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Globalisation of Indian Diets and the Transformation of Food Supply Systems

Inaugural Keynote Address
17th Annual Conference
Indian Society of Agricultural Marketing
Hyderabad, 5-7 February, 2004

Prabhu Pingali and Yasmeen Khwaja

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Prabhu Pingali
Agricultural and Development
Economics Division
Economic and Social Department
Food and Agriculture Organization
e-mail: prabhu.pingali@fao.org

Yasmeen Khwaja
Agricultural and Development
Economics Division
Economic and Social Department
Food and Agriculture Organization
e-mail : yasmeen.khwaja@fao.org

Abstract

This paper examines the change in the nature of food demand in India in the last twenty years. It identifies two distinct stages of diet transition associated with the period of economic growth. During the first stage, income-induced diet diversification, consumers move away from inferior goods to superior foods and substitute some traditional staples, especially rice. In the second stage, diet globalisation, the influences of globalisation are much more marked with increased consumption of proteins, sugars and fats. Diet diversification has marked the process of transformation in food production systems. The implications for small and marginal farmers could be serious, unless there are incentives and policies that allow them to move away from subsistence agriculture and become more integrated in the global food market.

Key Words: India, Globalization, Diet Transformation, Food Supply.

JEL: F02, Q18.

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Introduction

India is in a phase of rapid economic and demographic transition. Per capita income has been rising steadily since the 1980s. Life expectancy is increasing and birth rates are falling. The impressive growth rates of the 1980s were maintained in the last decade with reforms to open up the Indian economy. Poverty levels continue to decline as does the incidence of malnutrition and stunting. A key feature of this remarkable period of growth has been the change in the *nature* of the Indian diet. As the world economy becomes more integrated and communication faster, diet transition would have been inevitable. But it is clear that during the most recent decade globalisation has played an enormously important role in the transformation of food consumption patterns of Indian households. This is particularly evident in urban areas. The change in consumer tastes and demand has critical implications for the whole food supply system.

The present paper looks at the impact of globalisation on both the demand side and the supply side of the food system in India. Pingali (2004) has identified six key stylised facts characterising the changes in food *demand* in Asia. These facts pertain to changes in the consumption of rice, wheat, protein and energy-dense foods, and diet diversification. We explain these facts by identifying a two-stage process of diet transformation. During the first stage consumers move away from inferior goods to superior foods and substitute some traditional staples with primary food products that are more prevalent in western diets. In the second stage the influences of globalisation are much more marked with increased consumption of proteins, sugars, fats and temperate zone products. The figures on the demand structure for food in India are consistent with our analysis of a two-stage process of dietary change. As the demand profile changes with economic growth and globalisation, so the supply systems must adapt to accommodate this change. We examine the effects of the change in demand on the supply of food in India and draw some key policy implications.

Section 2 analyses in depth diet and nutrition change in India. We begin this section by looking at the crucial factors that have brought about this change and the emergent trends. The section ends with an analysis of the main effects on social welfare. Section 3 analyses the supply effects brought about by changing demand. We examine the effect of diet change in urban centres on the structure of food production. Particularly we consider the role played by supermarkets and other food outlets that are a part of a large global concern and the interaction between distribution and production. Section 4 explores policies and strategies that may protect the livelihoods of domestic farmers and allow small farmers to participate in the transformation process. Section 5 concludes.

2. Diet and Nutrition Change in India

2.1. Driving forces of diet and nutrition change

Since the 1980s India has enjoyed quite remarkable economic growth. Incomes have been steadily rising and per capita real expenditure has increased across all groups. Significantly, and consistent with high rates of growth, the proportion of per capita expenditure on food items has fallen. Economic growth has been accompanied by rising urbanisation (see tables 1 and 2). Indian cities are expanding with substantial increases in the growth rates predicted in the next thirty years.

Table 1. Annual growth in GDP per capita

Years	**1967-80**	**1981-2000**	**1981-1990**	**1991-2000**	**1996-2000**
India	1.3	3.5	3.3	3.7	3.6

Source: World Bank, World Development Indicators, 2002

Table 2. Urban Population, percentage

India	1980	1981	1989	1990	1991	1999	2000	2001	2010	2020	2030
	23	23	25	26	26	27	28	28	30	35	41

Source: Population Division of the Department of Economic and Social Affairs of the UN, 2002 Revision and World Urbanization Prospects.

Reforms introduced in the 1990's have been successful at maintaining these rates of growth. Tables 2, and 3 provide a picture on the nature of urbanisation in India. In 1950, the degree of urbanisation was estimated at 17.3%. By 2000, this figure stood at 28% and it is projected that by 2030 the figure could be as high as 41%

(see table 2). Table 3 indicates significant regional variability in urbanisation trends, the southern and western states are leading the way, while the north eastern and eastern states are lagging behind.

Table 3. Percentage of urbanisation in Indian States

	1	2	3	4
State	**Percentage of population living in towns less than 50000**	**Percentage of population living in towns 50000-200000**	**Percentage of population living in towns above 200000**	**Percentage of urban population**
Andhra Pradesh	13.47	36.33	50.21	27.08
Assam	47.23	28.10	24.67	12.72
Bihar	29.18	34.53	36.29	10.47
Gujarat	19.59	26.87	53.54	37.35
Haryana	24.09	37.98	37.92	29.00
Himachal Pradesh	76.10	23.90	0.00	9.79
Jammu & Kashmir	31.76	10.74	57.50	24.88
Karnataka	25.31	22.52	52.17	33.98
Kerala	41.61	25.31	33.08	25.97
Madhya Pradesh	36.01	25.16	38.83	26.67
Maharashtra	14.70	11.27	74.03	42.40
Orissa	37.76	26.92	35.32	14.97
Punjab	25.37	30.30	44.32	33.95
Rajasthan	29.58	23.09	47.33	23.38
Tamil Nadu	42.95	21.65	35.41	43.86
Uttar Pradesh	29.74	22.23	48.04	20.78
West Bengal	17.05	30.62	52.33	28.03
Delhi	7.23	13.89	78.88	93.01
Chandigarh	0.00	0.00	100.00	89.78
Pondicherry	12.85	12.64	74.51	66.57
All India	26.22	23.73	50.05	27.78

