regional market needs, in particular to the supermarket-market. PIPAA thus created for the local market a “Safety Certification Seal.” But to PIPAA’s management’s surprise, the supermarket chains did not jump at the use of the seal. Several suppliers did in fact adopt this seal, such as the case of La Carreta in Guatemala discussed above. However, the supermarket chains reactions are interesting. (1) Supermarket chains do not yet require the certification – it is voluntary. Suppliers informed us that it helps somewhat in negotiations but is not clear how much. Part of the reason for not requiring it, is that it is costly and not all suppliers can adopt it, which would then reduce the supply to supermarkets; in an interview with Mr. Viteri, manager of La Carreta, he noted that in application of PIPAA standards his costs rose 15%, while he calculated that the process management implied by the process standards saved 5% of his costs, and thus the net increase in costs was 10% - possible for a large supplier but a real challenge up front for a small grower; Ramírez and Caro (2003) have documented an increase in total firm costs of 17% in Chilean maize farms, and of up to 200% in peach farms that implement that country’s new Good Agricultural Practices standards (2) La Fragua expressed little interest in promoting the PIPAA Safety Certification Seal in the way it had been applied until May 2003 – where suppliers qualify for the Seal and then can sell products with that seal to any chain. Instead, La Fragua supermarkets in June 2003 have instituted a new seal, called “Paiz Safety Seal”. This seal is as before conferred on the producer and displayed on the product, but the Seal is specific to the

retailer, and thus the retailer is in the position of reaping competitive advantage (over traditional retailers and over competing chains) of having the seal. Also, the supplier cannot use the seal to sell to competitors of La Fragua, thus reducing the suppliers' bargaining position. (3) La Fragua wants to move the above safety/quality standard/seal from voluntary to mandatory over the next year. At present, however, it plans on continuing the "passive" system where it is the choice, responsibility – and burden – of the supplier to meet the production and post-harvest level requirements of this certification. There is no premium planned, only preference in sourcing and eventually access to sales.

Hence, understanding the retailer's (buyer's) business strategy helps to differentiate those kinds of safety seals/certification will work in the marketplace from those which sound like good ideas but then are not attractive to the buyer.

Type 5: Centralized proactive procurement system. The major difference between this system and the previous one is that in this case the supermarket chain establishes a technical assistance and training program to help its suppliers in making the gradual transition to higher quality and safety standards. The only example in the region is that of CSU supermarkets (part of the CARHCO regional chain since January 2002). CSU has 80% of the supermarket-sector in Costa Rica.

Since 1972 CSU has relied on a specialized, dedicated wholesaler, Hortifruti, for its FFV procurement. In fact, Hortifruti is a company in the same holding company as CSU, so they are separate profit centers but closely linked: CSU sells nearly all its FFV under the Hortifruti label, and CSU supermarkets are the only supermarket client of Hortifruti (Vallejos, 2003a and 2003b), although Hortifruti sells to other non-supermarket clients for a minority of its business (some exports, some sales to food service).

Until about seven years ago, Hortifruti relied mainly on the traditional wholesale market, buying in bulk, delivering lots to its DC, then breaking down the lots and sending small lots around to the CSU stores. As CSU grew into a chain of 97 stores in Costa Rica, the need to procure large volumes and standardize quality became crucial. Over the past 2-3 years Hortifruti moved nearly fully away from reliance on the traditional wholesale market (until today it only buys 15% of its FFV from the wholesale market) and only 10% from imports (via a specialized fruit importer). For the reasons discussed above regarding Central American chains' push and pull determinants of shifting away from sourcing from wholesale market, CSU and Hortifruti made this shift, as well as the shift to centralization, quickly and early compared to other chains in the region.

