The global rise and impact of supermarkets: an international perspective

Thomas Reardon
Professor
Michigan State University

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KEYNOTE ADDRESS

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Abstract

A 'supermarket revolution' has occurred in developing countries in the past two decades. We focus on three specific issues that reflect the impact of this revolution, particularly in Asia: continuity in transformation, innovation in transformation, and unique development strategies. First, the record shows that the rapid growth observed in the early 2000s in China, Indonesia, Malaysia, and Thailand has continued, and the 'newcomers' — India and Vietnam — have grown even faster. Although foreign direct investment has been important, the roles of domestic conglomerates and even state investment have been significant and unique. Second, Asia's supermarket revolution has exhibited unique pathways of retail diffusion and procurement system change. There has been 'precocious' penetration of rural towns by rural supermarkets and rural business hubs, emergence of penetration of fresh produce retail that took much longer to initiate in other regions, and emergence of Asian retail developing-country multi-national chains. In procurement, a symbiosis between modern retail and the emerging and consolidating modern food processing and logistics sectors has arisen. Third, several approaches are being tried to link small farmers to supermarkets. Some are unique to Asia, for example assembling into a 'hub' or 'platform' or 'park' the various companies and services that link farmers to modern markets. Other approaches relatively new to Asia are found elsewhere, especially in Latin America, including 'bringing modern markets to farmers' by establishing collection centres and multi-pronged collection cum service provision arrangements, and forming market cooperatives and farmer companies to help small farmers access supermarkets.

A 'supermarket revolution' in developing countries started in the early 1990s and has continued to the present (Reardon et al. 2003). This revolution involves the rapid increase of modern retail shares in food retailing at the expense of traditional shops and wet-markets. In broad strokes, the supermarket revolution entails the following characteristics.

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First, the diffusion of modern food retail rolled out in three waves. The first-wave countries (in Latin America, Central Europe, and South Africa) tended to go from a small share (approx. 5–10%) of modern food retail in overall food retail in the early 1990s to some 50% or more by the mid-2000s. The second wave, in the mid- to late 1990s, was in South-east Asia (outside transition countries like Vietnam), Central America, and Mexico. The second-wave countries in Asia started later and reached a range of some 30–50% share by the mid-2000s. The third wave, in the late 1990s and 2000s, has been in China, Vietnam, India and Russia. In Africa outside South Africa, mainly in eastern/ southern Africa, the supermarket revolution is just starting in some countries.

Second, the diffusion rolled out from large cities to small cities, from upper to middle to poorer classes, from processed foods to semi-processed foods to fresh produce, and from domestic local chains only to a multi-nationalised, concentrated sector.

Third, initially, procurement by modern retail was only from the spot wholesale markets, and few standards were used. Gradually, sourcing became increasingly direct from preferred suppliers, consisting of dedicated wholesalers, food companies, cooperatives, or farmers. Finally, distribution centres and national and regional networks (involving intraregional trade within a chain) were developed, using private standards. These changes rolled out from multi-national and large domestic chains eventually to smaller chains. They also rolled out from processed foods and semi-processed foods to their recent emergence in fresh produce.

We focus on three issues regarding the supermarket revolution, especially in Asia.

The first issue is *continuity in transformation*. Did Asian countries observed in the early/mid-2000s entering the third wave continue in it into the second half of the decade? The story of supermarket diffusion in Asia across countries was based mainly on data from 2005 and before (e.g. Reardon & Timmer 2007, Chen et al. 2004, PECC 2005). Many observers thought it unlikely that such a revolution would continue in Asia because of ingrained food systems and cultures not being conducive to supermarket shopping.

The second issue is *innovation in transformation*. Has Asia's supermarket revolution exhibited novel pathways of retail diffusion and procurement system change? The Asian conditions of the supermarket revolution are themselves unique in several ways. Although it is not unique in its traditional food retail system (with the same tradition of small shops, wet-markets, and hawkers shared in much of the world), Asia's economic growth and urbanisation rates are much higher, and the persistence of state presence in the economy as an actor is much larger.

At the same time, the rapid diffusion of modern retail in Asia implies the need for rapid procurement system growth and modernisation. However, the procurement system needs to evolve in a system in which traditional wholesale markets, relative lack of domestic agribusiness, high share of small farmers (relative to the overall economic growth and level of development), and sometimes (especially in South Asia) poor infrastructure are the rule.