Source: Census of India 2001

Increased urbanisation has seen the rise of the middle classes and it is predominantly the lifestyle preferences of this group that mark a change with the past. Moreover, economic growth alters the structure of the labour force in urban areas characterised by increased female participation with important consequences for the family diet. As more women enter the labour force, the traditional role of the Indian housewife to be in charge of food preparation is eroding. Whilst women may still

have prime responsibility for providing the daily meals, the nature of these meals may change. The consumption of ready made meals, or foods that cut the long preparation time of traditional dishes, are likely to be a predominant feature of the diet for families where there is a high female participation rate. Chapati-mixes for example can be likened to the availability of ready-made bread mixes in developed countries. Both are designed to appeal to women whose opportunity cost of time is high.

Moreover, working couples with no children may enjoy on average higher disposable incomes and are thus likely to consume food outside the home on a regular basis. It should be noted that whilst the emergence of the nuclear family is growing, India is still far from having the same numbers of two-income families that characterise labour markets of developed nations. With further increases in economic growth and greater integration in the global market, this may change more rapidly and consequently, we may see an even stronger upward shift in demand for convenience processed food.

Increased economic growth not only brings about divergences in the diets between different socio-economic groups but also across the age divide. Food preferences of older age groups tend to be relatively static over time. Where there is increased income for consumption, food preferences still tend to remain within an identifiable traditional boundary. Whilst there may be increased expenditure on superior foods, these tend to be prepared according to long-standing customs and practices. Younger generations are more influenced by new foods particularly when these are introduced through an advertising campaign that targets the group specifically. The divergence between the dietary habits of young and old tends to persist over a long-time horizon if not indefinitely. Generally, lifetime eating habits form at a young age and are difficult to reverse as age increases (see FSA, 2002; HPA, 2001).

The process of diet transformation in India can be seen as involving two separate stages:

(i) *income-induced diet diversification. A*t the start of the process of faster economic growth, diets diversify but *maintain predominantly traditional features*;

(ii) *diet globalisation. A*s globalisation begins to exert its influence, we see the adoption of markedly different diets that *no longer conform to the traditional local habits*.

During income-induced diet diversification, economic prosperity enables consumers to afford a more varied and balanced diet and to demand nutritionally superior food products. In this stage, the demand for food would still be largely directed towards traditional foods with positive income elasticities of demand as opposed to foods that display negative elasticities. Consumers typically move away from rice consumption or may consume higher quality varieties of rice. Increased consumption of wheat, in the form of bread and other wheat-based products, such as cakes, and cookies is also observed.

As growth consolidates and the economy opens up to globalisation, households start to adopt food consumption patterns that differ from the traditional ones. The new dietary habits reflect global patterns, and could be quite unlike the habits that had developed locally over many generations. Consumers exhibit strong preferences for meat or fish, temperate zone foods such as apples and highly processed convenience foods and drinks all of which are readily available in the emerging supermarkets and fast-food outlets. [1]

A critical implication of globalisation is the *severing of the link* between diets and the local availability of resources and local habits. In the second stage of *diet globalisation* in particular, consumers have access to varieties of food that were not previously available to them. Thus, consumers are no longer constrained in their demand to purchasing local produce.

The process of diet globalisation is clearly assisted by the globalisation of the media. The proliferation of global entertainment through popular television programmes or block-buster movies, permits the wide-scale advertising of global products. Both McDonalds, Coca-Cola and Pepsi have been able to broaden their appeal by linking their products either to specific films etc or personalities. Sports events that have global coverage are often sponsored by these big name food brands too. This has huge appeal particularly for the young market. The internet has broadened the advertising possibilities for these larger food companies.

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[1] The adoption of a globalised diet should be seen as a dynamic process: once the national diet opens up to the world influence, it will always be subject to ongoing changes.Thus, over a longer time horizon, we may continue to see a sequence/series of discontinuous structural breaks. Future generations may start to consider the energy dense diet as their traditional diet and move away from this to one that is more healthy with increased income. (see Popkin 1993 for a full discussion).

2.2. Trends in diet diversification in India

The two-stage model of diet diversification identified in Section 2.1 has a number of specific implications on the demand for food. During diet diversification, we should observe an increase in the demand for all traditional foods as income increases, such as rice, wheat, pulses, cereals, and animal products. During the second stage of change, as global influences begin to exert their effects, we should observe that the increase in demand is mainly concentrated on wheat, animal products and related foods, and there could be a *decline* in the consumption of traditional foods such as rice, pulses and cereals. However, it is important to note that income-induced diversification is still continuing and will do so for a long time to come but there are signs that diet globalisation is emerging. Diet globalisation is a phenomenon to watch over the future.

The evidence on diet change is both *direct* (food consumption/demand) and *indirect* (health indicators, indicators of malnutrition, incidence of diet-related diseases like obesity, cancer, diabetes, etc.). In the next section we will look at the indirect effects in more detail.

FAOSTAT figures presented in Table 4 below provide some compelling direct evidence for the two phases of diet diversification and allows us to identify the historical periods corresponding to each stage. Income-induced diet diversification occurred during the 1980s, when India experienced impressive growth rates, and stage two, diet globalisation, in the 1990s, after reforms were introduced in 1991 to open up the economy.

During the 1980s, consumption of both animal and vegetable products increased very substantially. Among the animal products, the largest proportional increase was in the consumption of milk. Among the vegetable products there were large increases across all food groups, but particularly for rice, pulses, wheat and cereals. Rice and pulses are essential components of the traditional diet. The 1980s also saw an increase in the consumption of spices and oil crops. Overall, the structure of food consumption has not changed markedly during the decade, but there was a rise in demand across all the main food groups.