But Hortifruti went a step further. Under the impetus of closing the price gap with wetmarkets that was impeding their penetration of the FFV market in Costa Rica, and increasing the quality gap, Hortifruti combined the above shift away from the wholesale market and centralization, with the establishment of a network of approximately 200 preferred FFV suppliers. Fifty of these are mainly fresh-processors (such as of fresh cuts) and grower/packers that aggregate product from other suppliers. The rest are individual growers or grower/packers. Each supplier must clean, crate or pack in final usable trays the product, and deliver to the Hortifruti DC. There are no formal written contracts, but there is a system of preferred suppliers. They have "de-listed" only 4% of these over the past five years, and so they rely on careful selection of growers and then the maintenance of a stable relationship that is a kind of de facto informal contract in its function.

The attraction for the growers is the promise of stable access to an attractive and growing market, at prices that are close to but usually a bit above the wholesale market, plus technical assistance, and for the small farmers, input credit. The attraction for Hortifruti is to reduce the power of wholesalers who “take their cut”, have a group of farmers with whom they can work to increase the quality and safety of the product above that typically delivered to the domestic market, get the volumes they need all year with consistent quality, reduce transaction costs, and “lock in” the minority of FFV producers who can meet their volume and quality requirements (a very important consideration in Costa Rica, a country with a small number of FFV growers). While 70% of the suppliers are small farmers, producing mainly leafy greens for which there are few economies of scale and the lots are small, 80% of the volume purchased is from medium or large grower/packers, many of whom are also exporters or work with agroindustry.

In turn, Hortifruti not only sends out regularly its agronomists cum field-buyers staff to the suppliers to check on crop calendars, production practices, and to resolve issues that arise, but over the past five years it has set up a Quality Assurance Unit and instituted a package of quality and safety standards that that unit is charged with monitoring. The founding of the unit roughly coincided with Hortifruti’s obtaining in 1998 the Costa Rican government’s “sello azul” (Blue Seal) certification for low-pesticide use (geared to the U.S. FDA/EPA standard). Hortifruti takes monthly samples from the lots of 20 types of products (out of a total of several hundred types of products traded by Hortifruti) and tests them for pesticide and E. coli, tending to focus on items with a higher chance of having E. coli or pesticide problems, such as leafy greens and a few bulk items such as tomatoes. They have their own E. coli testing apparatus in house and also use cheap private labs in towns. For pesticide testing, they must use the government lab, whose high costs are a major constraint to testing frequency and volume (the growers carry the cost of the test; at US\$ 200 a shot, Hortifruti argues that it cannot afford to test more for it could end up creating a resistance among many growers to work with CSU). If they find violations by suppliers on either the pesticide or E. coli fronts, this is used to orient the technical assistance and training activities of their field staff rather than to signal de-listing of the supplier or even destruction of the lot of produce that tested above the standard. On the other hand, produce is summarily rejected if it does not meet the cosmetic quality standards, since these color, shape, ripeness and so on are characteristics that the buyer in the supermarket can readily detect. The de-listing of suppliers or destruction of produce found to be unhealthy, are practices that according to Hortifruti would be a major disturbing factor in the relationship with their preferred. Instead, Hortifruti works with their selected and preferred suppliers through technical assistance and training, to gradually move them up to the desired levels. That “gradual adjustment with emphasis on technical assistance” is the hallmark of their approach to raising standards of suppliers. In May 2003 Hortifruti conferred on a tenth of their producers, mainly medium farmers producing leafy greens, the Hortifruti Quality Seal which essentially combines the Sello Azul with Codex standards for E. coli plus Hortifruti private quality standards. They see this as an initial step toward generalizing the standards for their suppliers (personal communication, April 2003, Bernardo Marin, Chief, Quality Assurance Unit).

From the above discussion of the procurement organization changes in Hortifruti (centralization, preferred supplier relations), their capacity to impose standards is apparent (with different degrees of enforcement). However, what are their incentives to do so?

First, although no safety label is put on the FFV or posters or placards announcing the quality and safety assurance scheme in the FFV section of the CSU stores, CSU/Hortifruti undertook a

publicity campaign in the late 1990s when they obtained the “Sello Azul” to communicate that to consumers, thus linking the “safety image” with the Hortifruti label in the shopper’s mind. That is both a competitive edge vis a vis other chains, but also in relations to the wetmarkets. In our interviews they said that the merchandising policy is not to use labels but to create a general link in the consumers’ minds between “Hortifruti” and quality and safety and freshness. They have recently added an explanation of their safety standards to their webpage www.hortifruti.co.cr.

