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Global Value Chains and Indian Food Sector: A Preliminary Analysis of Issues and Options

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ABSTRACT

The increased trade in agricultural value added products has internationalized production and marketing systems. As such, a variety of forms of value chain relationships have emerged (outgrower schemes, contract farming, marketing contracts etc.) that have replaced the arms length market relationships between buyers and suppliers. The application of the *Global Value Chain* framework as also *Production Networks* to agriculture has gained significance particularly considering the importance of promoting agricultural exports from developing countries. As agriculture in most of the developing countries, as also in India, is dominated by small and medium farms, poverty reduction through exports would require production shifts and access to the global agribusiness.

In recent years, the market requirements of agribusiness products have become challenging for three reasons. *First*, the importance of standards is increasing in global agricultural trade. Meeting the requirements of stringent food safety conditions has become complex as monitoring is required the way products are grown, harvested, processed and transported. *Second*, the demands of global buyers in terms of large-volume supply, speed and reliability of delivery, customization through processing and packaging and product safety guarantees have emerged as challenges for small producers. And, *third*, strategies for product differentiation particularly for traditional exports involved certification and/or closer links between producers, traders, processors and retailers. In meeting these challenges, organizing agribusiness value chains or integrated supply chains is necessary for global competitiveness.

The Indian agri business is largely unorganized at the production, trading and consumer levels and with trade and retailing gaining importance, structural shifts in agribusiness are taking place. With exports increasing, many food chains and companies are sourcing agricultural products from India to feed their outlets in different parts of the world. Similarly, under organized retailing, several channels of procurement have developed to ensure efficiency in the value chain. Under these evolving conditions, the paper addresses the following contextual issues:

- Value chain linkages and coordination costs of buyer-seller relationships
- Information codification and transmission along value chain and supplier competence
- Channels of procurement of different products by food retailers
- Public private partnership in developing market, transportation and logistic infrastructure
- Building supplier competencies of the producer particularly small farmers

The application of the GVC has underlined three important issues. First, with globalization and expansion of agricultural trade, India is still an insignificant part of the global production network. Though India has a comparative advantage in the production of many agricultural products, this is being undermined by the high transaction costs arising out of inefficiencies in distribution and logistics. But, considering that the market, transportation and logistics infrastructure is less developed in India and the public investments in the same being low, the policy approach should be to encourage investments by the transnationals in setting up the value chain and strengthening the support institutions like inspecting and testing facilities, certification companies, local consultancy etc. Overall, the effort should be to ensure a conducive economic environment for integrating India into global agricultural production networks.

The second important issue emerging out of the GVC analysis is the development of domestic retailing in building the capacities of the local firms for forging international operations. The development of organized retailing, particularly in the urban areas, provides the 'threshold expertise' to organize and coordinate supply activities for greater efficiencies. Leveraging the domestic operations for entering into global markets requires development of infrastructure and support institutions.

And, lastly, the third important issue arising out of the GVC analysis is the effect of trade in building the supply competencies of the producer, particularly the small farmers. The costs of compliance being high, the role of state in providing the *Standards infrastructure* becomes crucial. Adopting new technologies and production processes by the farmers is not scale neutral and therefore, can have the tendency of excluding the small

farmers. In providing this technical assistance, NGOs, international development organizations and public organizations can cooperate and extend necessary support.

Key Word: Global Value Chains, Indian Food Sector, International Trade

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Global Value Chains and Indian Food Sector: A Preliminary Analysis of Issues and Options

1. Introduction

Global Value Chain (GVC) analysis was developed to explain the internationalization of production particularly the way firms have organized and coordinated the cross border production arrangements and developed external networks. The central issue here is to understand how increased trade has shaped global production systems and whether trade liberalization has led to industrial capabilities of the participating countries. The GVC analysis, thus, focuses on the strategies of the firms, in tapping the capabilities and markets of developing countries and thereby dispersing production across countries and determining the cross-border flows of goods.

In understanding the coordination of the cross border production arrangements, two distinct types of international economic networks have been identified, namely, "Producer-driven" and "Buyer-driven" value chains. Given that the value chain covers the range of activities that involve the design, production and marketing of a product, in the 'Producer-driven' value chain, the manufacturer, usually the transnational corporation, plays a central role in coordinating production networks including backward and forward linkages. In the 'Buyer-driven' value chain, the large retailers and marketers play a pivotal role in managing the decentralized production networks in many exporting countries (Gereffi 1994). Notwithstanding the differences in the features of these two global chains, how the firms or global buyers exercised control in coordinating and managing these external networks, i.e., 'Chain Governance' became important in the GVC framework[1] as this determines the outcomes on the suppliers particularly in terms of developing their capabilities or extracting price concessions.

The application of the GVC framework to agriculture gained significance particularly considering the importance of promoting agricultural exports from developing countries arising out of the rapid expansion of global demand. As agriculture in most of the developing countries, as also in India, is dominated by small and medium farms, promoting agricultural exports would require developing production capabilities and access to the global agribusiness.

