

AN IMPACT STUDY OF DIVERSIFICATION AND FOOD PROCESSING ON EMPLOYMENT GENERATION AND FOREIGN EXCHANGE EARNING FROM GLOBAL MARKET

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IMPACT OF DIVERSIFICATION AND FOOD PROCESSING ON EMPLOYMENT GENERATION

Diversification of agriculture is advocated as one of the important strategies to stabilize and enhance farm income, increase in employment opportunities and conserve natural resources. However, the returns from diversification depends the on the availability of such infrastructural facilities as irrigation, electricity, transportation, storage, markets etc.

In Some state of India agriculture has been its transformation, from cereal-based subsistence agriculture especially in the areas falling under temperate agro-climatic zones. Place like Kullu in Himachal Pradesh and Ranchi in Jharkhand, transformation in agriculture has been seen.

In Kullu the area under vegetable crops increased from 25,000 hectares in 1995-96 to 34,150 hectares in 2001-02, while the production increased from 4,25,000 tonnes to 6,27,445 tonnes during this period. The process of crop diversification towards fruits and off-season vegetables crops like peas, cabbage, cauliflower, tomato etc. is more pronounced in the areas having suitable agro-climatic conditions, like districts of Kinnour, Kullu, Lahaul and Spiti, Srimaur and Solan, and districts of Ranchi, Hazaribagh and some adjacent places of Jharkhand. Earlier, the farmers were growing cereals, maize, wheat, paddy, minor millets like cheena, bathu, kauni and pulse like gram, mash, rajma and soyabean, but now these crops have been completely replaced by off season vegetable, specially in the areas having adequate irrigation facilities. In Kullu, the data regarding cropping pattern, labour employment and farm income etc. were collected.

Change in cropping pattern and Employment is in table .1 below:1.1

Table 1.1
Period I (1990-91)

Crops	Area (ha)	Employment (mandays)
Khariff		
Maize	0.224	22.4
Paddy	0.144.	27.0
Mash	0.096	12.5
Rajma	0.064	12.0
Other pulses	0.080	10.0
Rabi		
Wheat	0.320	30.0
Barley	0.160	18.0
Lentil	0.040	8.0
Gram	0.064	15.0
Mustard	0.064	9.0
Total cropped area	1.576	198

Period –II (2002-03)

Crops	Area (ha)	Labour (mandays)
Khariff		
Tomato	0.110	27.6
Cauliflower	0.101	20.3
Cabbage	0.063	13.7
Brinjal	0.054	13.3
Maize	0.041	6.7
Capsicum	0.024	5.3
Cucumber	0.080	18.6
French been	0.038	10.0
Rabi		
Cauliflower	0.220	45.0
Cabbage	0.142	28.3
Spinach	0.066	17.8
Turnip	0.32	6.0

Wheat	0.026	3.5
Radish	0.22	4.5
Ryi/Mustard	0.22	5.2
Peas	0.10	3.5
Total	1.333	293.3

Source: Bala and Sharma : Diversification and Commercialization of Agriculture in H.P., 2005.

It is clear from the table that, the total labour requirement was comparatively less in previous cropping pattern (period I) than the later cropping pattern (period II). The introduction of advanced technology in agriculture, for example, use of tractors, line sowing etc. had made various intercultural operations convenient and saved some labour too, but the vegetable crops were so labour intensive that even for smaller cropped area, there was requirement of more labour per farm. The table also shows that in the old cropping pattern the maximum labour was employed in paddy, followed by maize. In the vegetable dominated cropping pattern the maximum labour was employed in cauliflower (31% at the table), followed by cabbage (14.3%) and tomato (9.4%).

A study conducted by Kumar and Singh (2003) in the districts of Farukhabad (U.P.), has indicated that with increase in the cropping pattern, the employment of labour increased on the farm, where maize, potato, wheat and pumpkin were being grown and sunflower was introduced later. The study revealed that the employment for 176 Mondays for production of crops (average area 1.15 ha) during the year 1996-97 increased to 236 Mondays in 2000-01.

Food processing leads to significant employment generation not only directly but across the supply chain in production of raw material, storage of produce and finished products and distribution of food products to consumers for example a grant of INR 66.7 million (total investment of approximately INR 250 to 300 million to 35 units in UP in 2003-04 has resulted in direct employment of 2500 and indirect employment of 20000.

Thus, we observe through the above table and analysis that is a positive impact of diversification of agriculture and food processing on employment in the economy.