The third issue is *innovation in development strategy*. Has Asia evolved novel development strategies to link its ubiquitous small farmers to dynamic markets, in particular those created by the supermarket revolution? Can these strategies be scaled up to supply retail chains while spurring development of smallholder farms in Asia and in other parts of the developing world?

Continuity in transformation

We use indicators of modern retail sales growth to address the first issue. The table below presents data for 2001, 2005, and 2009 from Planet Retail, one of the leading retail data services in the world, tracking 7000 retail companies in 211 countries. It tracks in each country the leading retailers at a national level. The numbers are thus underestimates of the overall modern retail sector because in each country there are numerous regional and local chains and independent modern retailers that are not tracked. Our working hypothesis is that the leading chains present a picture of the general trends in the sector in each country.

We selected from their set 195 chains over nine countries: South Korea and Taiwan representing the 'first wave,' Indonesia, Malaysia, the Philippines, and Thailand representing the 'second wave', and China, India, and Vietnam representing the 'third wave'. The 195 chains include both chains specific to a country and multi-national chains (like Dairy Farm based in Hong Kong, or Tesco based in the United Kingdom). We selected only chains selling food. We used all such chains followed by Planet Retail from 2000 to the present. Of the 195 chains followed, 53 were not yet started in 2001 (and most of those are in third-wave countries, as expected); 25 of 195 that started the decade had been acquired or were bankrupt by decade's end (these are mainly in the first- and second-wave countries, as expected).

The main results are as follows. First, over the 8 years, there was fourfold growth in the total 'banner' (all products) sales of the chains: from 50 billion US dollars (USD) in 2001 to 200 billion USD. The rates of growth vary over the 'waves' as expected: the East Asian first-wave countries show slower modern-retail sales growth rates (a compound growth rate of 11.2% over the 8 years), the second wave in the middle (a compound growth rate of 17.9% annually), and the third wave the highest (40.9% compound growth rate), because the most recent starters advanced fastest, and the earliest were relatively saturated. There was variation over third-wave countries (with a sevenfold growth in sales over the 8 years for China, 20-fold in Vietnam, and 25-fold in India). The sales growth, particularly in India and Vietnam, rose in rapid crescendo from mid-decade. For India, 22 of 33 chains followed had not yet started in 2001; 17 of those 22 had still not started in 2005. Our calculations from Planet Retail data show that 75% of modern retail sales in India arose in chains formed only in the past 3 years. In Delhi, Minten et al. (2010) show that 85% of the stores started in the past 2 years.

The sales growth per country is composed of growth in the number of chains (as a chain 'graduated' to visible national status it was added by Planet Retail, the visible tip of the iceberg of the growing set of chains in the country), plus growth

Table 1. Sales of leading modern retail chains that sell food, and GDP growth, over selected Asian countries, over 8 years (2001–09), in billions of US dollars

Wave	2001 sales	2005 sales	2001–05 annual compound growth (%)	2009 sales	2005–09 annual compound growth (%)	2001–09 annual compound sales growth rate (%)	Real GDP compound growth rate (%) 2000–08	No. of leading chains followed
First wave								
South Korea	19.1	38.5	19.2	41.7	2.0	10.3	4.5	18
Taiwan	7.1	13.9	18.3	17.6	6.1	12.0	NA	17
Second wave								
Indonesia	1.8	4.0	22.1	7.3	16.2	19.1	5.2	14
Malaysia	2.0	3.5	15.8	7.1	18.5	17.2	5.5	16
Philippines	1.9	3.5	16.5	6.8	18.1	17.3	5.1	13
Thailand	5.4	10.9	19.2	17.7	12.9	16.0	5.2	21
Third wave								
China	13.1	40.2	32.4	91.5	22.8	27.5	10.4	47
India	0.2	0.9	45.6	5.1	54.3	49.9	7.5	33
Vietnam	0.1	0.7	62.7	2.0	30.0	45.4	7.7	16

Source: Authors' analysis of raw data in www.Planetretail.net. The chains are all of the chains followed by Planet Retail per country, that sell at least some food; the service follows the lead chains at mainly the national level but not the local and regional chains, so the total of 198 billion USD in 2009 for example is an underestimate of the overall food-selling modern retail chains' sales in the countries. Because most of the retail sectors are still fragmented, this maybe a significant underestimate. There are no official data with which to compare. In-country estimates, for example by chain store associations, tend to show higher figures.

of the individual chains. The latter can be very fast among individual chains. For example, the sales of the top five chains in China grew more than 10-fold during those 8 years; sales in the top chain in India grew 140-fold in those 8 years and fivefold over just the past 4 years.