The 1990s, by contrast, saw a significant change in the pattern of food consumption. There was a marked increase in the consumption of animal product, especially animal fats, whereas the increase in the consumption of vegetable products was relatively modest. Among vegetable products, there were large increases in the

consumption of wheat, starchy roots, vegetable oils, sugar and sweeteners, and fruits, whereas the consumption of rice, pulses and cereals has declined. These are evidence of a structural break relative to the previous decade. The 1990s were associated with the consumption of significantly larger amounts of energy-dense foods in the form of fats, oils and starchy roots. Whilst starchy roots represent a staple, the considerable increase in the 1990 captures the increased consumption of potatoes, a food with strong associations with energy-dense food products such as fries and potato chips. The decline in the consumption of rice and pulses and the increase in the consumption of wheat are particularly significant. It is important to note that the use of wheat in the diet is changing as well, since there is a move away from the traditional chapati to more commercialised bread products similar to those found in the West. This pattern is indicative of a specific move to a more western diet in the early stages of diet transformation. Traditionally, wheat represented a key staple in the north of India whereas in the south rice tended to dominate the habitual diet. With economic growth, dietary preferences in the south are moving away from rice towards wheat whereas in the north preferences are veering more towards rice. The net effect for India as a whole is a decline in total rice consumption given the neagtive income elasticity of demand for rice.

Table 4. Food consumption in India

(the unit used is cal/cap/day)

Product	Averages		
	79-81	**89-91**	**99-01**
Grand Total	2083	2365	2492
Total Animal Product	120	163	196
Animal Fats	23	28	47
Aquatic Products, Other	0	0	0
Eggs	3	5	6
Fish, Seafood	5	7	8
Meat	16	20	22
Milk- Excluding Butter	71	102	111
Offals, Edible	2	2	2
Total veg product	1963	2202	2296
Alcoholic Beverages	5	8	11
Cereals	1368	1508	1470
Fruits- Excluding Wine	31	34	51
Oil Crops	25	37	43
Pulses	120	133	109
Rice (Milled Equivalent)	670	779	751
Spices	11	14	17
Starchy Roots	41	40	49
Stimulants	1	1	1
Sugar & Sweeteners	193	221	247
Sugar Crops	8	9	11
Tree Nuts	3	4	5
Vegetable Oils	127	158	239
Vegetable	32	35	45
Wheat	390	461	493

Source: FAOSTAT, FAO

The values of the income elasticity of demand for the different categories of food can help us understand the changing food consumption patterns by Indian households. As income increases, the structure of consumption will shift away from low-elasticity towards high-elasticity food. This can certainly be extremely valuable for predicting the demand for the different food categories by Indian households as a result of income growth during the first phase of diet diversification. Table 5 summarises the elasticities for key foods. As expected, staples show a negative elasticity of demand. The figures suggest that with increases in income, consumers

move away from the consumption of rice, wheat and other cereals or coarse grains. Indeed, this result seems consistent with the general consensus on wheat consumption not only for India but Asia as a whole.

Table 5. Income Elasticity for Cereal and Cereal Components

Income elasticity	
Cereals	-0.05
Rice	-0.29
Wheat	-0.001
Other Cereals	-0.37

Source: Are Income-Calorie Elasticity's Really High in Developing Countries?: Some Implications for Nutrition and Income, by Arjunan Subramanian, 2001.

The figures on consumption patterns and elasticity for the staples reveal a clear direction away from what are regarded as inferior foods. However, what these figures do not fully capture is the changing nature of the household food basket itself. The demand for wheat is rising but more precisely it is increased household demand for bread that is rising. Additionally, while we see that consumption of fruits and vegetable is rising it is also clear that consumption of temperate zone fruits and vegetable accounts for an increasing share of this.

2.3. Diet diversification and health

The process of diet transformation has far-reaching consequences for public health. The adoption of a more varied and nutritionally balanced diet, typical of *income-induced diet diversification*, generally leads to a substantial improvement in public health indicators. The health implications of the *globalisation* of diets are less clear-cut. On the one hand, the availability of a much broader range of food products enables consumers to overcome the limitations of the traditional local diets in terms of availability of resources. Also, the process of food standardisation that is put in place by large food distributors and supermarket chains can ensure higher levels of food hygiene. Both these aspects would be associated with an improvement in health indicators.

The incidence of moderate and severe malnutrition in India for children between the ages of one and five has fallen markedly across all states. In 1991-2, severe malnutrition for India stood at 11.1% but by 2000-1, the figure has fallen to 6.4%. Moderate malnutrition too has fallen for the same periods from 45.1% to 41.3%. Table 6 gives a detailed breakdown for all states.

The reduction in severe malnutrition is explained precisely because of diet diversification. From table 4 it can be seen that there is amarked increase in the consumption of milk, animal protein and fruits and vegetables all of which combined can explain the reduced incidence of malnutrition.

On the other hand, the increased consumption of highly-calorific and more energy-dense food could lead to an increased incidence obesity and of diet-related diseases, like diabetes, coronary heart disease and certain types of cancer. It seems clear that dietary patterns are contributing to a clear change in the trends of chronic diseases in India (see Shetty, 2002). Shetty (2002) remarks: "There is clear evidence of a demographic, epidemiological and nutrition transition in India that is fuelling the epidemic of chronic diseases and obesity, particularly in the urban areas." From Table 7 the impact of globalisation and economic growth on health is overwhelmingly concentrated in urban areas. Indeed, whilst we have identified diet change as being a two-stage process made up of distinct phases, it is clear that the rate at which diet change occurs is a function of location. This is, of course, as we would expect. The mechanisms and institutions that drive economic growth and consequently globalisation are primarily concentrated in urban centres with a lagged effect in rural areas.