IMPACT OF DIVERSIFICATION AND FOOD PROCESSING ON FOREIGN EXCHANGE EARNING

Asian markets are transforming profoundly and extremely rapidly. This transformation has implications in terms of value-added and primary production employment for small-scale processors, intermediaries, and farmers, and landless labourers. The implications include new opportunities for poverty alleviation and income growth through broader and deeper markets, and markets that allow quality differentiation and more value-added. Those opportunities are accompanied by challenges to small-scale actors because in general the market transformation brings greater competition, greater demands for increasing quality and safety and reducing costs, increasing volumes and consistency, and modernizing post-harvest handling and commercial practices. These challenges translate into “threshold investments” by those actors – in equipment, skills, land improvements, knowledge – that can prove daunting to the asset-poor. Policies and public investments have an important role in helping producers over those hurdles in order to benefit from rapid market transformation.

Markets transformation can be analyzed in terms of changes of the characteristics of the exchange itself – such as its location and volume, and the demand and supply sides of the exchange. The demand side can be analyzed in terms of food consumption levels and composition, with the latter broken down into food obtained from home-production versus the market, and into types of food bought in the market – processed vs raw, staples versus non-staples. The supply side can be analyzed in terms of the supply chain from the farmer to the last point (usually retail) before reaching the final-demand point. That supply chain is composed of retailers, processors, wholesalers, farmers, and input supply firms. Thus, analysis of market transformation is a complex and vast terrain – in particular in Asia where all these elements are changing simultaneously and quickly.

Emergence of “Supermarket revolution”

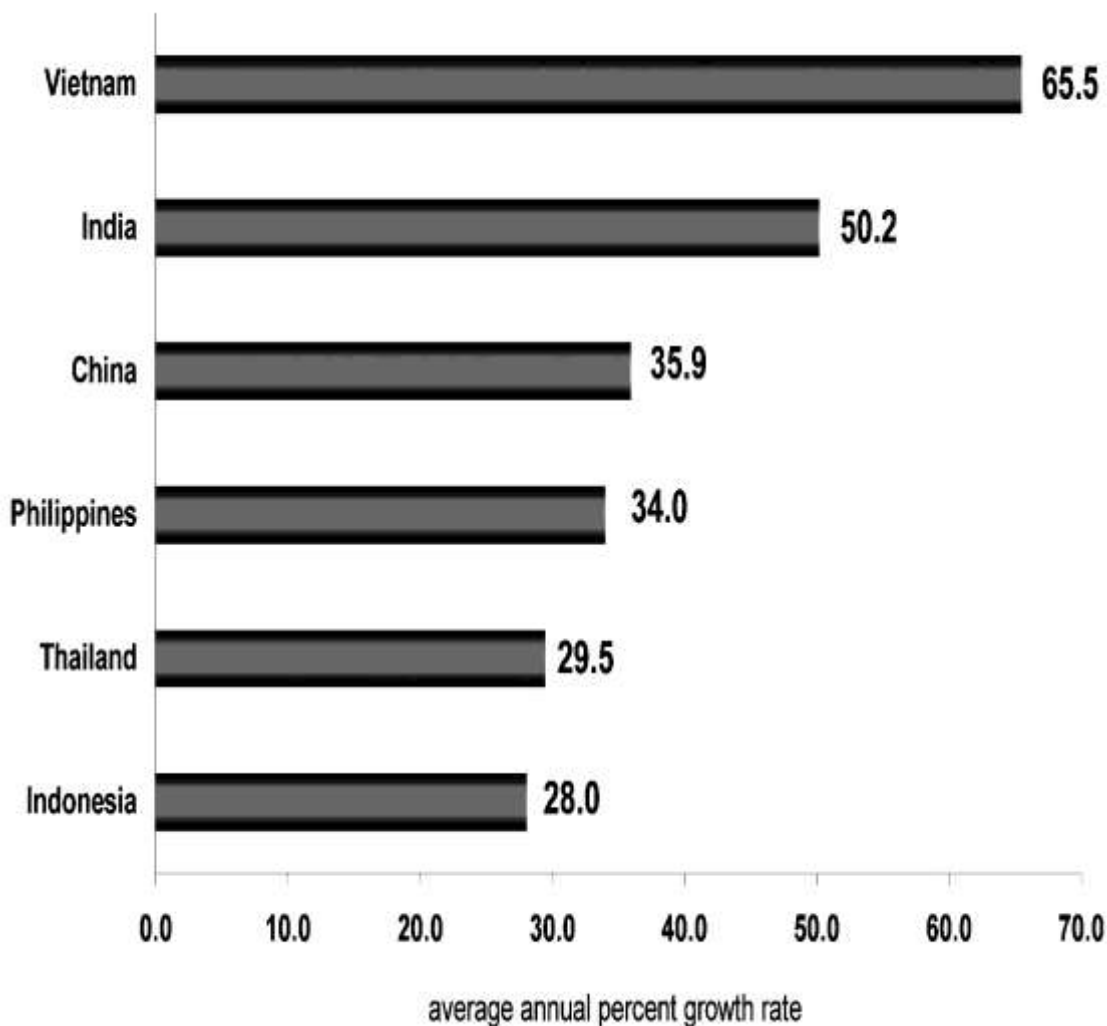
While the growth of wholesale markets and the growth and consolidation of the food processing industry have been very important trends in Asian food markets in the 1980s and into the 1990s, the most striking recent market structure change that has occurred in south-east