The access to global agribusiness has become challenging for three reasons. *First,* the importance of standards and meeting the requirements of stringent food safety conditions has become complex as monitoring is required the way products are grown, harvested, processed and transported. *Second,* the demands of global buyers in terms of large-volume supply, speed and reliability of delivery, customization through processing and packaging and product safety guarantees have emerged as challenges for small producers. And, *third,* strategies for product differentiation particularly for traditional exports involved certification

[1] Based on the knowledge and how information is codified and shared among the different nodes in the value chain, the GVC framework identifies *five* ways in which firms coordinate and govern the linkages between the value chain activities. These are: (i) *Market* linkage governed by price; (ii) *Modular* linkage is between the firm and the highly competent supplier where complex information regarding transaction is codified and shared; (iii) *Relational* linkage where tacit information is shared between the firm and the highly competent suppliers; (iv) *Captive* linkage is between a firm and less competent supplier where detailed instructions are provided; (v) *Management hierarchy* where linkages within the firms are managed. The patterns of these linkages are associated with three variable: (i) the *Complexity* of information exchanged between value chain activities; (ii) *Modifiability* of that information; and (iii) *Capabilities* of the suppliers. (Strutgeon, 2008).

and/or closer links between producers, traders, processors and retailers. Such that the identity of the product is established from the point of production to all nodes of the value chain (UNIDO 2006).

Under these evolving conditions, the GVC framework provides insights into the causes and consequences of the vertical coordination by allowing an analysis of the role of the lead firms, inter-firm relationships along the value chain and the chain governance and its implications on the production structures and the incomes of the producers. Such an analysis is important as the requirements of agribusiness have led to an overall tendency towards concentration at the different points in these value chains.

Given this broad approach, the discussion in the paper has been structured in the following way. Section 2 outlines the factors associated with the organization of the value chains in agribusiness under varying contexts. Section 2 analyses the trends in agricultural exports and the consequent developments in agribusiness and value chains. Section 3 analyses the developments in the Indian Food sector under the GVC framework. And, Section 4 details the policy issue and the emerging options for FDI.

2. Agricultural Exports: Trends and Developments

World agricultural exports increased from US$ 415 billion in 1990 to US$ 1362 billion in 2010. The share of agricultural exports in total merchandise exports increased marginally from 8.3% to 9.2% during 2005 and 2010. The relative importance of agricultural exports in total merchandise exports for India is higher than that of the world average at over 10% (Table 1). India's share in world exports was less than 1% in 1990 but increased to 1.7% by 2010. Food exports account for about 80% of India's agricultural exports though their relative share declined during 2000 and 2010.

Table 1: Trends in Agricultural Export: India and World

		Value (US $ million)				Share in Total	
		1990	**2000**	**2009**	**2010**	**2005**	**2010**
1.	World	414723	551421	1181288	1361853	8.3	9.2
2.	India	3506 (0.84)*	5951 (1.1)	16384 (1.4)	23199 (1.7)	10.3	10.7
3.	India's food exports	2782 (79.3)**	5418 (91.0)	14104 (86.0)	18268 (78.7)	9.0	8.5

Source: WTO, International Trade Statistics, 2011

Note: *Figures in brackets are share to world exports

**Refers to the share in India's agricultural export

Globally, structural changes in agricultural trade took place- the exports of traditional tropical products decreased and that of temperate products increased. More significant has been the rise in exports of processed food products. A comparative analysis of these trends for India and World are detailed in Table 2. During 1990 and 2010, the share of temperate products, particularly meat products, in India's agricultural exports increased from 1.8% to 6.84% and that of processed food products increased from 2.4% to 7.7%. The expanding trade in these products has been facilitated by changing consumer tastes, advances in production and transport methods. Further, these products have high income elasticities and low price volatility.

While there are positive income effects in increasing exports of these products, it needs to be emphasized that trade in these products is governed by food safety regulations and proliferation of SPS standards. Sustaining and expanding agricultural trade will require an effective way for meeting these challenges. In this regard, one of the primary concerns is the

variability of standards across countries for the same product and high costs of compliance. Table 3 details the regulatory requirements for the import of dried chilly spices from India. Most of the Food safety, Quality and Plant health parameters are commercial and not legally mandated requirements. Even with food safety parameters like Compliance with MRL and Aflatoxin limits, the mandatory and enforcements requirements varies across countries. Compliance with heavy metals limits is mandatory requirement in EU but not so in other countries. Phytosanitary certification is mandatory only in Australia and not in other countries. Within EU, the testing procedures differ between the member countries. These differences in requirements and enforcements between countries lead to additional costs of compliance, besides resulting in market access restrictions on the exporting country.

Additionally, the compliance costs are high and vary considerably across products. For example, in the case of Indian Spice exports, the investments for upgrading Quality and Food safety capacity has been around US$ 14.5 million. Of this, the share of private investment is about 78% largely comprising of equipment costs, post harvest facilities and management systems (see Table 4). Given this, if farmers were also to be exporters then the investment requirement is high and thus would be within the reach of mainly large farmers/exporters.

Table 4: Indian Investments in Spice Quality/Food Safety Capacity,Mid-1990s to 2003 (Estimated, US$ Millions)

Investment	**Private sector**	**Public sector**
Post-harvest materials, infrastructure, training, etc.	3.00	1.00
Cleaning, processing, and sterilization equipment; management systems	6.00	1.00
Laboratory equipment, personnel, and material costs	2.25	1.25
Subtotal	11.25	3.25
Total	**14.50**	

Source: World Bank, 2005 (P.85)

The development of variety of private standards, partly in response to food safety concerns as well as for product differentiation by buyers, has strongly affected the terms and conditions under which developing country suppliers access and compete in developed country markets. While this increased the buyers' pressure on suppliers to adopt quality control practices and management systems (for conforming to GAP, GMP, HACCP, EUREGAP etc) by developing company codes of practice, important changes in the structure of market also took place. Global sourcing, introduction of preferred supply arrangements, supply chain integration, elimination of middlemen etc has resulted in consolidation of food retailing and rapid growth in food service industry. With the consolidation of retailing, the tendency to cut suppliers' prices has increased[2]. There have also been instances where the buyer has extracted