Table 6. Distribution of Children (aged 1-5 years) by Nutritional Grade in Rural Areas of Select States

(per cent)

State	Period	Normal	Mild	Moderate	Severe
Kerala	1975-9	7.5	35.7	46.5	10.3
	1991-2	17.6	46.7	29.6	6.0
	2000-1	20.8	50.4	26.9	1.9
Tamil Nadu	1975-9	6.2	34.2	47.0	12.6
	1991-2	8.0	39.7	41.7	5.7
	2000-1	10.5	50.6	35.3	3.7
Karnataka	1975-9	4.6	31.1	50.0	14.3
	1991-2	3.6	33.6	54.5	8.3
	1996-7	7.2	45.2	45.2	2.4
Andhra Pradesh	1975-9	6.1	32.4	46.1	15.4
	1991-2	9.9	39.2	41.9	8.9
	2000-1	11.5	48.6	35.8	4.1
Maharashtra	1975-9	3.2	25.4	49.5	21.9
	1991-2	4.5	33.3	44.9	17.3
	2000-1	8.2	39.6	48.0	7.2
Gujarat	1975-9	3.8	28.1	54.3	13.8
	1991-2	2.4	34.9	50.8	11.8
	2000-1	7.4	43.7	40.0	8.9
Madhya Pradesh	1975-9	8.4	30.3	45.1	16.2
	2000-1	5.8	30.4	49.2	14.7
Orissa	1975-9	7.5	35.9	41.7	14.9
	1991-2	6.0	38.2	42.5	13.3
	2000-1	6.7	38.9	47.2	7.2
West Bengal	1991-2	9.3	30.1	42.7	17.9
	2000-2	7.4	43.0	42.9	6.7
All States	1975-9	5.9	31.6	47.5	15.0
	1991-2	7.2	36.3	45.1	11.1
	2000-1	9.0	43.3	41.3	6.4

Source: National Nutritional Monitoring Bureau; Report of NNMB Surveys (1991-2), National Institute of Hyderabad, 1993; *Report of the Repeat Survey_Rural*, 2001, National Institute of Nutrition, Hyderabad, 1999; Diet and Nutrition Status of Rural Population , National Institute of Nutrition, Hyderabad, 2001.

Table 7. Urban-rural differences in chronic disease risk in developing societies

	NIDDM prevalence, Tamil Nadu (%)	CHD prevalence, Delhi (%)	CHD prevalence, Moradabad (%)	Cancer incidence, Delhi vs. Barshi, per 100000
Urban **Rural**	8.2 2.4	9.7 2.7	9.0 3.3	118.8 57.6
Reference	Ramachandran, 1998	Chadha et al., 1997	Singh et al.,1997	Gopalan, 1997

Note: NIDDIM- non-insulin-dependent diabetes mellitus
CHD- Coronary heart disease

Epidemiology of non insulin dependant diabetes mellitus in India
Urban-rural difference in the prevalence of coronary heart disease and its risk factor in Delhi
Prevalence of coronary artery disease and coronary risk factor in rural and urban population of north India
Diet, Nutrition and Chronic Disease: Lessons from Contrasting Worlds

Moreover, the steady and visible expansion of the fast food outlet appears to add credence to some of the concerns raised by nutritionists on the rising incidence of obesity in India (and other diet related illnesses). Popkins *et al.* (2001) carried out an analysis of diet trends and nutritional status in India and China and calculate the economic costs of these changes. Whilst the incidence of undernutrition by their estimates is declining, the incidence of obesity, diabetes and hypertension is rising. Table 8 summarises some of their results for India. Significantly, the consumption of saturated fats is predicted to double over a thirty year period. Popkins *et al.* go on to corroborate that the prevalence of diet-related non-communicable diseases is higher in urban than in rural areas as we would expect. A further important point that contributes to the increased incidence of a high-fat diet is that real prices for energy dense foods has fallen. Compared to the 1960's, it is now possible to eat a diet that is made up of 20% fats at almost half the cost (see Popkin, 1993).

A diet that is particularly unhealthy, for instance because it is highly energy-dense or includes a high proportion of processed food, would clearly have individual costs in terms of a higher risk of illnesses for the individuals or households involved. These costs might be taken into account by the consumers, although they are often not given the weight they deserve. However, an unhealthy diet also has social costs, in terms of aggregate public health indicators, that are not considered by individual

consumers. The worsening of the health indicators would bring about a larger health care expenditure. In addition, they could have severe negative economic implications for instance in terms of a lower productivity of the workforce, and in the worst-case scenario this could jeopardise the very potential for growth of the economy. It is well established that there is a close link between nutrition and productivity, particularly in agrarian societies. In summary, the social public health implications of switching to a new diet ought to inform food policy decisions.

Table 8. Changes in Health Indicators 1995-2025

Category	India 1995	India 2025
Overweight (including obesity)	9%	24%
Saturated fat, % of total energy	4.7%	9%
Low birth weight (30 years ago)	44%	28%
Stunting (30 years ago)	57%	53%
Hypertension	16.3%	19.4%
Diabetes (% of whole population)	2.1%	3.0%
Population size (millions)	929	1330
Percentage rural	73%	48%
GDP/capita	$340	$875
Annual wage (US$)	$170	

Source: Popkin *et al.* (2001)

Urbanisation, food consumption patterns and food security are strongly related. Table 9 shows that in some cities a large part of urban growth can be attributed to the growth of the informal urban economy, with households living in slum accommodation on the peripheries of urban centres. Supermarkets and fast food outlets etc. tend to target the middle-classes and so the location of these enterprises is likely to be in areas that are inhabited by or serve these higher income groups.

The food consumption patterns of poor migrants in the urban slums are different from those in the formal urban economy who enjoy substantially higher incomes. Urban slums are often characterised by copycat street foods, that is, food stalls that seek to mimic the branded products of fast food outlets. Moreover these

street vendors are part of the *unregulated* economy and this has implications in terms of food safety which could exacerbate the poor health effects of a nutritionally-deficient diet.

The development literature has not focused specifically on the analysis of the dietary habits of the urban poor, precisely because the overwhelming majority of India's poor live in rural areas. However, the consumption patterns of the urban poor cannot be ignored, particularly given the rate of urban expansion, and are likely to differ markedly from those of the rural poor.