Asia in the early/mid 1990s, in China in the mid/late 1990s, has been the emergence of a “supermarket revolution”, which is currently spreading to south Asia, notably India.

The spread of supermarkets has and is taking place in three established waves, and a fourth emerging wave. (1) The “first wave” countries experienced supermarket-sector “takeoff” in the early to mid 1990s. These include much of East Asia (outside China and Japan). In these countries, the average share of supermarkets in food retail went up roughly from 10-20% in 1990 to 50-60% on average by the early 2000s (Reardon and Timmer, 2007). Compare to that the roughly 75-80% share, that supermarkets have in food retail by 2005 in the US and Western Europe, and one sees a process of convergence. These first wave countries saw supermarket diffusion in a single decade that took some five decades in the U.S. and the U.K. (2) The second-wave countries include much of Southeast Asia. In these areas, the share went from 5-10% in 1990 to 30-50% by the early 2000s, with the take-off occurring in the mid to late 1990s. (3) The third-wave countries include countries where the supermarket revolution take-off started only in the late 1990s or early 2000s, reaching about 1-15% of national food retail by today. These areas include “transition East Asia” (China and Vietnam) and India.

During 2000-2006, top ten grocery retailers in six selected countries of south and south-east Asia registered average annual growth rates ranging from 65.5% in Vietnam to 28% in Indonesia. (Fig. 1.1).

Fig. 1.1 : Average Annual Growth Rate in Grocery Sales of Top 10 Retailers in Selected 6 Countries in South and South East Asia (2000-06)



Source: Planet Retail website, Access Date 31st July 2007.

There are also some waves of diffusion of supermarkets over space within an Asian country, over consumer segments, and over product categories. (1) Supermarkets tend to start in large cities, and then spread to intermediate cities and towns, and then to small towns in rural areas. The business strategy is the same as chains have in spreading in waves over countries: the richest and largest market is entered first due to highest profit per capital invested; competition and saturation of the initial base drives investment by a given chain into the series of subsequent markets. (2) Controlling for the pattern of spatial diffusion, there are similar waves of diffusion over socioeconomic groups cum consumer segments. Obeying the same business logic as in spatial diffusion, supermarkets focus first on upper income consumer segments (national and expatriate), and then move into the middle class, and finally into the markets of the urban poor.

(3) Moreover, as modern retail spreads, there tends to be format diversification to facilitate the spatial and consumer segment differentiation. For example, to penetrate the markets of inner cities and small towns where space is limited and product assortment can be more narrow, chains use discount stores, convenience and neighborhood stores, and small supermarkets. (4) Product penetration spreads from processed foods (canned, dry, and packaged items such as rice, noodles, and edible oils) to semi-processed foods (with extensive or minimal processing such as dairy products) and minimal processing/packing (chicken, pork, beef, and fruit) to fresh fruits and vegetables.

An example from China and Hong Kong illustrate the penetration of supermarkets – and reinforce the point that the challenges for policies and programs will be earliest in the value-added segment (processed and semi-processed products as noted here). In a new study in the six largest cities in China, from a random sample of 1200 consumers, Goldman and Vanhonacker (2006), show that modern retailers already have a retail market share of 94% in non-food, 79% in packaged/processed goods, 55% in baked goods, 46% in meat, 37% in fresh fruit, 35% in poultry, 33% in fish, but only 22% in fresh vegetables. Compare that to the more advanced case of Hong Kong, which one might say represents the average Asian consumer sometime in the medium-term future; supermarkets have a 59% share in fruit retail, but still only a 55% share in vegetables (hence a share similar to supermarket penetration of produce retail in Brazil), 52% in meat, 39% in poultry, and 33% in fish (Coca-Cola Retailing Research Council Asia 2005).