Second, although gross domestic products (GDPs) in Asia grew fast, and those in the third-wave countries the fastest in the world, the rates of growth of the sales of the chains were much faster, as shown in Table 1. Thus, modern retail continues to gain share in overall retail.

Innovation in transformation

The supermarket revolution in Asia has been driven by the same factors as in other regions: on the demand side by income growth and urbanisation, and on the supply side by foreign direct investment (FDI), format diversification to meet consumer segment needs, competitive domestic investments, and procurement system modernisation to drive down costs. However, several things were different in Asia. Especially for third-wave countries — China, India, and Vietnam — the trends have been more intense and more rapid. The third-wave countries in Asia also have active state involvement in economic development. In China and Vietnam, and to lesser extent India, state investment in modern retail provided a major initial fillip to the revolution.

Although supermarkets in other regions eventually moved from the initial urban base to rural markets and from the initial offering of mainly processed foods and staples into fresh produce, in Asia, especially in the third-wave countries, these transitions have been accelerated. Modern retail, either in modern private or state variants, has adapted to formats to penetrate rural areas, sometimes (as in India) combining with services for farmers. Relative to the United States and Latin America, Asian supermarkets have already started to penetrate fresh produce markets, perhaps because of the special importance this has for Asian consumers.

The combination of rapid retail transformation and supply-side constraints requires combining modernisation of procurement systems in ways done in other regions (distribution centres and networks, preferred supplier systems, use of dedicated wholesalers, and private standards) and adaptation to traditional supply chains, involving development of relations with wholesale markets. Beyond this dual approach is the gradual introduction of innovative procurement system and supply chain modernisation 'solutions' by agribusiness companies, sometimes in company with government and donors, such as with rural business platforms and hubs.

Nature and diffusion of modern retail in Asia

Supermarkets spread quickly in the 1990s in Latin America and Central Europe and the first-wave countries of East Asia — much faster than the slow march of modern retail diffusion in the United States and Western Europe since the 1920s/1930s — but not close to how quickly modern retail has spread in Asia, especially in the third-wave countries, in the 2000s. The speed, continuity, and probable sustained development into the future are driven by several factors.

The first are the basic enabling demand-side conditions fuelling modern retail diffusion, which typically is a function of urbanisation, rising incomes, and women increasingly working outside the home. The very rapid income growth rates and the emergence of large middle classes in Asia are well known. The urbanisation rates are no less striking: for example, 40% of the US population was in cities in 1900 and 75% nine decades later, by 1990. That same shift occurred in South Korea in the two decades up to 1990 (Henderson 2002). The rapid development of Tier II, III, and IV cities, for example in India, has also been propitious for the spread of modern retail beyond the megalopoli (Reardon & Gulati 2008).

Enabling supply-side conditions also fuel the supermarket revolution; some of these are shared between other regions and Asia, and some are unique in form and/or extent in Asia. The great importance of retail FDI in spurring the supermarket revolution holds in Asia as in other regions. The policy process of liberalisation of retail FDI in the 1990s and 2000s that came with structural adjustment programs, with multilateral trade agreements, and for some, with full World Trade Organization accession (such as for China in 2004 and Vietnam in 2009) significantly assisted this role. Relying on the background raw data from Planet Retail, we calculate that for China, Vietnam, Thailand, Indonesia, Malaysia, and Taiwan, on average approximately three of the top six chains are foreign. Foreign firms are also important in the overall set, but because the chains are the leading chains, this may be an overestimate of their shares in the overall sectors.

However, even this shared characteristic of the importance of FDI seems to be more striking in Asia. Saturation and intense competition of the Western Europe and US markets, and nearing saturation in the earlier retail growth markets of the first wave, have focused global retailer attention on Asia as 'the last frontier' and other gold-rush terms. Kearney's (2010) 'Global Retail Development Index' ranking 30 developing countries in terms of the overall opportunity for retail FDI ranked China number 1, India 3, Vietnam 14, Indonesia 16, Malaysia 17, and the Philippines 22 in 2010. Compare these ranking with other BRIC (Brazil, Russia, India and China) countries: Brazil ranks 5 and Russia 10.

On the other hand, domestic retail investment has also proved to be a powerful force in Asia.