An important *social* aspect of the globalisation of the diet is that, once the traditional food consumption habits have been displaced by the new consumption patterns, the change becomes largely irreversible. Processed food is both easier to prepare and less time-intensive than the traditional food. The skills required to prepare the local food that have been developed over centuries and had been passed on from generation to generation can easily be lost. The globalised diet therefore becomes an *absorbing state*, in the sense that it would be virtually impossible for the dietary habits to revert back to the old traditional ones. This process is very visible in Western countries, where the availability of convenience food is leading to a rapid loss in the ability of households to prepare the traditional recipes. The globalisation of diets would therefore have critical implications for the whole food culture of the country, leading to a cultural homogenisation to the global model.

Table 9. Slum Population in metropolitan cities, 2001

City	Slum population	Total population	Percentage of slum population
Greater Mumbai	5823510	11914398	48.88
Delhi	1854685	9817439	18.59
Kolkata	1490811	4580544	32.55
Chennai	1079414	4216268	25.60
Bangalore	345200	4292223	8.04
Hyderabad	601336	3449878	17.43
Ahmedabad	439843	3515361	12.51
Nagpur	726664	2051320	35.42
Pune	531337	2540069	20.92
Surat	406018	2433787	16.68
Vadodara	107289	1306035	8.21
Ludhiana	314759	1395053	22.56
Kalyan	34854	1193266	2.92
Haora	118235	1008704	11.72
Thane	420276	1261517	33.32
Nashik	142234	1076967	13.21
Faridabad	491131	1054981	46.55
Pimpri Chinchwad	129357	1006417	12.85
Kanpur	368808	2532138	14.57
Lucknow	N/A	2207340	N/A
Jaipur	350353	2324319	15.07
Indore	259577	1597441	16.25
Bhopal	126346	1433875	8.81
Patna	3511	1376950	0.25
Varanasi	138183	1100748	12.55
Agra	121890	1259979	9.67
Meerut	471316	1074229	43.87
All Metro Cities	16896937	70813906	23.86

Source: **www.censusindia.net**

3. Transformation of Food Supply Systems

India is beginning to observe a dramatic change in food supply systems in response to rapid urbanization, diet diversification, and the liberalization of foreign direct investment in the food sector. The observed changes are in both the retail sector as well as in the production sector. This section describes the changes in food supply systems, with a particular emphasis on provisioning the cities. It then proceeds to examine the implications for domestic production and the specific impact on small farmers.

3.1. Feeding the cities

Feeding the burgeoning urban masses is one of the most important food policy challenges facing India today and for the foreseeable future. There are three specific dimensions to the issue of feeding the cities. The first stems from the quantitative aspect. Towns are getting larger and so the size of the urban market is expanding. This requires not only increases in total urban food supply, but also the establishment of large suppliers in order to manage the increased level of activity in the market. The second dimension derives from the qualitative aspect of demand changes in cities. The rapid diversification of the urban diet cannot be met by the traditional food supply chain. It requires in effect the commercialisation and diversification of domestic production systems and/or increased food imports. The third dimension draws from the location of urban centres. India's most populous cities and towns tend to be located on the coast. Importing food to satisfy the changing food demand could be relatively easier and less costly than acquiring the same food from the domestic hinterlands. There will be a growing choice, at the margin, between domestic supply and imports, although one would suspect that both would rise in absolute terms.

The change in urban food demand is almost simultaneously accompanied by changes in retail preferences. Western style marketing outlets are gaining a foothold in most Indian cities. Whilst income-induced diet diversification may be met by local suppliers with few changes to the existing production environment, the second stage of diet globalisation requires a shift away from traditional products. Globalisation results in a significant increase in the size of the domestic food market and this generates powerful incentives for foreign suppliers and supermarkets to enter the food sector. Trade liberalization greatly facilitates the widespread establishment of global supermarket chains and fast food outlets and thus speeds up the diffusion of homogenous foods and of a global diet in the Indian market. The growth of

supermarkets is thus a crucial determinant for the second stage of the change in dietary habits.

Supermarkets are in the ideal position to deal with both the quantitative, qualitative and locational elements of changes in the urban food market. Moreover, supermarkets also play an active role in accelerating and broadening the scope for diet diversification. The wide product range of supermarkets, from fresh produce to detergents to light household electrical appliances, allows consumers to avoid the need to visit distinct retail outlets. Consumers are able to buy detergents and kitchen utensils etc., which can be regarded as complements to food preparation, all under one roof. This is particularly important in urban areas, where changes in the pattern of work place increased constraints on time. Moreover, supermarkets provide food that must conform to certain standards of safety and quality. The combination of choice, convenience and safety as offered by supermarkets has huge appeal for the burgeoning middle classes.

After a relatively slow start, supermarkets are beginning to move in to the Indian market. FoodWorld is the largest supermarket chain in India operating in Southern India, with 80 outlets and with plans to have 100 stores by end of 2003. In Andhra Pradesh, the largest chain is Trinethra with 42 outlets in Hyderabad. Tata is also planning to enter fresh vegetable marketing. Part of the reason for the initially slow proliferation of supermarkets thus far has been rent-seeking practices by the government and restrictive policies that prevent even Indian supermarkets from purchasing or renting land for retail purposes (see Deshingkar et al., 2003). In addition, the rise of two-income families – who are most likely to prefer convenience food – in India remains limited. Given the pace of urbanization and the demographic trends, this is likely to change.

Domestic producers can use the opportunity brought about by globalization and trade liberalization to gear production more specifically to both the world and the domestic market. The incentives that apply to foreign suppliers also apply to domestic farmers. Given the high costs of transporting and storing imports of fresh produce, there is a clear potential for Indian suppliers to develop new production systems in order to meet the demands of the large food outlets. This requires domestic producers to have information on the changing nature of the market and the willingness and means to adapt production accordingly. Vertically integrated food supply chain that

links input suppliers, producers, processors, distributors and retailers becomes essential for meeting the changing demand requirements as efficiently as possible.