Second, Alvarado et al. (2003) note, citing several recent studies, that the technical assistance and quality assurance system with preferred suppliers has resulted in substantial cost savings for Hortifruti over the past several years. They note (translation):

“The strategies of monitoring and control of growers and harmonization of growers’ planting periods resulted in company growth of 15-20% per year between 1997 and 2001, and cost savings of 40%, as a result of reduction in product losses and waste due to quality increase. Moreover, there was a savings of 10% due to the ability to differentiate prices by quality (Hidalgo, 2003; Pomareda, 2003).”

CSU entered Nicaragua in 1968-1979, and then restarted in the mid 1990s, and has 22 stores there today, with 55% of the supermarket-sector. Before 1998 CSU relied on direct purchases from the traditional wholesale market. Hortifruti entered in 1998 and also relied on the wholesale market until in 2000 it set up a system of about 50 preferred suppliers similar to that in Costa Rica, except that it added a system of collection centers (centros de acopio) in the rural areas as Nicaraguan farmers are far less likely to own trucks than their Costa Rican counterparts. At the “centros”, they make quality selection and wash the leafy greens in chlorinated water. They also have a system of agronomists/buyers that work with the suppliers with respect to cropping practices. As the system is incipient, the consumer less demanding, and the grower base far less robust, Hortifruti is focusing on building volume of supply and minimum quality; safety standards to be applied to growers are in the future, although Hortifruti is phasing in good manufacturing practices including health standards in its plant (with planned convergence to the Costa Rican plant level over the next 18 months, personal communication Armando Gonzalez, Hortifruti/Nicaragua).

The story of Hortifruti’s entry and growth and system is similar in Honduras. CSU entered in 2000 and grew quickly, acquiring chains and building stores, and then in 2002 transferred ownership/management of the stores to the Guatemala-based La Fragua chain - right after CSU, La Fragua, and Ahold entered the three-way joint venture CARHCO. Hortifruti had already entered Honduras in 2001 to service the CSU stores, and continued in that role for the La Fragua stores. Again, Hortifruti started in 2001 only buying from the traditional wholesale market and then quickly shifted (in early 2002) to mainly relying on a preferred-supplier program with today about 50 growers, and only buying 10-20% on the wholesale market.

Interestingly, in both Nicaragua and Honduras, the second-place chain (both called La Colonia although unrelated firms) followed suite under the impetus of competition with the front-runners and imitating their procurement systems. La Colonia in Honduras started the system in late 2002 with a procurement program (in-house) with preferred suppliers (although a passive system as with La Fragua in Guatemala), and has started drawing on a specialized wholesaler, Frutas Internacionales, for its fruit procurement and a small subset of its vegetable procurement. La Colonia in Nicaragua notes that it has plans to start the same sort of system.

Type 6? After recent rapid regionalization of supermarket chains... Incipient Regionalization of Procurement Systems – and gradual convergence of standards. Above we showed that one or another member (La Fragua or CSU) of the regional multinational CARHCO (also including Ahold as third member of the joint venture) is either strongly or moderately dominant – in every one of the five countries. Five years ago there was much less concentration of the sector, there was no pan-regional chain, and the current two front-runners, La Fragua and CSU, were only starting their expansion into neighboring countries.

The expansion and finally regionalization of these dominant chains was followed by two waves of procurement system change by the dominant chains: (1) with a 2-3 year lag with respect to implantation, the organizational change discussed above, with imitation/diffusion effects among second tier chains; (2) very recently, over the past year and with plans over the next several years, a very incipient regionalization of the procurement system of CARHCO.