A key source of domestic investment has emerged from the economic boom itself and the large conglomerates linked with it. In India and the Philippines, laws restrict retail FDI, leading to predictions in India that the emerging retail revolution would be slowed or stopped. However, the following half decade showed an enormous increase in modern retail sales. In 2009 only 18% of sales of modern retail and 'cash and carry' (modern wholesale) (of those in Table 1 followed by Planet Retail) were by foreign firms (our calculation from Planet Retail data). By contrast, approximately half of the sales of Indian modern retail are from retail divisions of huge conglomerates that are rich in investable funds from two decades of very rapid growth in telecommunications, construction, oil, information technology, and other boom sectors (Reardon & Gulati 2008). An important share of the retail boom in the second half of the 2000s was the turn to retailing by giants like Reliance, RPG, Bharti, and Tata (a set of

four conglomerates with well in excess of 100 billion USD of sales); although the latter two have taken foreign partners (Walmart and Tesco) as 'back-end' partners allowed by current regulations, the rapid rise was driven by domestic investment and could continue so for years (Reardon & Gulati 2008). Even where retail FDI is not constrained, domestic conglomerates have played a key role: Lotte and Emart (with 21 billion USD in just retail sales between them) in South Korea have become regional multi-nationals with investments in China, Vietnam, and Indonesia. Hong Kong retail multi-national chains (Dairy Farm and China Resources) are number 1 in China and Malaysia and number 4 in Indonesia and present in India as an early entrant.

A second and unique source of domestic modern retail investment is by governments. Although chains from the socialist period have been mainly privatised in Eastern Europe, in Asia they have either persisted or have been proactively used to position domestic retail in competition with private domestic and foreign retail. India has state retail and cooperative retail forms helped by the state, such as the continued important presence of Fair Price Shops in state retail and the cooperative-modern retail chains, such as Mother Dairy (Reardon & Gulati 2008). In Vietnam, the number 2 chain is the Saigon Cooperative chain, a state-owned enterprise (SOE), the number 6 is Fivimart (SOE); in China, the number 2 (Lianhua with 10 billion USD of sales) is still partially an SOE. Outside these countries the SOE chain is largely absent (apart from the India case noted). Government investment and proactive policies, such as 'Nonggaichao' (converting wet-markets to supermarkets in China), the recent 'rural supermarkets' program in China (Hu et al. 2004), tax exoneration for supermarkets in South Korea, and wet-market regulation, demonstrate a tendency by a number of governments (in China, Taiwan, South Korea, Hong Kong, Singapore, and Vietnam) to view supermarkets as tools of modernisation. Even where there have been regulations to slow growth (such as in Thailand, Indonesia, and Malaysia) they have been vacillating, partially implemented, and side-stepped by local interactions and coopting of traditional retail, or format diversification, or both.

Early penetration of rural and fresh produce markets

A series of innovations and precocities are largely unique to Asia. Although Asia echoes other regions in the spread of supermarkets to secondary and tertiary cities and towns and spread of modern retail from the middle classes to the working poor, there has also been a surprising development of rural supermarkets. Penetration of rural towns by modern retail came late in most countries outside Asia. By contrast, in India there are chains of 'rural business hubs' that are combinations of small supermarkets and input stores with joint venture banks and even health units in rural areas, such as Choupal Saagar or Hariyali Kisaan Bazaar. The market share of these new rural business hubs is still modest, but store numbers are increasing rapidly, such as one sees in the rapid growth of Hariyali outlets in the past several years. These forays seem to be driven by increasing rural incomes, the dearth of services, and the recognition that modern retail brings cheaper staple foodstuffs and nonfood goods (Chakravarty et al. 2007, Bell et al. 2008, Farhoomand 2008).

There has also been a surprising and precocious penetration of fresh foods retail. Although this is sometimes thought in Asia to be 'slow' because lagged and recent, in fact it is occurring earlier and faster than in other regions (including in the United States). Part of this is because of the importance of fresh produce in Asia, partly because there has been a format diversification into small neighbourhood stores 'early' (to link to frequent shopping habits), and partly it has been linked to efforts to modernise procurement systems early (discussed below) to drive down produce costs.