Integration arrangements may differ. At one end of the spectrum the decision-making authority of the farmer is displaced further down the production line to the processor or retailer (who may be one and the same) so that farmers essentially are employed by these large processing firms (see Reardon and Barrett 2002). Importantly though, there are ways in which small farmers can enter the chain at various points in the production line without compromising their autonomy. For example, farmers may sell their produce at a particular point and not be tied in any further. In this case, the farmer may be guaranteed a buyer but if there is a collapse in product price the farmer is no more protected than if he were operating at subsistence level. Thus, the nature of the contractual arrangement can vary and need not necessarily involve reducing the decision-making authority of individual producers.

Vertically integrated firms are necessary to meet the changing tastes of consumers located in urban areas. This need not have adverse consequences for Indian agriculture by any means. In fact, integration may bring benefits. Vertically integrated firms can play an important role in disseminating technologies to allow agricultural transformation. Moreover, they can facilitate the process of improving product quality. Foreign-owned firms in particular, may be a source of capital and provide export opportunities. The net effect of a highly integrated agricultural system is difficult to predict *a priori.* Whilst there may be genuine concerns over the long-term livelihoods of small farmers, there are also clear benefits.

3.2. Transformation of domestic agriculture

The major challenge facing domestic agriculture is the need to adapt its production systems in order to meet the requirements of the two stages of diet diversification. In the first stage, the increased demand for domestic food products would call for a higher level of activity by traditional suppliers. The key issue is whether there are the conditions for increasing returns in production, as the overall level of the demand for food expands. During the second stage, farmers need to satisfy the demand for new types of foods, representative of a more global diet.

Income-induced diet diversification has the potential for generating a tension between small and large domestic suppliers. Given the larger scale of production, large farmers could have an advantage over small farmers in terms of their ability to make use of more cost-effective production techniques. If conditions for increasing

returns in production are met, then many small producers may effectively be driven out of the production sector. In their place, we could see the emergence of monopolistic suppliers consisting of large firms that employ more cost-effective technologies and operate under increasing returns to scale. Or, with proactive government support, small farmers could become increasingly commercialized and integrated into the market (Pingali, 1997).

During diet globalisation, domestic suppliers could face strong competition from foreign suppliers. It is important during this stage for domestic suppliers to signal that they can adapt production to meet the procurement requirements of large food outlets. Domestic producers have a comparative advantage over foreign producers of fresh produce. Fresh foods are costly to transport and store for prolonged periods. If domestic agriculture can produce the goods locally, then they have a cost advantage over foreign competitors. In India, we are already beginning to see agricultural diversification and the emergence of contracts between farmers and large food outlets (see Binny , 2003; Deshingkar, 2003).

Whilst there are challenges faced by domestic producers during the process of diet diversification, globalisation brings with it some important opportunities. The dynamic nature of the transformation of the food market places a new urgency on domestic farmers to modernise. Previously, Indian agriculture could be characterised as quite static, focusing predominantly on traditional cereal and rice production mostly in a subsistence context. Liberalization of agricultural markets requires the need to move out of subsistence agriculture to one that is commercial in nature.

Moreover, the exposure of Indian farmers to international competition can be seen as a very real opportunity to supply world markets with foods for which India enjoys a comparative advantage. Thus, whilst diversification is important, rice and cereals should not be totally ignored. The challenge here is for farmers to produce those varieties of rice and cereals for which world demand is growing. For example, the rising export demand for basmati rice.

Indian agriculture is responding to the changing domestic demand and the effects of globalisation. This is happening through both public and private investment. The Indian government, recognizing the increasing demand for fruits and vegetables, has dramatically increased investment in horticultural production in the last 15 years and this is expected to stand at Rs 20 billion by the next five-year plan. The poultry sector is one example of an industry that has reinvented itself to become a major

commercial activity. In the last 15 years growth rates in production and consumption have been 11%, well above the world growth rate of 5% (see Landes, 2002). Heavy investment in breeding, rearing and processing seems to have reaped dividends. The dairy industry has also been successful in meeting the rise in demand for milk products through the widespread establishment of milk co-operatives.

However, whilst diversification is important for the future of Indian suppliers, the direction of diversification needs to be such as to provide a hedge against risk. Potato production in India has increased quite dramatically, yet there have been glut years dramatically reducing the price of potatoes. Stories abound of potatoes left to rot by the roadside as supply outstripped demand. Moreover, potatoes are costly to produce requiring large amounts of water. The storage of potatoes is very particular and requires investment in the appropriate infrastructures. This raises an important point in that although diversification can hedge against risk it may also expose farmers to risk if the direction of diversification is inappropriate.

The experience of the potato industry highlights some of the difficulties in adapting to a more commercialised market. More formally, we can identify **seven** fundamental constraints that could hinder the ability of farmers to enter global markets on a competitive basis. The first four constraints relate to the organisation of production in the face of diversification whilst the last two constraints relate to the finance and risk issues that arise precisely because of this diversification.

First, farmers need adequate knowledge of markets and of their changing profiles. Second, it is vital that farmers have knowledge of and access to new technologies that permit them to implement the necessary changes in the production structure. The third constraint results from understanding to what extent land can suitably be adapted to new crops. This also depends on the irrigation facilities available or required and other support infrastructures, such as roads, communication, and storage capacity. Just because diversification into a particular crop may appear lucrative, it may not be physically possible to change since the costs may be prohibitive. Fourth, there is a real need to develop managerial expertise in order to partake in international markets. The thinking behind subsistence farming is radically different from the approaches that need to be fostered in a more competitive environment that is subject to new and different risks. Fifth, there are institutional constraints that pertain to the feasibility of drawing up contracts between parties that are enforceable and that allow the possibility of recourse in order to avoid exploitation

by any of the parties involved. Specifically, the institutional environment needs to such that permits novel approaches to the relationships in either labour, product or credit markets.