[2] Bananas in UK is a good example. Loose Bananas were priced at £1.08 per kilo for 6 years. When Wal-Mart cut the price to £0.94, after negotiating with Del Monte Fresh produce, Tesco, Sainsbury and Safeway also followed. Morrison further cut the price to £0.85 which was followed by the retailers. This price war among the retailers not only resulted in retailers accepting lower margins but also deeper cuts from the suppliers as indicated in the data below

The UK 'banana wars' 2002-2003'

Date	**Retail price (£ per Kg)**	**Price to supplier (£per Kg)** [a] (	**Retail margin (£ per Kg)**
12/2001	1.08	11.00	0.47
06/2002	1.08	9.50	0.56
08/2002	0.94	9.50	0.42

more favourable terms from suppliers and passed on the business risks to the primary producers in the supply chain.[3]

Another important trend in retailing that has influenced the value chain is the multinationalisation of the retail sector which resulted in the modernization of the procurement systems both by the foreign and local retailers. With most countries following liberalization in FDI policies, several types of retail FDI patterns emerged. The global multinational retailers from US and Europe (Carrefour, Walmart, Ahold Metro, Tesco) and second tier retail chains from Japan, Thailand, Taiwan and South Korea entered into these markets. The investment pattern varied from Greenfield investment, acquiring a local chain, or Joint ventures. Huge investments were made in 'distribution centres' – a shift away from fragmented, per store procurement system to a distribution center serving many stores in a district, eventually to the country and region. This led to a coordinated procurement over a set of countries. A natural outcome of this development is to move away from spot markets to preferred supplier with defined contracts. To some extent, these contracts involve investments by the buyers in assets to incentivize the supplier or provide direct or indirect assistance to the farmers for investments in human capital, management, input quality etc.[4]

The immediate effect of these developments on the suppliers is obvious. The formal contracts between the buyers and suppliers resulted in formal registration and invoicing from suppliers and demanding requirements with respect to volumes, consistency, quality, costs and commercial practices. These translate into 'threshold investments' maintenance costs for suppliers. Consequently, the tendency of the supermarket chains is to source from large and medium suppliers.

Given the need to include the small famers into this new organized procurement system, differential policy strategies gained credence. While the basic policy focus can be to develop appropriate competition policy (to limit the concentration and collusion among buyers), regulation of retail marketing practices, regulation of retail procurement practices (particularly payment terms, equal treatment among suppliers), measures to include small farmers into the new organized procurement systems need also to be initiated. In this regard, the country experiences need to be highlighted. In Mexico, ASERCA has a direct marketing program where it facilitates between local suppliers of fresh produce and supermarket chains. ASERCA promoted links between association of grape producers (producer group) and large chains through trade shows, buyer-supplier meets. Government programs also linked the association of small growers of raspberries with Sam's Club in Mexico by facilitating meetings, providing assistance with investments in cold chains, trucks and packing facilities. The same is also evident in Brazil. The Brazilian Export Promotion Agency (APEX) and the Ministry entered into a linkage Agreement with Carrefour to promote Brazilian fruit in its local stores and European stores. The Malaysian government also has a program called Federal Agricultural Marketing Authority (FAMA) which arranges linkages between local

09/2002	0.85	9.50	0.33
01/2003	0.85	9.25	0.34
02/2003	0.85	8.50	0.38
04/2003	0.81	8.50	0.34
Summer 03 (est.)	0.75	8.00	0.31

Source: DFID, 2004

[a] About 4% in 'over-riders' (discount based on sales volume and paid retrospectively by the supplier to the retailer) must be deducted in order to derive the actual price paid to suppliers. These figures are rounded up or down to nearest 25p to protect sources.

[3] The UK Competition Commission's 2000 report on supermarkets shows that the largest supermarket, Tesco, was able to obtain discounts from its suppliers 4% below the industry average. Oxfam report details the instances where supermarkets have set prices long after the produce has been shipped and demanded exclusive relationships. Most often, these risks are passed on to the most vulnerable links in the value chain, i.e., primary producers.(DFID, 2004)

[4] In some cases, this has led to interlinkages between product and factor markets where farmers' contract with supermarket has served as a collateral substitute. For example, Metro in Croatia, has intervened with the bank to provide contract with the supermarket as a collateral substitute for green house investments for strawberry suppliers.

suppliers and foreign hypermarket chains to enter into their regional and global procurement systems. Overall, the approach is to organize small farmers into clusters or groups, upgrade them to adapt to standards and to provide access to bank loans by interfacing with financial services providers and providing guarantees to the banks for the small and medium farmers.

3. GVC Framework and India's Food Sector

The Indian agri business, which covers primary agricultural products, farm inputs and processed products, is largely unorganized at the production, trading and consumer levels. About 75% of the food market is concentrated in the fresh food segment and the marketing channels for this segment are mainly traditional with a number of intermediaries. Direct marketing by farmers to consumers is negligible and most of the produce is transacted through traditional markets (with poor infrastructure) and traders. The marketing inefficiencies are high resulting in product wastage and low net returns to the farmers.

However, with trade and retailing gaining importance, structural shifts in agribusiness are taking place. With exports increasing, many food chains and companies are sourcing agricultural products from India to feed their outlets in different parts of the world. PepsiCo's operations in India is an example in this case. To meet its export obligation, the company entered into contract farming for the production of tomato, potato, chilly, basmati rice and value added groundnuts[5]. These products were procured for further processing and exported all over the world using PepsiCo global marketing network. Another example is that of the export of grapes by Maharashtra State Grape Growers' Association by adopting new technology and practices. 'MAHAGRAPES" a cooperative firm that partnered with Maharashtra State Agricultural Marketing Board to provide pre-cooling and cold storages and marketing support for export of grapes. Mahagrapes is an established brand in EU and Middle East markets.