This precocity can be seen in its most surprising form in India, where in a few years the share of fresh produce in leading chains' store sales has risen to 10–15% (Minten et al. 2010), compared with that occurring only after some 15–20 years in Mexico (a country with a similar share of fresh produce in the diet as in India) and some 40 years in the United States (where supermarkets long did not 'touch' fresh produce, given the traditional habits of shopping daily at wet-markets and small shops that were thought insuperable). However, it is also seen in China, where Goldman & Vanhonacker (2006) found in a large survey in urban areas that modern retailers already have a retail market share of 37% in fruit and 22% in vegetables (compared with 79% in processed goods or 46% in meat). Compare that with the more advanced case of Hong Kong, where supermarkets have a 59% share in fruit retail and 55% in vegetables (similar to Brazil), compared with 52% in meat (CCRRC Asia 2005) and a majority of staples and processed foods. Additionally, Ho (2005) showed that supermarkets had only a tiny share of the rice market in Hong Kong in the 1970s and grew to dominate it nearly completely by the 2000s.

In Vietnam and Thailand, Moustier et al. (2010) and Gorton et al. (2009) show that food safety concerns of consumers, sensitised by recent food crises, are accelerating a turn to produce and poultry from supermarkets earlier than in other regions. In Vietnam, an 'early supermarket-penetration stage' country, Mergenthaler et al. (2009) found that both income and price elasticities of fresh fruit and vegetable expenditure from supermarkets were substantially higher than those for overall fruit and vegetable expenditures from traditional retailers. They attribute this partly to quality differentials between supermarkets and traditional retailers and partly to food safety concerns of Vietnamese consumers.

Food procurement system modernisation

The following discussion focuses on impacts that modern retail has on farmers and processors.

Evidence on the impacts on consumers in Asia (and elsewhere) is reviewed by Minten et al. (2010) and Reardon et al. (2010). The essential points are as follows: (i) there is substantial emerging empirical evidence that supermarkets charge consumers less than traditional retailers for staples and processed products, from the early stages of penetration, and for produce, mainly in the later stages; (ii) there is incipient but inconclusive evidence as to the relation between a 'nutrition transition' to obesity from greater consumption of processed foods; the empirical base to test this has not yet been established; and (iii) there is mixed evidence regarding links between food quality and modern retail but clearer evidence concerning food safety and modern retail.

The modern retail diffusion described above, whether fast and/or along unique pathways, would not necessarily imply impacts on farmers different from traditional retail if modern retailers use the same procurement systems traditional retailers do, the wholesale markets. However, the evidence points to modern retailers increasingly using modernised procurement systems, at different speeds and pathways over the two product categories: (i) processed/staples, such as grains, edible oils, and packaged foods, and semi-processed products, such as meat and dairy; and (ii) fresh products. The implications for small food processing/manufacturing enterprises and farmers in the longer run are also significant.

Procurement modernisation in processed and semi-processed products and staples

This category often forms two-thirds of food consumed in Asia and sold by modern retailers. Procurement modernisation in this category seems to be happening early and rapidly in Asia, as it has elsewhere. There are several reasons for this.

The emerging evidence points to modern retailers sourcing processed foods, staples, and dairy from medium and large companies in the region. The latter have themselves emerged with the rise, formalisation, and consolidation (abetted by economies of scale) of the processing sector in many Asian countries in the 1980s and 1990s (more or less along the lines of the waves in retail change). These processes were spurred by FDI by global and regional multi-national chains and domestic (private and public sector) investment in agro-processing in the 1980s and 1990s (Wilkinson 2004). The multi-national food processors' presence spurred competitive investment and brand-building by national companies (for China, see Wei & Cacho (1999); liberalisation led to rapid capital-deepening in the food processing sector, such as in India (Ali et al. 2009)). A number of large domestic companies emerged, and several became regional multi-national companies, such as CP of Thailand, San Miguel of the Philippines, and Wilmar of Malaysia. Even in latecomers to food processing liberalisation, such as India, which 'dereserved' (from small enterprises) food processing only in 1998, there has been rapid consolidation and growth in the formal sector (Ali et al. 2009). It is likely this trend will continue because it is abetted not just by intensive investment, domestic and foreign, but also by regulations such as the emerging food safety regulations that will be difficult for many small enterprises to meet. Additionally, consumer sensitivity to food safety has been found to impel consumers to shift from wet-markets to supermarkets in, for example, Thailand (Reardon et al. 2010).

