Food Insecurity in India: Causes and Dimensions

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April 2005

Abstract

In this study we explore causes of the widespread food insecurity that prevails in India. It has been observed that even though the proportion of the malnourished fell by about 1 percent (FAO, 2002) through the nineties in India, their absolute number increased by about 18 million. Thus the problem of food insecurity in India is not of general systemic failure that arises due to a supply shortage. It is in fact more a problem where certain sectors (mainly the rural agrarian population and the urban informal sector) suffer from a shortage of food in a general climate of increasing production. Delving deeper, we observe that the main determinants of food insecurity in India today are the shrinking of agrarian and informal sector incomes and failures (both due to policy framing as well as implementation) of support led measures to combat poverty. The latter include the near breakdown of the targeted public distribution system (TPDS) in most regions of the country. This study uses existing scholarly work in the area as well as conventional data sources in order to show the extent of food insecurity in India today and the logic of the different patterns of its causality.

"*Food insecurity exists when all people, at all times, do not have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.*"

Food and Agricultural Organization (1996)

1. Introduction

In spite of the significant progress that our country has made in food production and sufficiency over the last 50 years, most rural populations/ communities have had to deal with uncertainties of food security on a daily basis year after year, most often generation after generation. In aggregate, over one fifth of India's population suffers from chronic hunger. Tracking the incidence of hunger over three reference periods, 1979-81, 1990-92 and 1998-2000, the Food and Agricultural Organization (FAO) of the United Nations plots the number of undernourished as 261.5 million, 215.6 million and 233.3 million respectively. (FAO, 2002) Table 1 depicts the malnourished in different countries in the Asia-Pacific region both in terms of absolute numbers as well as a percentage of the population over the three reference periods mentioned above. At the turn of the millennium India found itself doing better than countries like North Korea, Mongolia, Cambodia and Bangladesh but considerably worse than China, South Korea and Indonesia.

<TABLE 1 ABOUT HERE>

The uncertainties of the food insecure are linked to and compounded by their vulnerability from the uncertainty of sustenance/production, livelihoods, accessibility to health and education services etc. An important fact about hunger and food insecurity in India is that the growth of the number of malnourished people is in *absolute* terms rather than a percentage. Specifically, the number of undernourished people has increased by 18 million from 1991- 1992 even though the proportion fell from 25 percent to 24 percent (FAO, 2002).

This above fact makes the problem of food insecurity in India a complicated one. It highlights the fact that hunger in India is not necessarily a function of underproduction, bad monsoons or the fall in buffer stocks. In fact India today finds itself in a paradoxical situation of having food grain stocks with the Food Corporation of India (FCI) standing at an all time high of 63.1 million tonnes in July 2002 (Patnaik, 2003). This exceeds the requirements for food security by about 20 million tonnes, yet above 200 million people go hungry and about 50 million are on the brink of starvation (Goyal, 2004). The existence of food stocks above buffer requirements has not translated into availability and in 2001, a per capita availability of 151 kg per annum was lower than the level in the late 30s and around the average for the time period corresponding to World War II, which included the Bengal famine of 1943 (Patnaik, 2003). In the next sections we briefly look at coordinates, causes and prescriptions related to the issue of food insecurity at an all India level.

2. Urban Food Insecurity

According to the 2001 Census, approximately 28 per cent of the population lives in urban areas. However, in absolute terms, this population of 290 million people does not uniformly share the benefits of urbanization that the top decile of the population enjoys. Since just above 67 per cent of the Indian workforce is still dependent on

agriculture, the persistence of poverty and food insecurity in rural areas has resulted in distress-induced migration and urbanization, leading to a large tertiary labour market, referred to as the "informal sector" in the literature. This pattern of urbanization results in the development of slums and squatter settlements, all of which are characterized by unsanitary living conditions and high food insecurity. The problem is particularly acute in the 4,200 plus small towns in India, which account for 26 per cent of the urban population. The extent of casual employment, which guarantees a variable income at best, is high among both men and women in the informal sector in these urban areas.