In both these examples of export driven value chain, lead firm is the supplier and therefore, conforms to the characteristics of "Producer driven value chain". The coordination of the value chain activities is by the lead firm which also exercised control and monitored the activities in the value chain as most of the suppliers are captive. The capabilities of the suppliers improved not only in terms of productivity increases but also in terms of conforming to the food safety and quality requirements of the global markets. In both these cases, the support from public institutions complemented the efforts of the Buyer.

In the case of organized food retailing[6] in India, which is gaining importance, traditional formats of food supply chain have undergone structural shifts. With consumer preferences for quality, wide product range and convenience increasing, the traditional format of agri supply chain is giving way to new formats of agri value chain[7]. Organized retailing in India uses several channels of procurement to ensure efficiency in the value chain. Issues like

[5] To develop its production base for its global operations, PepsiCo entered into a collaboration with Punjab Agricultural University and Punjab Agro industries corporation. The purpose was to identify and use specific varieties suitable for Indian climate in order to increase output. Under the contract farming system, the company provided farmers with inputs, agricultural practices and periodic inspections. With these efforts, the yield increased significantly, from 16tons in 1989 to 52 tons per hectare in 1999. Further, the farmers return also increased as the farmers supplied to the company at an agreed price and quantity.

[6] Organised food retailing in India still accounts for less than 2% of the total food market. Estimates indicate that in 2010-11, the size of this segment is Rs 194 billion as against the total food market of Rs 12,450 billion thereby accounting for a share of 1.56%. By 2020, the organised retail segment is expected to increase to about Rs 620 billion with a projected share of 1.89% of the food market. (NABARD, 2011)

[7] In the traditional format of the delivery of agricultural produce from the production areas to the consumers, there are a large number of intermediaries with the market serving as a place for procurement with a total disconnect between the primary producers, transporters, processors, traders and consumers. With most of the agricultural produce requiring processing before they can be retailed, the degree of processing determines the format of the agri value chain. For grains, oil and pulses, the degree of processing is high and the processor along with primary producer emerge as critical links in the value chain. As against this, where the degree of processing is low, mainly requiring grading, sorting and packaging, the role of primary producer is critical in the value chain. Each of these diverse activities is a part of a network that defines how efficiently goods are transferred and how effectively information flow takes place between the various stakeholders in the supply chain.

purchasing, quality control, demand & supply planning and inventory control are emerging as important determinants, as a result of which, the relationship between the primary producers, processors and retailers is taking different formats.

Table 5 details the channels of procurement of different products by major food retailers in India. Traders and processors emerge as major procurement channel for products requiring higher degree of processing, while Consolidator or traders emerge as major procurement channel for products with a lesser degree of processing. For these products, direct procurement from farmers or own production or contract farming is also present but to a much less extent.

A comparison of the efficiency of the supply chain between the traditional format and direct procurement is given in Table 6. It is evident that the net gains to the farmer, consumer (better price) have increased and there has been a significant fall in the wastage level. The farmers' net income has increased by over 8%, while the consumer paid 6% less and the post harvest and transit wastage decreased by 7%. However, the major issues arising out of direct procurement is the increased pressure on the farmers on the quality of the produce (strict grading is followed before procuring) and the inability to sell the total produce to the retailer. Depending on the required quantity based on store sales estimates, the purchase from the farmers varies from 50-100% of the produce. Thus the farmers continue to depend on commission agents, though to a lesser extent.

Table 6: Supply chain efficiency in Direct Procurement

Traditional supply chain		**Disinter mediated supply chain**		**Remarks**
Channel partner	**% share**	**Organised SC**	**Organised SC**	
Consumer pays	100%	Consumer pays	94%	Benefit customer @6%
Retailers wages	5%	Retailers wages	6%	Actual accountings
Retailer margin	22%	Store margin	25%	Retailer margin increased
Semi wholesale	5%	Semi wholesale	0%	Semi whole seller eliminated
Whole sale wastage	3%	Distributions	5%	Incurred cost on distribution (cold chain)
Whole seller commission	8%	Whole seller commission	0%	Whole seller eliminated
Transit wastage	5%	Transit wastage	2%	Reduced by 3%
Village consolidation	2%	Consolidation exp	2%	Net Savings
Post harvest wastage	8%	Post harvest wastage	4%	Net Savings 4%
Net to farmer	42%	Net to farmer	50%	Increased earnings by 8%
Total	100%		94%	

Source: NABARD, 2011

A variant of the direct procurement is the SAFAL model where the retailer manages the complete backward and forward linkages. The auction market serves as a trading platform and is an important link between farmers' associations (backward linkages) and cash and carry semi-wholesale and retail outlets (forward linkages). The important elements of this model of value chain are:

- Farmers' associations are a direct link to the SAFAL market and they take the responsibility of training individual growers in quality management aspects, extension services and input supply. These associations also provide logistics support to the farmers in terms of packing and transportation.

- Wholesalers purchase from SAFAL auction market complex as the product quality is maintained because of better facilities are available. Graded and quality checked with friendly packs for easy handling and transportation is available. Stat of art fruit ripening facility, quick and efficient dispatch of produce and online wholesale price information of all items in major markets is available. Additionally, cold storage facilities are available on payment basis.

- SAFAL also maintains cash and carry stores owned by the auction market and supported by four distribution centres.