As in other regions, a 'symbiosis' is emerging between medium/large food processing firms and supermarket chains, which seems to lead to 'mutually reinforcing dual consolidation'. For a dairy example in Brazil and Argentina, see Farina et al. (2005). Retailers prefer medium/large processors because of lower product and transaction costs, ability to provide diversity of product types in a 'one-stop shop,' attractive packaging, formality of invoicing needed for value-added tax accounting and product liability, and brand development that attracts Asian consumers. Moreover, large processors are increasingly modernising their own distribution systems and have distribution centres and their own logistics,

or they promote and use the emerging modern logistics sector. For examples of the latter in India, see Reardon & Gulati (2008).

Sourcing efficiencies (such as buying direct from factories) and scale allow modern retailers to charge consumers prices below those of traditional retailers in processed/staple products. A recent study in Delhi showed that supermarkets charge lower prices for the key staples rice, wheat flour and edible oil than small shops (Minten et al. 2010). This is a common finding in other developing regions (Minten & Reardon 2008).

Incipient procurement modernisation of fresh produce and emerging impacts on farmers

In a typical supermarket in Asia roughly 20–35% of the food sales are of fresh products — fresh meats, eggs, fish and produce (fruits and vegetables). Although meat and egg sectors are undergoing a similar consolidation in terms of the processors (e.g. Landes et al. 2004), produce tends to be predominantly produced by small farmers because they can undertake labour-intensive production of produce on small plots and earn substantially more per unit of land than they earn with basic grains. However, in a number of horticulture zones (such as discussed for India and Indonesia below), although small farmers dominate in numbers, it is common, at least in commercial agriculture zones, for medium and even large farmers to have most of the volume of sales in the market. Processes of land consolidation and rental market development seem to be underway in these zones and are leading to a differentiated farm sector. Even where smallholders dominate there is substantial differentiation in holdings of non-land assets. Supermarket chains thus have a choice over farm size and asset strata in sourcing, in contrast to the conventional image that there is a mass of undifferentiated tiny farmers producing horticultural products in Asia.

The fresh produce is mostly moved to supermarkets via traditional wholesale markets by many field brokers and wholesalers, as indicated by recent evidence from China (Wang et al. 2009), India (Reardon & Gulati 2008), Indonesia (Natawidjaja et al. 2007), Thailand (Schipmann & Qaim 2010) and Vietnam (Mergenthaler et al. 2009).

Procurement modernisation involves a shift from using spot markets to coordinated supply chains. In fresh produce this involves a gradual shift along a continuum of 'technology/institutional/organisational' modes. (i) The 'most traditional' sourcing system is the supermarket chain buying in spot markets at traditional wholesale markets and delivering store to store. (ii) The 'early transitional' is the mode whereby the supermarket works with a dedicated wholesaler which buys, sorts and grades, minimally processes, crates, and delivers in the wholesale market. (iii) The 'modernising traditional' is the mode whereby wholesale sectors and markets become more amenable for sourcing by supermarkets. There is some concentration among wholesalers and a displacement of 'the first link in the chain', the traditional field brokers (observed in India, China, Indonesia and others), with concomitant direct buying by wholesale markets from rural areas from cooperatives, mills or cold stores; emergence of grading and quality schemes in wholesale markets; and backward

linkage by wholesalers to rural areas (in assemblage). (iv) The 'transitional modern' is the mode whereby the dedicated wholesaler locates off-market and organises sourcing from farmers, applying private standards, and delivers to distribution centres of the supermarkets, which then on-deliver to stores. (v) The 'most modern' is the mode whereby the supermarket chains source directly from farmers either in chain–agribusiness relations or via collection centres from individual farmers and/or consolidators or cooperatives.

Which modes are used in procurement systems varies widely over countries in Asia, the product, the chain, and even the region of a country. In general, this process varies by country according to the wave; but controlling for the wave, other factors include (i) the efficiency of the wholesale markets (so that supermarkets rely more on them in China than they do, or want to, in Indonesia and India); (ii) multi-national companies and large domestic firms vs smaller chains; (iii) requirements of freshness and quality for specific products; and (iv) the availability of modern logistics/dedicated wholesalers and larger farmers and agribusinesses to supply produce. Leading chains have dedicated wholesalers sourcing from preferred lists of farmers in Indonesia (such as Carrefour using Bimandiri) and/or collection centres (such as Reliance does for 20–30% of its vegetables, the most perishable, in collection centres in peri-urban areas) and as does the Cargill Ceylon chain in Sri Lanka.