The literature on food security has always been related to agrarian distress caused by the lack of availability or the low absorption of food in rural areas. However, the Food Insecurity Atlas of Urban India (2004) brought out by the M.S. Swaminathan Research Foundation (MSSRF) and the World Food Programme (WFP), maintains that " a closer look makes one wonder whether urban lower income groups are really better off than their rural counterparts." Taking into account that the largest population of the economically vulnerable population in cities is the one that has migrated from rural/semi rural areas, the issues related to food insecurity in the urban centres cannot be looked at in isolation from the situation that prevails in rural India. The Atlas indicates alarmingly, that average urban calorie intake is lower than average rural calorie intake and that average calorie intake has declined marginally in urban and rural India in the last three decades.[1] Furthermore, the poor in India's burgeoning urban areas do not get the requisite amount of calories or nutrients specified by accepted Indian Council of Medical Research (ICMR) norms and also suggests that absorption and assimilation of food by the urban poor is further impaired by non-food factors such as inadequate sanitation facilities, insufficient housing and woeful access to clean drinking water. More than 21 per cent of India's urban population lives in slums, 23 per cent of urban households do not have access to toilet facilities and nearly 8 per cent of urban households are unable to find safe drinking water.

Providing food security to urban populations has become more important by the fact that urbanization has been an important trend with the growth of industrialization in most developing countries. According to the 1961 Census of India, 17.97 per cent of the country's population lived in urban areas. In 2001, the figure was 27.78 per cent (285 million people). The United Nations estimates that India's urban population will reach 600 million by the year 2025. Urbanization that has accompanied liberalization and open market reforms in most developed countries and in India has brought with it the problem of inequity, poverty and hunger that co-exist with the gains to the professional/business community. The main factor that influences urban food insecurity among the poor and vulnerable groups is the dependence on casual employment wages, which tend to be variable over different days of the month.

As with the Food Insecurity Map of Rural India (See next section), MSSRF (2004) adopts a broader definition of the concept and views regarding food security in urban areas from three different angles, the availability of food, which depends on production and distribution; the access to food, which is determined by an individual's

[1] The urban *Atlas* uses existing data to analyze food security problems and the main data sources are the Census of India and National Sample Surveys (NSS). Data have also been taken from National Family Health Surveys, Pollution Control Boards, the Health Information of India compiled by the Ministry of Health, and the Environmental Compendium. The study excludes the north-eastern States of Mizoram, Manipur, Nagaland, Meghalaya, Arunachal Pradesh, Tripura and Sikkim since NSS statistics for these areas are found to be unreliable.

purchasing power, and in turn purchasing power is affected by livelihood access, access to housing, caste and gender discrimination; and the absorption of food, which is affected by sanitation, clean drinking water and health care. The study identifies 17 key indicators that include availability, access and absorption factors for the 20 states investigated. These are combined in order to make different indices that influence food insecurity.[2] These are the *Food Affordability Index*, *Livelihood Access Index*, *Housing Index*, *Discrimination Index*, *Sanitation and Health Index* and the *Nutritional Outcome Index*. These are then combined (weighted and unweighted) in order to generate a composite *Index of Urban Food Insecurity*.

According to the unweighted insecurity map in the report, the urban population of Madhya Pradesh is the most food insecure in India. Along with Madhya Pradesh, the urban populations of Orissa and Pondicherry and Chhattisgarh are classified as "extremely insecure". Urban Uttar Pradesh and Bihar remain close behind these States and are categorised as "severely insecure". The urban populations in Himachal Pradesh, Jammu and Kashmir and Delhi are considered "secure", with urban Himachal Pradesh leading this category. Gujarat, Kerala, Punjab, Rajasthan, Karnataka, Haryana, Kerala and Assam are considered "moderately secure." The weighted index shows a similar pattern with a few interesting differences from the unweighted index. The most glaring among these is that Kerala drops out of the "moderately secure" category into the "moderately insecure" category though MSSRF (2004, pg. 117) warns about the problems related to aggregation that may affect the food insecurity rankings within and across the maps, and thus these rankings may be best used "to make broad comparisons across typologies, but not attaching specific importance to relative positions vis-à-vis other states."