There are several drivers of the above changes:

- (1) increasing incomes and urbanization;
- (2) retail FDI liberalization in the 1990s and 2000s, with competitive domestic retail investments;
- (3) pro-supermarket policies such as state-supported supermarket chains (such as in China), tax breaks for supermarkets by municipalities, and regulation of wetmarkets (in most countries) or even conversion of wetmarkets to supermarkets (in some Chinese cities); these policies have been to some extent balanced by

policies constraining supermarket diffusion, such as location and hours rules such as in Thailand and some continued FDI limitations such as in India.

- (4) Some recent food safety crisis have spurred consumers to shift to modern retail and large processors for their food, for example as found by Phan and Reardon (2007) for Vietnam before and after the bird flu outbreaks.
- (5) Procurement system modernization, especially in processed and semi-processed products, including dry goods, oils, meat, fish, dairy (together 85% of what supermarkets sell), have driven down costs and thus prices and helped supermarket diffusion.

Implications for Producers and Policy:

Note that the trends of diet diversification and the supermarket revolution share some common drivers (income growth and urbanization), reinforce each other (as supermarkets build and extend markets for processed and semi-processed products like dairy, processed horticulture products, and meat), and transform each other (as consumers press for quality and safe produce, supermarket chains transform their supply chains for more coordination and traceability).

Supermarkets and large processors tend to source from a combination of wholesale markets, specialized/dedicated wholesalers, and direct from farmers and processors. The impacts on farmers are mainly through effects of supermarket sourcing on processors and processors in turn imposing cost and quality demands on farmers.

Several patterns are emerging empirically (in recent studies) with respect to the kinds of suppliers from which supermarkets source.

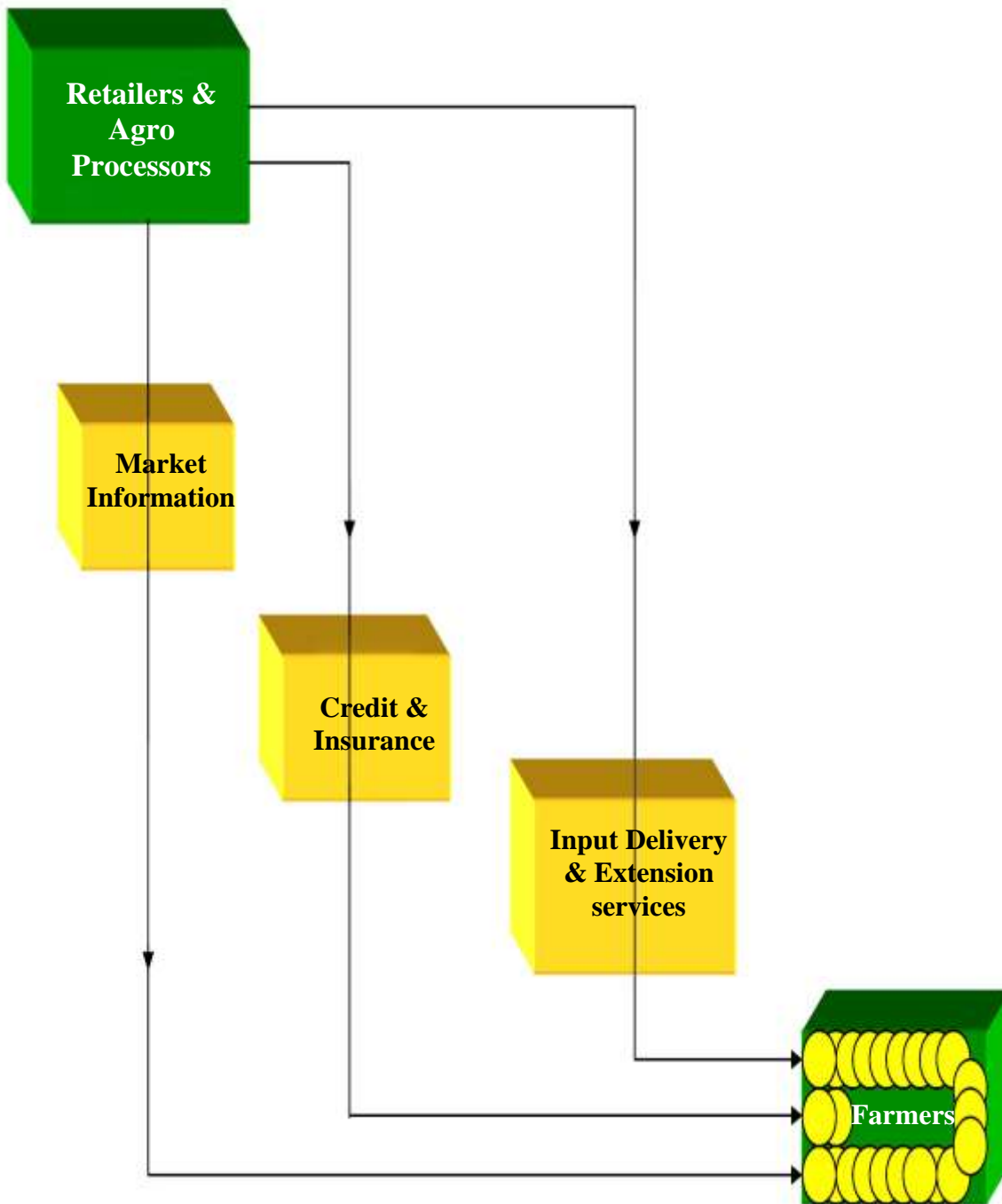
- (1) Supermarket chains tend to source from medium and large suppliers where they are available; this typically means a tendency toward sourcing from larger meat and dairy products and other processed food companies, as is shown for example in India and Indonesia.