Besides the above, organized retailing in India has also adopted other formats of procurement such as Outsourcing, Corporate farming, Franchisee model and Direct marketing. A brief analysis of these different types of value chain is detailed below:

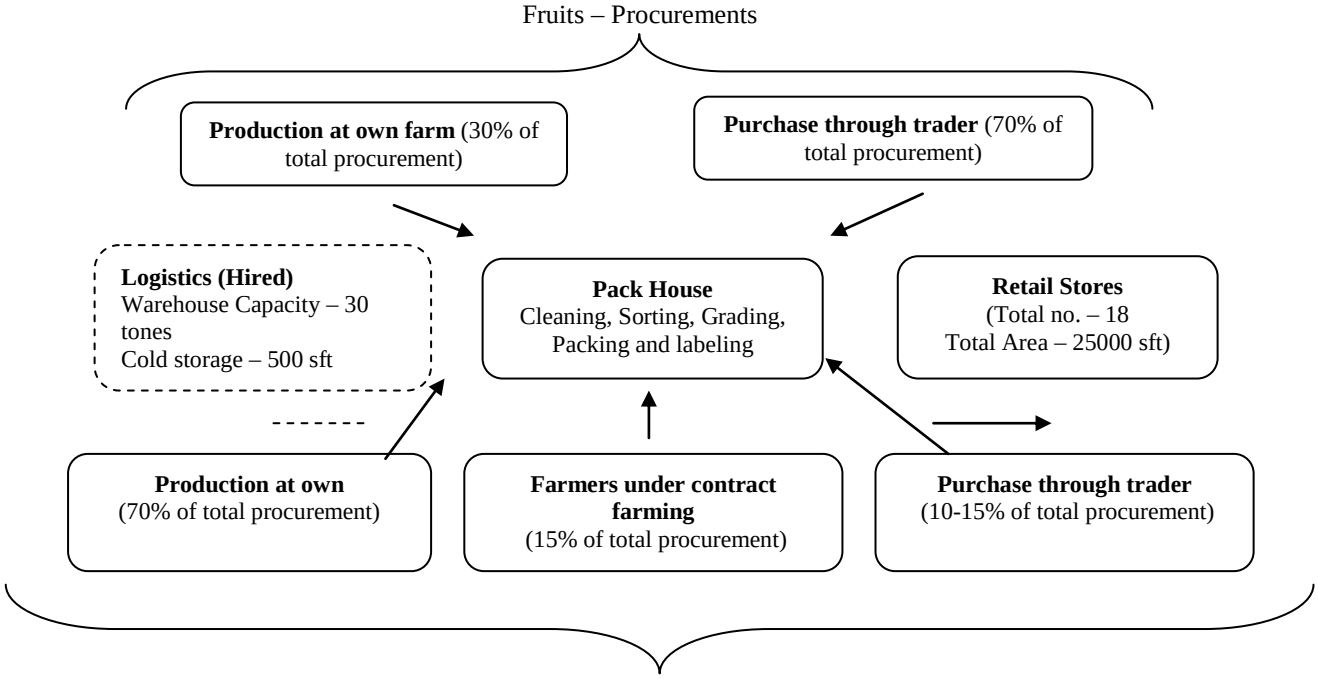
(i) Outsourcing

This is a category management format wherein the retailer provides space in the store to the vendor on a revenue sharing mode. The vendors manage the entire back end and the store sales. In most cases, the vendor ties up with the large wholesaler who manages the entire backend operations. This is prevalent for fruits and vegetables and mainly offered by Food bazaar (Pantaloon retail) and other retailers.

(ii) Corporate/Contract Farming

In this format, the retailer manages the complete value chain in terms of production and retailing. In the value chain, the backward and forward linkages are highly integrated and risks are largely borne by the retailer. The format is followed by Namdhari Fresh and the important links in the value chain are highlighted in the process of procurement as shown in the Figure in next page.

Figure 1: Source of procurement for Namdhari Fresh



The company has requisite infrastructural facilities and has control on procurement, sorting/grading, packing and marketing. The company follows this model as it has to

cater to three different market segments, namely, Retail, Institutional and Export. These three market segments have varying requirements in terms of product quality, price and logistics. The company has EUREGAP certification and therefore has access to markets of developed countries.

(iii)Franchisee Model

This is a dealership model where the franchisee invests in front end and back end operations. This is followed by Suguna poultry for fresh and value added chicken products. The emphasis is on high-quality, modern retail stores targeting the higher income and urban consumers. The company supports the franchisee through various promotional events and healthy incentives for assured earnings.

(iv) Direct Marketing

Direct marketing by farmers brings about a direct link between buyers and sellers by eliminating the middlemen. The purpose is to increase the farmers' share in the price paid by the consumer. The marketing infrastructure and the functioning is monitored by the government agencies. As this facilitates in the quick movement of the produce, this channel is mostly adopted for fruits, vegetables and flowers. Some of the examples of this format are *Apni mandies* in Punjab and Haryana, *Rythu Bazar* in Andhra Pradesh, *Uzhar Santhi* in Tamil Nadu, *Hadaspar* market in Pune, *Raithra Santhegalu* in Karnataka.

The above review of the different retail formats for agricultural produce in India clearly brings out that they are "Buyer driven value chains" where the lead firm is the retailer. In managing the value chain, the extent of 'chain governance' by the retailer, there seem to be two important determinants. These are: (i) market characteristics; and (ii) investment in infrastructure. These factors also seem to influence the choice of retail format.