The Indonesia study (Natawidjaja et al. 2007) shows that among small farmers, those with greater non-land assets (especially irrigation) are included, as are those in marketing cooperatives. In the studies reviewed from India, where supermarkets directly sourced from small farmers (Singh 2009), the supermarket collection centres source disproportionately from medium/large farmers, except in the few cases in which effective marketing cooperatives have been organised by or for the small farmers, often with nongovernmental organisation (NGO) help (for the Uttarakhand case, see Minten et al. 2009).

Although the studies cited above tend to show that supermarkets at present (and for some time) can source from either medium farmers or asset-endowed small farmers, as the supermarket volumes grow there will be increasing need to source beyond the initial base. This will happen at sharply different rates over products and countries. Given the requirements of supermarkets in terms of quality, consistency and volume, this may then eventually pose a challenge to asset-poor farmers. Again, depending on the product and country, that may be near or far off in time. However, the innovative programs discussed below to facilitate the linkage with small farmers will be useful for that transition.

Innovation in development strategies

As supermarkets spread in Asia and their sales expand much faster than GDP growth, they can draw on a rapidly growing, consolidating and modernising processing and milling sector in cereals, dairy, meats and condiments/sauces. However, fresh produce retailing, still in its incipience, puts strains on traditional produce supply chains because of its speed. That is a big challenge facing the chains trying to scale up procurement. There are two prongs to the attack on this problem.

First, governments need to invest in wholesale market systems and other market infrastructure. For example, the 2 × 100 Markets Upgrading Program launched in 2006 by the Ministry of Commerce in China targets the 100 leading wholesale markets and couples them with 100 leading food firms (including foreign firms like METRO) to act as 'modernisation anchors' in the wholesale market by improving the physical premises and the logistics of the wholesale markets to make them more efficient for the retail sector and more accessible to farmers (Reardon & Gulati 2008).

More specific strategies are also being developed to link farmers to dynamic supermarket channels. Policy makers, chains, NGOs, donors, and farmer associations in the region are creating programs (discussed below) for small farmers to gain access to the quality-differentiated modern markets epitomised by modern retail, and potentially raising incomes. Still, small farmers in Asia (and elsewhere in developing regions) are constrained by 'idiosyncratic market failures'. Credit, input, information, and insurance markets exist, but small farmers often cannot access them on favourable terms. Small farmers are also constrained by their general poverty of assets, such as education and infrastructure, but also by specific assets, such as irrigation or specialised horticultural knowledge, needed to supply to modernising domestic and export markets. These are challenges facing all farmers in scaling up supply to modern markets; they are more difficult for smallholder farmers.

To meet this double challenge, unique development strategies are emerging in Asia. Some are shared with other parts of the developing world, but a number are unique to Asia and serve as interesting lessons for elsewhere.

First, and the most unique to Asia, is a family of development strategies being developed that involve assembling into a 'hub' or 'platform' or 'park' the various companies and services that link farmers to modern markets. These seem to be mainly emerging in India but may be useful nodal development strategies, for example for regional economic corridor projects underway in South-east Asia and southern Africa.

This hub approach is 'bringing the markets to the farmers' and provides the missing services (such as output procurement, processing/packing/cooling, technical assistance, credit and insurance) and products (inputs and equipment of requisite quality) required for small farmers to compete. This cluster of services is localised, benefiting from economies of agglomeration. Sometimes, fanning out from it is a set of collection centres or depots to which farmers deliver. This approach is designed to meet the input and service needs of farmers and reduce transaction costs by putting retailers and processors into rural areas, but provide the missing infrastructure and service base for the companies, which in turn make concomitant investment in packing plants and logistics facilities.

There are two variants of these hubs/platforms/parks.

The first variant is the mainly private and medium-scale hub, such as the chains of 'rural business hubs' of companies in India started in the mid/late 2000s (Chakravarty et al. 2007, Bell et al. 2008, Farhoomand 2008). The retailer, such as Hariyali Kisaan Bazaar and ITC's Choupal Sagaar, sets up a rural hub, in which

it puts a small supermarket, an input retail shop, and sometimes procurement facilities for grain or milk or vegetables, and invites partners in the banking, insurance, and health sectors to set up 'store in store' units. This becomes a 'one-stop shop' for farmers and a procurement hub for other operations (such as business-to-business to other retailers or to processors or exporters).