3. Rural Food Insecurity

As with the urban sector in India, MSSRF (2003) identifies 19 key food security indicators for 16 different states in India. These are combined in order to identify the degree of food insecurity or "map" the country into categories ranging from "extremely insecure" to "food secure."[3] This index of food security that combines access, availability and absorption of food is vastly superior to indices that are either single factors (i.e. - food-grain availability per capita or PDS offtake per capita) or proxy human development factors such as poverty ratios or mortality rates that have been traditionally used to map rural food insecurity. Most of these single factors cited above have been taken into account for conducting the comprehensive index (See

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[2] The factors are *Per capita consumtion of food-grain, Per consumer daily intake of calories for lowest decile, Percentage of population below Poverty Line, Percentage of Population dependent on casual labour in the lowest decile, Percentages of Illiterates, Percentage of households living in kutcha (temporary structure)houses, Percentage of households living in semi-pucca (sem-permanent) houses, Percentage of SC, Ratio of Male to female wage for casual workers other than public workers, Percentage of slum population, Percentage of households without facilities, Percentage of households without safe drinking water, Number of persons per hospital dispensary bed, Infant Mortality Rate, Life Expectancy at Age One, Percentage of population suffering from acute and chronic ailments* and *Juvenile Sex Ratio.*

[3] According to MSSRF(2004), the 19 critical factors that affect food security are *Deficit in Cereal Production, Instability of Cereal Production, Sustainability Index, Population affected by Cyclone in 98-99, Percentage of Drought Prone Areas, Calorie intake of lowest deciles per capita per day, Percentage of population consuming less than 1890 Kcal, Percentage of population below Poverty Line, Percentage of Population Dependent on Labour Income, Rural Infrastructure Index, Percentage of SC/ST, Life Expectancy at age one, Percentage of Population with Chronic Energy Deficiency, Percentage of severely stunted children under the age five, Percentage of children severely underweight for height under five, Infant mortality rate* and the *Health Infrastructure Index*.

footnote 2). Based on these 19 separate indicators, Bihar and Jharkhand have been classified as "extremely insecure", but what is even more alarming is that seven of the 16 states surveyed (Gujarat, Rajasthan, UP, Madhya Pradesh, Chhatisgarh, Uttaranchal and Orissa) which account for roughly half of India's geographical area are "severely insecure". The typology of food insecurity in Gujarat is particularly noteworthy in that it is characterized by a "moderately secure" urban population and an "extremely insecure" rural population, indicating the levels of inequality in income, infrastructure and access that exist in this state today. The next few sections delve into the complex and inter-related causes for the state of food insecurity in India today. The main arguments pertain to the agrarian sector as we feel that the issues of food availability, access and absorption owe their genesis to the rural poor in India, where the deprivation originates primarily through demand deflation and inadequate distribution of food through public distribution mechanisms. Through distress migration, casualization of labour and urban pressure on infrastructure it then moves to the urban areas where it is most acutely felt in small towns (population under 50, 000). [4]

4. Poverty among Tribal Populations

The two main groups that are socially and economically disadvantaged in India are the Scheduled Castes (SC) and the Scheduled Tribes (ST). These two groups have been specifically targeted in our constitution for affirmative action and accounted for 16.5 and 8.1 per cent of the total population (Census of India, 1991). This figure has remained more or less the same over the next decade. According to the 2001 Census (Economic Survey, 2004) STs numbered 84.32 million and accounted for 8.2 per cent of India's population. Unlike the SCs, whose economic and social discrimination stems from being at the lower end of the Hindu religious hierarchy, the STs have been socially and economically disadvantaged due to their isolation both geographically as well as culturally from the mainstream population. Habitation in remote difficult terrains and the practice of primarily subsistence forms of agriculture has led to significant economic backwardness of tribal communities. Moreover, the lack of knowledge regarding their lifestyle and customs has also caused them to be regarded as "backward" or "uncivilized" by majority of urban and a large section of the non-tribal rural population. According to Sundaram and Tendulkar (2003a, 2003b) the headcount ratio of the percentage of the population below the poverty line among STs was 48.81 percent in 1993-94 and 48.02 percent in 2000-2001 for the rural sector giving rise to a poverty gap of almost 20 percent with the non SC/ST population.[5] Farrington and Saxena (2003) find the central tribal belt in India to be among the poorest in rural India.[6] In urban areas too, this poverty gap is almost 15 percent in

[4] Surveys on employment conducted by the National Sample Survey Organization, during 1993-94 and 1999-00 illustrate that the proportion of casual workers among those employed in small towns (population under half a lakh) is twice as high as in the metros (towns with population above one million). In 1999-2000, 21 per cent are reported to be casual workers; and 31.7 per cent are employed in regular and salaried jobs. The corresponding figures for the metros are 12.2 and 51.0 percent respectively (Rukmani, 2002).