If the retailer is largely focusing on the domestic market then the value chain is fragmented with market based relationships. The wholesaler/agent emerges as an important node in the value chain and serves as an intermediary between the buyer and seller. Depending on the degree of processing required for retailing, the significance of the Processor in the value chain is determined. In the semi and processed products, where the product quality difference is not varied, trader, processor and buyer emerge as major links in the value chain. The relationships between buyer-trader, buyer-processor and trader-processor depends on the value addition activities taken up by the buyer. The higher is the value addition made by the buyer, lower is the significance of processor. Bulk buying from the trader in the production areas indicates that the buyer's primary objective is to economise on procurement, transportation and logistic costs. This being central for determining the competitiveness of the buyer/retailer, the economic size of the buyer emerges as an important factor. The direct link between buyers and suppliers is virtually non-existent and the better price realized by the seller is due to the reduction in the transaction costs by reducing the market intermediaries. Thus, efficient price discovery in the wholesale market emerges as an important factor for sellers. As the quality of the produce is an important factor influencing the price received by the farmers, the information on buyer requirements is transferred by the trader to the seller. For integrating small famers into this value chain, public investment in extension services, access and availability of requisite inputs and market infrastructure is necessary.

In the case of vegetables and fruits, the buyer-seller relationship is much stronger. As these products are highly perishable and quality is a major consideration, the buyers' involvement in the value chain begins from the productions stage. By reducing the number of intermediaries and post harvest wastages, the buyer is able to reduce the

associated transaction costs. This also reduces the burden of transportation costs on the seller. In this case, buyer-seller relationship is not determined by market but more on the seller conforming to the quality requirement of the buyer. Hence, the suppliers' competence in meeting these standards become important. Parallelly, there is also a value chain where the market determines the buyer-seller relationship. Here the Agent/trader emerges as an important link who transfers the product requirement of the buyer to the seller. In this case, the transaction costs of coordinating with sellers with diverse competence levels seem to be high. Therefore, increasing the sellers competence through technological interventions and organising them into groups such as producer associations would enable a better price realization.

Against this, if the retailer also caters to the export markets, then the value chain is more integrated and largely monitored and controlled by the buyer/ retailer. In this case, the backward integration necessitates a close relationship between the buyer and the seller. Here, the supplier capability plays a very important role in the choice of suppliers by the retailer. Possibilities of small farmers being integrated into this value chain exist but support institutions in ensuring transparent supply contracts are necessary.

Further, as the infrastructure requirement for setting up an integrated value chain is high, the retailers/buyers ability to do so will also influence the choice of the retail format. If the retailer invests in setting up the value chain then the relationship between the buyer and seller is captive and the buyer exercises complete control on the value chain. However, in meeting the product requirements of the export market, two variants of value chains have emerged. One, the buyer is a transnational company and is sourcing the product from India as a part of its global production and marketing network. And two, the seller is able to upgrade seller competence through producers' organisations and meet the quality requirements of the export market. The marketing support in this case, is provided by the public institutions. Thus, both buyer driven and seller driven value chains are able to coexist.

Thus, in the Indian context, the value chain relationships are largely determined by the *supplier competence* and the *governance costs*, which are in turn influenced by developments in *standards* and *concentration* in the value chain. Conformance to quality, product safety, labour standards and environmental standards are driving the business to a coordinated approach of the value chain from production to sale point but the arms-length market relationships are not completely replaced by direct coordination through exchange of information between the buyers and the suppliers[8]. The enforcement of instructions of the buyers relating to what products to produce (product design), how to be produced (process controls) and when (timing) are not only influencing the organization of the value chain but also differentiating between producer capabilities particularly relating to large and small farmers. Thus, lower supplier performance has lead to denial of access to the market while a better supplier performance has resulted in realizing higher than average prices.

Given the importance of *supplier competence*, the buyer seller relationships take the following formats. If the buyer has less confidence in the supplier competence, then they are subjected to rigorous monitoring and control as in the case of captive suppliers in out grower scheme. As investments would be required in these transaction specific relationships, this can also become costly. However, if the suppliers are competent to meet the requirements of the value chain, the buyer supplier relationship would depend on the extent to which knowledge can be codified. When buyers and suppliers have independent and special competences because of which knowledge cannot be easily communicated or codified, then value chain linkages take the form of strategic alliances. But, if information can be easily communicated

[8] For example, the structure of horticulture production in Kenya and Zimbabwe were influenced by the large supermarkets (Dolan, Humphrey and Harris-Pascal, 1999).

and codified then suppliers can supply customized products without any difficulty. In this case, the buyer can switch easily between the suppliers which induces risk and uncertainty at the producer level.

The costs of coordinating value chain relationships take two forms. First, the direct cost of managing inter-firm relationships and the loss of flexibility. When low cost locations are chosen for production then more investment is required to meet international standards. In this case, the buyer will determine the products and processes and may provide the inputs. For the suppliers, it is easier to enter into the value chain as the competences required will be low. In these captive networks where production is dispersed managing may become difficult. As such, attempts to simplify value chain linkages will put pressure on product differentiation, innovation, timeliness etc. Thus, the challenge here is to manage these different objectives while keeping the costs of coordination low. And, second, under the system of global production, there is an increased concentration in the downstream activities and fragmentation and competition in the upstream activities. This leads to asymmetries in market power and uneven distribution of profits and risks.

From the GVC perspective, the major trends in *Standards* that have influenced the global agribusiness are: (a) increasing stringency of mandatory food safety standards by public agencies; (b) increasing scope of standards; (c) a shift from product to process standards; and (d) increasing importance of collective private standards.

To a large extent, the implementations of these Standards are interrelated. Even though the product standards define the outcomes to be achieved, the National laws of importing countries aimed at food safety view the value chain of the product to manage risks thereby making traceability mandatory. Thus, traceability and process standards have emerged as necessary conditions for product standards. Further, as the responsibility is on the buyers, the control and monitoring of the suppliers increases with regard to production practices. Therefore, to sustain transactions, information needs to be codified and transferred, the buyers may restrict to smaller number of sellers whose competence is high in order to reduce the costs of coordination. With the standards changing over time and the increasing importance of collective private standards[9], the supplier competence requirements also change. This provides the buyers with the flexibility of changing suppliers as there are high economies of scale for adhering to process standards such as HACCP which tends to marginalize the small farmers. Marginalization of small farmers also takes place when the monitoring costs increases with new standards thereby excluding the small farmers from the value chain.