The second variant is the 'public–private partnership' version of the above, such as the mega-food parks and integrated agrofood parks in India, started in 2009. These may have a private sector 'anchor' that invites other investors, such as a processor or retailer who then invites logistics companies and other service providers to co-invest in the (large) platform area. This agglomeration of services, at close range to the farmers, is meant to solve the missing service constraints facing both the retailer or the processor and the farmers. The public sector can also be an anchor investor, or an infrastructure facilitator, providing the 'park' or 'hub' water and electricity and so on, as well as technical assistance services to the farmers linking to the hub.

Next, a family of development strategies is being developed that has several echoes in other developing countries, that again 'brings modern markets to farmers' by establishing collection centres and multi-pronged collection cum service provision arrangements. The general strategy is to bring a procurement unit (such as a collection centre of a retailer or its dedicated wholesaler) to a rural area, and at the same time provide the small farmers with the missing assets and services (such as credit and technical assistance and sometimes delivery) needed to meet the market requirements. This is a version of the 'resource provision contracts' used by export companies in Latin America in the 1980s (Key & Runsten 1999) or by processing companies in central Europe in the 1990s (Gow & Swinnen 2001). These may be collection centres such as those operated by Reliance retail, sourcing vegetables in peri-urban areas in India, or the Cargill Ceylon chain in Sri Lanka, providing technical assistance to farmers not getting that assistance from traditional extension. These may also be quadrangular arrangements such as Carrefour, aided by the dedicated wholesaler Bimandiri, and input and credit provided by Syngenta, with specialised extension from the government, working with a melon farmers association in Indonesia for sales in Indonesia and to Carrefour stores in the region (Natawidjaja et al. 2007).

In a variant of the above, governments themselves set up physical infrastructure (such as warehouse or collection centre networks) in rural areas to facilitate linkages between supermarket chains and individual farmers or cooperatives. This approach can also involve a 'symbiosis' between NGOs and governments to partner with these private sector-led efforts to assist in provision of resources and services needed by small farmers, but with the promise of the latter gaining access to specific and demanding modern markets. This approach is mutually beneficial. NGOs are often seeking to help their beneficiary farmers move from low-remuneration non-quality-differentiated and demand-constrained local produce markets to modern markets linked to urban and export demand (as illustrated in Minten et al. 2009, for the Dutch NGO Himalayan Action Research Centre in India, working with the Mother Dairy/Safal chain). The retailers, in turn, often cannot or do not want to make the investments in technical

assistance and credit provision that the NGOs have as part of their mandates. For example, a large chain in India is starting (2010) to use the assistance of a microcredit NGO for both credit provision and even procurement logistics. Similarly, the United States Agency for International Development-funded Growth-Oriented Microenterprise Development program helped the ITC and Foodland chains and farmers cooperatives with technical assistance and other intermediation in India. Such partnerships may become increasingly common.

Finally, the well-known strategy of forming farmer market cooperatives and farmer companies is being given a fillip — and tested — by the challenge of helping small farmers access supermarket channels in Asia. Development of cooperative action to position small farmers to enter supermarket channels is increasing, as in Vietnam (Mergenthaler et al. 2009) and India (Reardon & Gulati 2008). As elsewhere, this has involved a shift from the traditional cooperative model to the 'new generation cooperative' model, with limited membership, target market specificity, and investment and profit sharing in the form of what is essentially ownership of stock.

The emerging evidence is that such aggregation seems to be a requirement to reduce transaction costs to sell to modern channels. Still, a relatively unexplored topic is how scalable and sustainable these cooperatives are (Chen et al. 2004) and what assistance is needed to make them competitive in a rapidly changing market environment. This latter challenge seems present for the multitude of unique strategic approaches now being tested in Asia that are designed to keep smallholder farmers profitably engaged in modern supply chains, while continuing to bring the benefits of modern supermarkets to a rapidly increasing proportion of the region's consumers.

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Thomas Reardon has been a Professor in the Department of Agricultural, Food, and Resource Economics at Michigan State University (MSU) since January 1992, and from 1984 to 1991 with the International Food Policy Research Institute (IFPRI). His research focuses on links between agrifood industry transformation and food security in Asia. Thomas has worked extensively (in Asia and Latin America) on the 'supermarket revolution' transforming horticultural, dairy and rice supply chains, and novel development strategies to link small farmers to dynamic markets.

Contact address: International Food Policy Research Institute, Michigan State University Joint Program on Markets in Asia, Michigan State University, East Lansing, MI 48824, USA.
Email: reardon@anr.msu.edu