- (2) Supermarket chains also tend to source, where possible, fresh products from medium/large farmers; however, this is rarely possible in most developing countries, except for a few products (which vary by country) and other export sectors where large and medium farms have developed in produce.
- (3) Most of the time supermarket chains thus source only indirectly, through wholesalers and processors, from small farmers. The latter tend to be the upper stratum of small farmers in terms of capital assets (organization, equipment, and training), infrastructure access, and size (Reardon and Timmer, 2007).
- (4) Where the small farmers are benefit of the needed assets, but the channel must still rely on them, sometimes the proximate intermediary or even the retailer assists with training, credit, and so on (for example as Carrefour and Metro are presently doing directly from producers in new programs in China).
- (5) As most fresh produce growers are small in Asia, small farmers are not excluded on the basis of size of their landholding or land tenure, except when these factors affect the farmer's capacity to implement certain technologies that in turn have an impact on quality, productivity, costs, or the ability to plant and/or harvest at the needed times during the year. Rather, other assets appear to play a much bigger role than does land. In particular, the included have more education, more access to transport and roads, have greater prior holdings of irrigation , and other physical assets, depending on the product, such as wells, cold chain, greenhouses, and good quality irrigation water (because of contaminants). Natawidjaja et al. (2007) shows this for tomatoes in Indonesia. In the very rare instances where small farmers sell direct to the supermarket, they have a very good rural producers' organization (RPO).
- (6) Farmers in the supermarket-channel tend to earn substantially more (from 10% to double) in net terms, so the payoff to making the "threshold investments" is substantial. However, those who sell to the supermarkets tend to be the asset-elite among small farmers. The impact in the early stages of supermarket penetration, on exclusion of asset-poor small farmers should be placed in the context that typically only 10-30% of all the farmers are selling via the modern channels. That number will continue to grow (from being nearly zero only a decade ago), and that will create an increasing market challenge as well as an opportunity for the asset-poor.

The above discussion clearly brings out one thing for policy: that it is the asset-poor (not necessarily the small holder) who may be left out from participating in these supermarket chains. Implication for policy is that small holders need to be focused for “asset building”, be it through market information, education, credit disbursement, extension services, etc.

In order to understand better how organized retail can help the small (asset-poor) producers, one has to imagine the process from plate to plough, or retail to tail (farming) (Figure-1.2). The organized retailers are first interface with the consumers who buy in the organized channels, and they can effectively communicate consumers’ preferences back to producers in terms of quantity, quality, and other specific traits, especially food safety, of different commodities. This market information itself is critical for small producers to mitigate their market risk and encourage investments.



Figure 1.2 : Backward Coordination : from retail to tail (farmers)

Source : Gulati and Reardon, 2007.