There is evidence to show that large retailers have transformed from resellers of products to increasingly involving in product development, branding, supplier selection and distribution. This enables them to exercise control on producers in order to monitor and control process standards for meeting food safety requirements and to reduce the coordination costs through scale economies. This is further driven by the internationalization of the retailers.

4. Policy Issues and Options for FDI

The application of the GVC framework to understand the emerging producer and buyer relationships in agriculture under different retail formats has underlined three important issues. First, with globalization and expansion of agricultural trade, India is still an insignificant part of the global production network. Though India has a comparative

[9] Collective private standards of EurepGAP and others, require additional requirements like environment impact, labour standards, animal welfare etc for which certification system is based on accreditation of certification bodies like EUREP, British Retail consortium and the recognition by these organizations of equivalent standards

advantage in the production of many agricultural products, this is being undermined by the high transaction costs arising out of inefficiencies in distribution and logistics (World Bank 2007). Further, in the broader institutional context of trade policies, regulation and standards, the incidence of transaction costs increases further. Under these operation conditions, expansion of agricultural trade would depend on gaining access into developed country markets through global production networks. The policy orientation, in this context, would be to facilitate transnational companies to source from India. Whether the mode of entry is through subsidiaries or joint venture or strategic alliances would depend on the capability of the local firms/suppliers. If a local firm is able to establish an integrated value chain then partnering with the local firm would be a viable option for the transnational companies. As the investment requirement for setting up the value chain would be low for the transnational, the relationship between the foreign and local firm would largely be in terms of product design and process standards particularly if transaction specific investments are required.

But, considering that the market, transportation and logistics infrastructure is less developed in India and the public investments in the same being low, the policy approach should be to encourage investments by the transnationals in setting up the value chain and strengthening the support institutions like inspecting and testing facilities, certification companies, local consultancy etc. Overall, the effort should be to ensure a conducive economic environment for integrating India into global agricultural production networks.

The second important issue emerging out of the GVC analysis is the development of domestic retailing in building the capacities of the local firms for forging international operations. As most of the agricultural retailing in India is unorganized, the supply chain is highly fragmented. The development of organized retailing, particularly in the urban areas, provides the 'threshold expertise' to organize and coordinate supply activities for greater efficiencies. As of now, most of the retail formats are mainly focused on domestic market operations. With increasing competition, the pressure on prices and costs will rise thereby forcing the retailers to become scale efficient. This would evolve in expanding their global operations. Leveraging the domestic operations for entering into global markets requires development of infrastructure and support institutions. In this regard, the recent policy initiatives to permit FDI in retailing with a focus on the development of backend infrastructure is aimed at this long term objective. The condition of 50% of FDI on backend infrastructure within a fix time frame of 3 years will bind the foreign investors and can result in reducing the post harvest losses. This will also facilitate the small producers to get integrated into the global retail chains and encourage the producers to adopt global best practices.

And, lastly, the third important issue arising out of the GVC analysis is the effect of trade in building the supply competencies of the producer, particularly the small farmers. Accessing export markets would require conforming to the food safety and quality standards. The costs of compliance being high, the role of state in providing the *Standards infrastructure* becomes crucial. In this regard, the producer access to Inspection and Testing facilities, Certification agencies and Extension facilities needs to be ensured. Adopting new technologies and production processes by the farmers is not scale neutral and therefore, can have the tendency of excluding the small farmers. Therefore, efforts are to be made to build the capacity of these farmers in terms of up to date and relevant knowledge transfer. In providing this technical assistance, NGOs, international development organizations and public organizations can cooperate and extend necessary support. Further, in the fresh produce value chains, reliable delivery, speed of delivery and product innovation can add value to the produce. This requires schemes for linking business development services to agri supply networks.