The procurement regionalization is incipient – 16% of the FFV in CSU stores in Nicaragua come from Costa Rica, for example, and there are only beginning exchanges between Hortifruti and Disfruve as the two procurement poles of the only regional chain in Central America. This has gone further in some other products, especially in dry beans. Note also that the FFV imports from outside the region are similar to these internal flows, and a number of these suppliers at the same time are heavily engaged in exports of FFV, so that they are adapting to changing domestic as well as export markets, marked by increasing demand for quality.

However, Hortifruti has made it clear that it is moving – gradually - toward a regionalized procurement system with a mapping of product specialties to countries.

That regionalization of procurement is already starting to inspire the first glimmers of convergence of standards across countries within the chain, in particular with respect to quality of product, such as in the program Hortifruti/Nicaragua has to increase the quality of the tomatoes it gets from local producers so as to be substitutes for Costa Rican. That is happening most quickly in the convergence of warehouse hygiene through the gradual adoption over the next 18 months of good manufacturing practices by Hortifruti plants in Nicaragua and Honduras, and the upgrading of the newly acquired facilities of the chain just acquired by La Fragua in El Salvador. Because of the highly unequal degrees of development of horticulture over the countries, the convergence is constrained to occur less quickly with respect to application of quality and safety standards. Hortifruti, by adopting systems of active monitoring and assistance of suppliers in Nicaragua and Honduras to its Costa Rican system, is taking steps toward that convergence. The consumer-side pressure to do so is of course much lower in the poorer countries and countries in which there are no public laws yet.

But two other factors are potentially significant, that were mentioned in the interviews. The first is that lowering procurement costs demands more fluidity of flow of products within the region over countries; that implies both the need to reduce border slow-downs (a key concern of Hortifruti's) and the need for the Honduran and Nicaraguan operations to upgrade suppliers to meet standards at least for the products and volumes that are needed to flow across borders, such as potatoes and cassava. The second factor at least as a supportive element, is the presence of Ahold in the regional joint venture. A delegate from Ahold heads CIES's (world association of retailers and key suppliers) Global Food Safety Initiative, and Ahold also supports the importance of convergence of food safety standards applied by its chains globally, to the extent and at the rate that is feasible. That factor was mentioned in the discussions with Hortifruti in

Costa Rica, and it is reasonable to expect that involvement of a top global player in a regional chain will have such influence, even if it is secondary to other factors.

Conclusions and Implications

The above results regarding the evolution of the retail sector in Central America (the rise of supermarkets), organizational change in the procurement system of supermarkets (centralization, shift from sourcing from wholesale markets to specialized wholesalers, rise of use of preferred suppliers), and institutional change in the procurement system of supermarkets (rise first of use of private quality then of public safety standards enforced privately), together present the image of an inverted-U curve.

That image allows us to make the link back to the image presented by Thrupp of how the link, via trade liberalization, of global supermarkets with producers in Central America, stimulate the latter to go from little to intensive use of pesticides, to meet quality standards of the buyers. We then noted that eventually there was a rise of safety standards (responding to consumer fears and demands) in developed countries that translated (for example through the application of organic market or EUREPGAP standards) to developed and developing country farmers. Likewise, in Central America we see that as supermarkets rose, and quality standards rose, there was increasing pressure on the producers (relative to the traditional situation) to use pesticides and farm intensively to meet the rising quality standards and the larger volumes from supermarkets, including for year-round consistency and thus the need for multiple cropping, irrigation, greenhouses, etc. However, we also showed that in the most advanced cases, for example with the Sello Azul application by CSU/Hortifruti in Costa Rica, and the new Sello Paiz in Guatemala by La Fragua/Disfruve, there is in utter incipience the start down the slope of the inverted U curve, toward supermarket procurement systems driving reform of production systems toward safer and healthier systems. Of course, that coincides with large swathes of the procurement systems outside of leafy greens, even in the frontrunner situations, still focused on cosmetic quality only and not yet safety, and of course in the other countries one is more in the situation of rising cosmetic quality standards and the implications for the pressures that puts on producers to “push” the land.

Several factors will influence how and how fast supermarkets continue to develop quality and especially safety standards in Central America.