The process can be strengthened and expedited if the retailers or their specialized procurement agencies (esp. processors) not only tie up with farmer organizations for their output, but also help them in providing critical inputs such as technical expertise, extension, finance, insurance, etc. which are in general scarce or even missing in the public support systems accessed by the broad mass of farmers.

Given the scale at which organized retailers/processors operate, they can bring in the services of banking and even insurance companies in this game by bringing in specialized agencies. This would release not only the credit constraints that most of the farmers, especially small ones, face but also give a cover to their production risks as they move from low value agriculture to high value agriculture. This surge of access to inputs means farmers are empowered to modernize and become more competitive both in the national and the international market. Supplying to supermarkets (or their dedicated processors) can thus be a springboard or (in bicycle) “training wheels” for exports even by small/medium farmers. Given the size of demand by organized retailers and their processors, it is very difficult for individual farmers, especially small ones, to enter into any agreement or contracts with these retailers. That is where a challenge lies in clustering farmers in groups of viable size to match their supplies with the type and size of demand by the organized retailers. It could be done through farmer cooperatives, duly supported by the governments, as was done in India under “Operation Flood” for dairy farmers, and today the retail network of Mother dairy in India procures milk from these farmer cooperatives. It could also be done through farmer floated companies or through civil society organizations.

Since organized retailers have largely (85% or so) processed and semi-processed food, major linkages with farmers are likely to emerge through large processors. Nestle in India, e.g., is procuring milk through more than 85,000 farmers, majority of whom are mid to small. Similarly, corporate house like ITC in India is linked to 3.5 million farmers for its procurement of soya, wheat etc. through its e-choupal network, and majority of these farmers too are middle to small. The upshot is that the backward integration of these organized retailers/processors can take several forms, directly through farmers’ organizations, or through “lead” farmers, who act as collectors at the village level, or through specialized and supported procurement agents, or through processors. But all this happens when the front end of organized retail is big enough to necessitate large procurement and thus pay for the price premiums that reward consistency and quality differentiation. Once they reach a critical level of say 20-30% of the total retail, their impact on modernizing the wholesale markets, logistics, and in providing necessary inputs to farmers, etc. would start becoming visible. The governments, business associations, and civil

society organizations may have to work together in a way that this opportunity is not lost but used in a manner that benefits majority of stakeholders in this chain from retail to tail.

References:

- Balaki, Brij and Sharma, S. D. 2005. "Effect on income and employment of diversification and commercialization of agriculture in Kullu District of Himachal Pradesh", *Agricultural Economic Research Review*, Vol. 18, July-Dec. 2005, pp. 261-269.
- Bhavani, T. A.; Gulati, A. and Roy, D. 2006. "Structure of the Indian Food Processing Industry: Have reforms made a difference?" in "Plate to Plough: Agricultural Diversification and its Implications for the Small holders in India", A report submitted to Ford Foundation, International Food Policy Research Institute, U.S.A.
- Natawidjaja, R., Reardon, T. and Shetty, S. with Noor, T.I.; Perdana, T.; Rasmikayati, E.; Bachri, S. and Hernandez, R. 2007. Horticultural Producers and Supermarket Development in Indonesia. UNPAD/MSU Report published by the World Bank/Indonesia, June
- Pingali, P. 2006. Westernization of Asian diets and Transformation of food systems: Implications for research and policy", *Food Policy*, 32 (2006) 281-298
- Reardon, T. and Timmer, C. P. 2007. "Transformation of Markets for Agricultural Output in Developing Countries Since 1950: How Has Thinking Changed?" chapter 55 in R.E. Evenson, and P. Pingali. *Handbook of Agricultural Economics, 3: Agricultural Development: Farmers, Farm Production and Farm Markets*. Amsterdam: Elsevier Press: 2808-2855.
- Reardon, T. and Timmer, C. P. 2007. "The Supermarket Revolution with Asian Characteristics," chapter in by A.M. Balisacan and N. Fuwa (editors) *Reasserting the Rural Development Agenda: Lessons Learned and Emerging Challenges in Asia*, Singapore: Institute of Southeast Asian Studies, and Southeast Asian Regional Center for Graduate Study and Research in Agriculture.
- Reardon, T. and Berdegúe, J. A. 2007. *The Retail-Led Transformation of Agrifood Systems and its Implications for Development Policies – A Background Paper Prepared for the World Bank's World Development Report 2008: Agriculture for Development*. Rimisp and MSU: January.