Table 1: Changing Structure of Agriculture Trade: World and India

		INDIA					WORLD				
CODES	PRODUCTS	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
	TRADITIONAL TROPICAL PRODUCTS	**26.23**	**30.96**	**18.70**	**23.69**	**22.90**	**15.63**	**15.07**	**13.61**	**11.98**	**13.77**
9	Coffee, tea, matï and spices.	19.33	10.92	9.78	7.36	7.70	4.24	3.27	3.30	2.59	3.05
10	Cereals	6.39	18.10	7.96	15.70	11.22	7.79	8.19	7.25	6.12	7.06
17	Sugars and sugar confectionery.	0.50	1.93	0.95	0.64	3.99	3.60	3.61	3.06	3.28	3.66
	TEMPORATE PRODUCTS	**13.06**	**13.82**	**13.26**	**16.39**	**19.62**	**23.86**	**23.00**	**22.99**	**23.28**	**24.44**
2	Meat and edible meat offal	1.80	2.25	3.35	4.77	6.84	9.49	8.61	8.53	8.90	8.04
4	Dairy prod; birds' eggs; natural ho	0.06	0.19	0.42	1.96	0.92	6.60	6.65	6.06	6.23	5.92
12	Oil seed, oleagi fruits; miscell gr	3.42	2.80	3.62	3.21	4.07	3.51	3.56	4.18	4.09	5.68
23	Residues & waste from the food indu	7.78	8.58	5.87	6.46	7.79	4.27	4.18	4.22	4.06	4.80
	FISH HORTICULTURE	**21.32**	**20.11**	**27.68**	**24.04**	**16.33**	**21.65**	**19.09**	**20.87**	**20.67**	**19.08**
3	Fish & crustacean, mollusc & other	12.27	12.15	16.70	11.97	8.20	10.50	7.28	8.64	7.61	6.57
6	Live tree & other plant; bulb, root	0.10	0.22	0.31	0.55	0.24	0.85	1.82	1.87	1.89	1.53
7	Edible vegetables and certain roots	1.92	2.02	3.14	4.41	3.71	4.47	4.46	4.36	4.54	4.76
8	Edible fruit and nuts; peel of citr	7.03	5.72	7.53	7.11	4.18	5.82	5.53	6.02	6.63	6.22
	PROCESSED PRODUCTS	**2.44**	**5.45**	**5.86**	**8.10**	**7.69**	**21.03**	**22.32**	**21.70**	**24.57**	**25.93**
15	Animal/veg fats & oils & their clea	1.13	3.28	3.13	3.33	3.39	5.99	5.89	4.58	5.43	7.45
16	Prep of meat, fish or crustaceans,	0.01	0.04	0.06	1.26	0.99	3.83	2.98	3.30	3.54	3.12
18	Cocoa and cocoa preparations.	0.04	0.03	0.03	0.05	0.11	2.09	2.63	2.39	2.90	3.26
19	Prep.of cereal, flour, starch/milk;	0.28	0.38	0.45	0.96	0.95	2.21	3.04	3.54	4.19	4.07
20	Prep of vegetable, fruit, nuts or o	0.38	0.50	0.66	1.12	1.06	4.88	4.20	4.32	4.37	4.06
21	Miscellaneous edible preparations.	0.59	1.22	1.52	1.39	1.19	2.02	3.57	3.57	4.13	3.98
	OTHER PRODUCTS	**33.83**	**25.72**	**30.49**	**23.69**	**30.10**	**15.38**	**18.01**	**18.45**	**17.14**	**14.56**
22	Beverages, spirits and vinegar.	0.42	0.17	0.36	0.41	0.64	4.05	6.95	7.74	8.24	7.29
24	Tobacco and manufactured tobacco su	3.40	1.63	2.20	2.45	3.38	3.62	4.63	4.48	3.35	2.84
52	Cotton.	30.01	23.92	27.93	20.83	26.08	7.71	6.44	6.23	5.55	4.42
	TOTAL AGRI PROD(US MILLION $)(ITS 100%)	**4270.042**	**8153.214**	**8036.448**	**12188.18**	**25960.36**	**117952.7**	**453938.2**	**442711.7**	**706423.4**	**1136777**

Source: WITS Database

Table 2: Product/Process Requirements for Indian Dried Chilies in Selected Markets

Source: World Bank, 2005

	United States	South Asia	East Asia	European Union	Australia
Quality					
Compliance with physical and chemical parameters	D4	D4	D4	D3	D4
Compliance with cleanliness parameters	A3	D4	D4	D3	D4
ISO 9000/1 certification	D1	D1	D1	D3	D1
Food safety					
Compliance with MRLs	C2	C2	C2	B2	B3
Compliance with aflatoxin limits	C2	C1	C1	B2	C2
Compliance with heavy metal limits	D2	D1	D1	B1	D1
HACCP program requirement	D1	D2	D2	D2	D2
Allergen policy	C4	D1	D1	C4	D1
Plant health					
Fumigation requirements	A4	D2	D2	D2	D4
Phytosanitary certificate	D1	D1	D1	D1	A2

Legal Requirement:
A Legally mandated and strictly enforced
B Legally mandated, spot/sample enforcement
C Legally mandated, minimal enforcement
D Not legally mandated

Commercial Requirement:
4 Fully required for commercial purposes
3 Mostly required for commercial purposes
2 Not required, but somewhat beneficial commercially
1 Not required and unnecessary for commercial purposes

Source: Jaffee (forthcoming).

Table 3: Channels of procurement by major food retailers

Retailer	Procurement through (% of total)							
	Grains	**Pulses**	**Oil**	**Fresh Fruits**	**Vegetables**	**Processed products**	**Milk and milk products**	**Poultry**
Smart	Processor-90, Appointed agent-10	Processor-80, Appointed agent-20	Processor-90, Trader-10	Appointed agent-30, Trader-70,	Appointed agent-80, Trader-20,	Processor-80, Trader-20	Trader-100	Trader-100
Home store India retail	Consolidator-60, Trader-40	Consolidator-60 Trader-40	Processor-100	Consolidator-60, Trader-40	Consolidator-70, Trader-30		Processor-100	
Namdhari	Trader-100	Trader-100	Trader-100	Trader-70, Own farm-30	Own Farm-70, Contract Farmg-15, Trader-10-15	Trader-100	Trader-100	
Mother dairy	Trader-100	Processor-50, Trader-50	Processor-90, Trader-10	Appointed agent-60, Trader-40,	Appointed agent-60, Trader-40,	Processor-80, Local vendor-30		Local vendor-100
More retail	Trader-80 Processor-10, Job work after procuring the raw material from farmers-10	Trader-60 Processor-20 Job work after procuring the raw material from farmers-20		Appointed agent-35, Trader-65,	Appointed agent-35 Trader-65	Trader-100	Trader-100	Trader-100
Tesco-Star Bazaar	Trader-100	Trader-100	Trader-100	Trader-95, Appointed agent-5	Trader-95, Appointed agent-5	Trader-100	Trader-100	Appointed agent-35, Trader-65,
Spencers	Trader-50 Processor-50	Trader-100	Trader-100	Farmer-70%	Farmer-70%			

Source: NABARD 2011

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