The last two constraints pertain to finance and risk. Farmers need to have access to credit in order to fund their modernisation projects. This requires that credit markets in rural areas are sufficiently developed. Finally, farmers must be able to hedge against the risks associated with new production systems, and thus need to put in place adequate insurance provisions. Diversification in production may itself be a form of insurance, but farmers may also require other mechanisms in dealing with large negative shocks. This could be through access to private loans or some form of government support.

3.3. Globalisation, diet diversification and the small farmer

The most critical issue for Indian agriculture is how small and marginal farmers can be integrated into the global process. Indian farming is dominated by subsistence farmers who need to be able to face the challenges that result from exposure to integrated world markets. Although subsistence farming carries its own risks, the risks arising from globalisation are quite different. Therefore appropriate mechanisms and policies need to be put in place.

The nature of the challenges facing smallholder farmers stems from competition with large-scale production and the ability to diversify into new varieties of crops. Their ability to adapt hinges fundamentally on their ability to make the necessary investments and changes. Given the rapid pace of change, it may appear that small farmers might be the losers of economic transformation. Page (2003) identifies several necessary conditions that must be met to allow local suppliers access to the changing market. Specifically, these conditions are grouped under four key areas. These are an understanding of the market, including knowledge of buyers and changing tastes; organisation of the firm to consider production equipment and investment capital, technology and quality of goods and services; good communication and transport links and fourthly, an appropriate policy environment that the legal framwork to deal with issues such as land tenure, the trading environmnet and acceptable tariff and non-tariff barriers.

The transition to the global market is neither easy nor smooth and the small farmer in particular may find that he is simply trading one set of risks for another, that is, from the risk associated with subsistence farming to those associated with diversification of agriculture on an economy-wide basis (see Pingali and Rosegrant, 1995). However, there are a number of possible strategies that small farmers could pursue in order to sustain their livelihood with the potential for growth.

In Andhra Pradesh, for example, farmers have engaged in a variety of practices designed to protect and sustain their livelihoods in the face of new markets. One such scheme is the labour-water exchange whereby marginal farmers obtain irrigation water from neighbouring farmers with tubewells and pay in labour services (Deshingkar, 2003). Where such schemes have worked, the availability of water has enabled year-round production of vegetables. Social networks and cohesion ensure that the contracts are honoured.

Another innovation is contract leasing. Small and marginal farmers lease out their lands to outsiders who then supply the land with a tubewell and grow a variety of crops ranging from carrots to chillies. The contract is verbal in nature lasting five years with no government intervention. Landowners are offered wage employment on these farms. The system has been successful largely because contracts have been entered with friends and relatives on a voluntary basis and once again enforceability is established through the social and cultural norms prevailing. Deshingkar (2003) points out that more farmers are entering these types of schemes and could be more successful than government-sponsored schemes in protecting the interests of the small farmers particularly.

The growth of village milk co-operatives in India has pointed to a successful way of integrating landless, small and marginal farmers into the changing food market. Following from the experience in the dairy industry, co-operatives are also in operation in vegetable production but with mixed results. Nonetheless, it is widely accepted that diversification into vegetables away from the more traditional cereal production does increase rural employment (see Deshingkar, 2003).

A crucial issue for the survival of small farmers is their ability to sell their products to large supermarket chains. It is critical that small farmers are guaranteed access to the procurement systems of supermarkets. This could be achieved by ensuring that structures of intermediation are in place, for instance in the form of co-operatives of small farmers, that provide the latter with a channel for selling their

products to supermarkets under fair conditions. The implications for small farmers to selling their products to supermarkets rather than to retailers or directly to customers can be far-reaching. First, their output has to conform to the standardisation requirements of supermarkets. They will therefore have to invest in the appropriate technology for ensuring this outcome, and this could impact on their production systems. Second, they might face reduced uncertainty on their sales, since they would work directly for the supermarket chains. In Africa, for example, British supermarkets have entered direct agreements with farmers in the production of fruit and vegetables (see Dolan and Humphrey, 2000). In India, this is beginning to happen with companies such as McCain (major supplier to McDonalds') negotiating with small farmers directly for the provision of potatoes (see Sabharwal, 2003). In these types of agreements, the large food outlet undertakes the required investment necessary to produce the specific product.

We have identified a number of possible measures that small farmers can use to ensure their survival in a more competitive environment. However, small farmers do face some specific problems. In particular, it is important to consider the market structure that prevails in the food supply chain between supermarkets and small suppliers. Supermarkets will effectively be able to set the price at which they will purchase the farmers' output, consistent with a monopsonistic market structure. Small farmers might thus have no control over the price of their output.

If the bargaining power lies largely or entirely with the supermarkets, we would have a monopsonistic market structure where profits would entirely accrue to supermarkets. If suppliers can also wield some bargaining power, we would have a bilateral monopoly whereby surplus profits are shared between the parties according to their relative bargaining power. However, given that Indian agriculture is dominated by small farms operating at or near a subsistence level, it is the supermarkets that are likely to have complete bargaining power.

This is important because the way the surplus is shared among the parties also has dynamic implications on the level of investment. If profits are largely appropriated by supermarkets, small farmers might not adequately invest for diversification, because they would not be able to retain the returns from their investment. This is a well-known result from bargaining theory, whereby if a party retains no share of the joint surplus it would have no incentive to invest (Grout, 1984). Farmers would not adopt new modes of production, and this could exacerbate the

displacement of local suppliers during the process of diet globalisation. In India, there has been inertia on the part of many rice growers to change production to more profitable crops. Farmers prefer to accept the risks of subsistence agriculture in a familiar crop rather than move towards commercial crops with unfamiliar risks (see Kinlay et al., 2003). A more balanced allocation of the surplus could ensure a higher level of investment at the level of small farms and lessen the negative impact of the second phase of diet diversification.