The first set of factors is on the demand side: (1) public education concerning health aspects of FFV consumption ; (2) the enactment and enforcement of public health regulations and liability laws with respect to produce, to “give teeth” to (1) and to spur supermarkets on toward implementation of safety standards. Our judgement is that demand side policies are more feasible and applicable only in the countries with relatively substantial middle classes and potential for enforcement by government: in particular Costa Rica but also Guatemala and perhaps El Salvador.

The second set of factors is on the market side: (1) more laboratories and lower service fees to test products for pesticides and E. Coli; these need to be cheap enough to be used for domestic (supermarket) markets, not just aimed at export, or supplier capacity will not grow; this is of course not a substitute for better application of process standards, discussed below; (2) easier cross-border movement of produce, hence reduction in particular in administrative barriers (non-tariff trade barriers inside Central America were not in general, except for entering Costa Rica,

identified as important constraints by the supermarkets); this will increase the chance for regionalization of procurement, which, controlling for the difficulties for small farmers of the increased competition, will further convergence of standards; (3) expansion and deepening of the Sello Azul and PIPAA efforts, good efforts begun to affect the supermarket-market's institutions. These three are more generally applicable to all the countries.

The third set of factors has to do with supply-side constraints, that is, constraints on the farm sector side that supermarket procurement officers lament and feel constrain their ability to increase quality and safety: (1) although we recommend above that lab tests should be made cheaper, the trend in this industry globally is away from extensive testing of final product (for performance standards) towards process standards and controls (Reardon et al. 1999); this implies this implies training at the farms, packing sheds and reception areas in distribution centers, testing water quality and training for proper hand-washing as part of a preventative approach for reducing bacterial contamination; the same should apply for production process standards applied to pesticide use, with approaches like "PIPAA" discussed above, and private labs to audit farms, be made more affordable, and to complement that with farm-level training of workers; (2) public extension services do not, all of our respondents (supermarkets and farmers alike) felt, fill the need for technical assistance to suppliers in a way that is adequate to upgrade their production and post harvest practices to meet supermarkets' needs; (3) farmers' assets (such as drip irrigation, green houses, trucks, cold chambers, record keeping skills, and so on) are vastly insufficient to meet volume and consistency and year-round availability needs of supermarkets. (4) the payment period of supermarkets is relatively long (15-30 days) compared with the traditional wholesalers (immediate payment); this has more to do with which supplier types are excluded, but it suggests the need for fee credit arrangements such as arose in Chile under similar situations (personal communication, Loren Stoddard).

The above supply-side constraints in current practice lead already to, or will potentially lead to, substantial exclusion of small growers. Already procurement officers prefer medium/large producers who have already the needed assets (human, financial, physical), often have even export experience, can "hit the ground running", and have the technical, managerial and financial capacity and the scale to internalize many of the additional costs derived from the imposition and enforcement of higher quality standards. There are several ways to address this problem, and these are applicable to all countries. (1) We observed several donor/government projects, begun relatively recently, that focus on training and equipping farmers to meet the specific requirements of supermarkets. We interviewed such projects in the field. These are resource-intensive projects that provide assistance (not provided by public extension) in training or linking to investment funds, for small, medium, and larger farmers, with a tendency to work with small semi-commercial farmers and medium farmers for the local supermarket links and the medium and larger farmers for exports. These projects⁷ use donor and government funds to resolve bottlenecks in supply chains to meet buyers' needs (in the export and the supermarket-market, among others). These are useful to a group of producers, but their methods and approach needs to be "scaled up" and adapted and adopted by the broader government services in order to reach the broad mass of producers who will eventually face the rigors of the emerging markets and already need to meet supermarket requirements to sell to the most dynamic market, the urban middle class markets. (2) Closely related are the broad projects, such as those funded by the

⁷ Examples include projects interviewed, including the project MAGA II, an Inter-American Development Bank Export Promotion Project (implemented by the national export association, AGEXPRONT) in Guatemala or the project Partnerships for Food Industry Development (Michigan State University) in Nicaragua, or the project by Fintrac in Honduras and El Salvador. All three are aimed at assisting farmers to sell to both export and domestic supermarket markets.

Inter-American Development Bank, the International Fund for Agricultural Development and the World Bank, that provide assets to farmers. As much as possible there needs to be interaction between the “buyer and market focused” projects described above and the broader supply-side and asset-transfer-focused projects in which multilateral donors and governments are most apt to be engaged. That will be a crucial element to “scaling up” and helping the small farmers of the region seize the opportunities – and face the challenges – of the rapidly emerging supermarket-market for FFV in the region – a market that will be crucial to agricultural diversification opportunities in the next decade.

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Table 1. Supermarkets and the Central American fresh fruit and vegetable domestic markets

Country	Number of supermarket stores ^a		Value of domestic food market million \$ ^b		Value of domestic FFV market million \$ ^b		Value of FFV exports ^c million \$		Supermarket share of food market, by value % ^d		Supermarket share of FFV market, by value % ^e		% of stores of leading supermarket chain ^a	GNP (billion dollars) ^f	Population (millions) ^f	
	2002	1997	2002	1997	2002	1997	2001	1997	2002	1997	2002	1997	2002	2001	2001	1997
Costa Rica	227	217	5,495	4,753	559	570	339	314	50	45	18	16.5	63	15.7	3.9	3.6
Guatemala	132	98	7,300	6,600	292	264	116	75	34	25	9	7	75	19	11.2	10.5
El Salvador	130	125	5,200	4,576	520	458	8.3	4.6	37	34	11	10	44	13	6.4	5.9
Honduras	37	15	2,360	1,912	236	191	29	44	43	25	12	7	26	5.9	6.6	5.9
Nicaragua	43	22	720	658	72	66	10.9	10.7	19	10	5	2.6	52	1.8	5.2	4.7
Total	568	477	21,075	18,499	1,679	1,549	599	518	36.3	28.1 ^g	10.7	8.5	58 ⁱ	55.4	33.3	30.6

^a Sources: Guatemala, Orellana, D. (2002); Honduras, Orellana, D. and Gómez, A. (2001), Heinen, S. and González, O. (1999); El Salvador, Herrera, M. and Iglesias, A. (2002), Heinen, S. and Herrera, M. (1999); Costa Rica, Ramírez, I. (2002), Gallegos, J. 2003^a, Alvarado, I. and Charnel, K. 2002; Nicaragua, personal interviews with leading supermarket chains in the region.

^b Value of domestic food market expenditures is in average 40% of per capita income for Central America. Food expenses can go up to 60% in the poor sectors of the population (Orellana 2001). FFV expenditures are on average 10% of total food market based on an approximation of household surveys (Costa Rica: Instituto Nacional de Estadística y Censos 2003; Honduras: El Instituto Nacional de Estadística 2003; Nicaragua: Banco Central 2003; Guatemala: Instituto Nacional de Estadística 2003; El Salvador: Dirección General de Estadística y Censos 2003).

^c FAOSTAT 2001 and 1997. It includes all fruits and vegetables minus bananas, beans, dried fruit, juice fruit, prepared fruit, and frozen vegetables.

^d For each country (urban only), 2002 has been estimated using the value of all supermarkets' food sales over the total food market value (see sources above).

^e For each country (urban only), 2002 has been estimated using the value of all supermarket's FFV sales over the total FFV market value. For example, Nicaragua supermarkets' value of FFV sales is 10% of their total sales. Dividing the estimated supermarkets' FFV sales by Nicaraguan FFV market yields the supermarket share of FFV. For 1997, the same procedure was used, taking the number of supermarkets operating in 1997.

^f World Bank Development Indicators database, 1997 and 2001.

^g Population-weighted average of supermarket's food and FFV share for Central America and population-weighted average of supermarkets FFV share respectively.

ⁱ Supermarket-weighted average for leading supermarket chain for Central America (Adding all leading supermarket chain stores of each country divided by total number of supermarkets in Central America).