The long-term survival of small holders as the Indian economy grows even more is subject to doubt. Diversification by its very nature favours large farms. The poultry industry in India is dominated by small-scale units situated close to urban centres. The industry has shown good rates of growth, but the emerging pattern is that the size of units is growing (Mehta and Nambiar, 2002). A similar story applies to horticulture. At present, small units are able to partake in the growth of the sector, but increasingly large farms appear to dominate (Deshingkar, 2003). The ineluctable outcome appears to be that small holders and marginal farmers will have to enter non-farm wage employment in rural areas. This has implications for general rural non-agricultural development, if mass rural migration outflows are to be stemmed.

4. The policy agenda

An obvious dilemma for the Indian government is how to maintain food security, given the pressures on agriculture to diversify. Previously, the maintenance of high levels of cereal production was regarded as essential to food security. Cereal consumption per capita has fallen with economic growth and policies geared towards the production of traditional cereals and rice risk becoming less relevant.

The policy agenda needs to focus on incentives that promote agricultural diversification, but also at the same time enhance the competitiveness of cereal crop production. Trade liberalisation and the opening up of the domestic market to foreign direct investment are vital to the long-term growth of the Indian economy. In the short- and medium-term, the exposure to increased competition places many producers in a more vulnerable condition. Appropriate policies therefore need to be put in place to allow domestic producers to survive and thrive in an international market environment. This is especially important for small farmers, who also suffer from the competition by large farmers.

In Section 3.2 we have identified a number of constraints faced by farmers during transition. Government policy needs to provide support systems that develop information and education on new technologies and new markets. In addition, there is a need for investment in infrastructure to facilitate and support the process of modernisation and diversification of the food supply chain. For example, diversification will be limited if the necessary distribution infrastructures such as roads and storage facilities are absent or unsatisfactory.

A major constraint is the functioning of credit and insurance markets. This is particularly relevant for small farmers. Traditional credit markets in rural areas tend to be informal in nature, with credit being offered as part of an interlinked contract. These informal institutions are insufficient to support the structural transformation required in agriculture as a result of dietary changes. A related issue is how farmers with insufficient or no collateral can access credit. Indeed, informal credit markets have been able to survive precisely because poor farmers cannot access formal credit institutions. Government strategy needs to rethink ways of providing investment funds to poor farmers, possibly along similar lines to those adopted in Bangladesh by the Grameen Bank for co-operatives of farmers. Policies that encourage farmer co-operation also send a positive signal to the food chain of the ability and willingness of domestic suppliers to meet their demands.

In general, the policy framework may include a range of options. The government could decide to implement forms of direct intervention, such as public investment in agriculture or in infrastructures. Alternatively, the government could implement indirect measures aimed at promoting private investment. This could be achieved through more market-friendly policies, such as tax incentives or subsidies, or by reducing the layers of bureaucracy. An additional key policy instrument is the regulation of contractual arrangements, especially those that concern the procurement requirements of supermarkets *vis à vis* small farmers, in order to preclude the potential scope for exploitation.

The proliferation of supermarkets and fast-food outlets does not only promote cultural homogenisation but also product homogenisation, e.g. similar-sized apples etc., which requires investment in the technology needed to develop this and implications for the vertical food supply chain. Thus, the losers may well be small farmers who use traditional methods of production. Unless there is a state-sponsored

system to address the constraints faced by small farmers, it will be large farms that reap in the profits from the supermarket revolution.

At the aggregate level, the policy environment needs to consider the nature of the costs faced by small farmers especially if they need to switch production to new foods. Appropriate government policies can alleviate many of the possible adverse consequences that follow from the process of commercialisation and diversification (Pingali, 1997). In India, at present there is a bias to cereal production and rice production in the form of government subsidies. The focus of government policy needs to address to what extent this is still necessary in the light of changing domestic tastes and preferences. The general framework of macro-policy must allow for the full integration of the rural economy through a variety of strategies from investment in rural markets, transportation infrastructure, secure land rights and tenure and access to water systems.

Finally, the Indian government needs to develop the right environment conducive to agricultural growth in the long term. The development of specialist agricultural agencies that promote and disseminate appropriate use of technologies, and that provide clear information on the evolution of markets, could play a leading role in the transformation of the agrarian sector. Furthermore, agriculture needs to be decentralised and as such these types of agencies may be more effective in developing regional agriculture, given the specific constraints.

5. Conclusions

In this paper we have examined the change in the nature of food demand in India in the last twenty years. We identify two distinct stages of diet transition associated with the period of economic growth. The impact of globalisation has accelerated the nature of dietary change and this has implications for food supply systems. Liberalisation has meant that large food chains have a strong incentive to enter the very large Indian market but given their relative bargaining power this could have adverse effects on Indian suppliers.

However, whilst agricultural diversification has marked the process of transition in food production in order to meet the change in food demand this need not spell the demise of small farmers. We have seen in Andra Pradesh, positive initiatives taken by small farmers in securing their livelihoods. Moreover, an examination of the experiences of small farmers across the globe may provide some useful ways for the

protection of small farmers. For example, Mexico has a programme for the development of non-traditional farm products. The focus of the programme is to move small farmers away from sectors dominated by large producers to produce instead, food products that are particularly suited to small farmers. The government plays a key role in providing both market information and establishing links to buyers (see Ramirez, 2001).

The long term future of small farmers are at stake. Whilst initiatives and policies may be useful for the short and medium term protection of small and marginal, the policy and indeed research agenda must focus on the longer term. The development of the rural sector to provide non-farm and wage employment may be necessary as agriculture becomes more commercialised. If the rural sector is not adequately developed to meet the growing numbers of small farmers who find it increasingly difficult to operate in a more competitive environment, then we may see unprecedented rural-urban migration flows. The food security framework may shift from the rural poor to the urban poor.

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Agricultural and Development Economics Division (ESA)
The Food and Agriculture Organization
Viale delle Terme di Caracalla
00100 Rome
Italy

Contact:
Office of the Director
Telephone: +39 06 57054358
Facsimile: + 39 06 57055522
Website: www.fao.org/es/esa
e-mail: ESA@fao.org