[5] Sundaram and Tendulkar (2003a, 2003b) use Unit Record Data from the 50th (1993-94) and the 55th (2000-2001) rounds of the consumer Expenditure Surveys (CES) carried out by the National Sample Survey Organization (NSSO).

[6] This belt includes Bundelkhand, Jharkhand, Vidarbha, Madhya Pradesh, Chattisgarh, Rajasthan, Western Orissa, Telangana where the population practice risky rain dependent agriculture supplemented by casual informal sector labour.

1999-2000 (Sundaram and Tendulkar, 2003a). The most vulnerable groups with respect to poverty in India are the agricultural labour households (rural) and the informal sector casual labour households in the urban sector. Gang et al. (2002) find that the poverty rates among tribal agricultural labour households to be at 58.3 percent as compared to 37.3 percent for the non scheduled households, using the 2400 calorie per capita measure for evaluating the poverty line. The high incidence of poverty among agricultural labour households in general and tribal agricultural labour households in particular has been borne out in the the analysis of Dubey and Gangopadhyay (1998) and Meenakshi and Ray (2002).

The high poverty rate of the tribal population has meant a lower literacy rate (Gang et al, 2002), high incidence of disease caused by low sanitation, and staggering levels of food insecurity in most areas they inhabit. Particularly in Orissa, Bihar and Madhya Pradesh STs are significantly below the poverty line. In Orissa, Bihar and Madhya Pradesh 69.6, 60 and 55 per cent respectively, of the ST population is in the expenditure group of Monthly Per Capita Expenditure (MPCE) under Rs 190 (NSSO, 1994). In some states such as Gujarat, Rajasthan and Uttar Pradesh, the percentage of ST households in lower expenditure classes is small, but the deprivation and vulnerability of these populations in expenditure classes of less than Rs 140 per capita per month is very severe. This is especially true for the more drought or disaster prone areas of rural Gujarat or Rajasthan.

5. Reasons for food insecurity in India

The Green Revolution from the late sixties onwards using modern agricultural techniques and high yielding varieties of seeds resulted in marked differences in regional concentration of food-grain output.[7] But more importantly, from the mid-sixties North and North West India were deemed by public policy to become the granaries of India with states such as Kerala, Karnataka, Tamil Nadu, Assam and Andhra Pradesh thrust into the role of cash crop production (spices, rubber, tea etc) with a small amount of arable land being used for food-grain cultivation. Agriculture with a regional thrust such as this has meant that over time there has developed an inequitious pattern of foodgrain production. Patnaik (2001) uses *Economic Survey* data to illustrate that the North and North West of India's share of food-grain production is 40% of total output. The inequality in production is actually higher

[7] The term "Green Revolution" is a general one that is applied to successful agricultural experiments in many developing countries. The agricultural experiment in India, spearheaded by Dr. M S. Swaminathan, spanned the period from 1967-68 to 1977-78 introduced a new paradigm for agricultural production to an agrarian sector that was given to traditional modes of cultivation and land tenure. Specifically, the strategy entailed the continued expansion of farming areas, double-cropping existing farmland; using seeds with improved genetics. The Green Revolution resulted in a record grain output of just over 130 million tons in 1978-79. This established India as one of the world's biggest agricultural producers. However as its many critics pointed out, the Green Revolution in India led to great leaps in agricultural technology in certain geographical locations and produced only moderate gains in others. Chakravarty (1987) points out that the main benefit of the Green Revolution has been confined to wheat, cotton and to a much lesser extent rice. The situation with regard to edible oils, pulses and coarse grains has by and large deteriorated giving rise to what may be referred to as an unbalanced cropping pattern. Furthermore, the model of large scale farming promoted by India's Green Revolution has been recently critiqued by its chief proponent, Dr Swaminathan, who now advocates sustainable small scale farming over big-agribusiness that relies on genetically altered strains and chemical pesticides, as an engine of rural growth and poverty alleviation. Swaminathan (2003a, 2003b).

today than it was in the seventies when the total share of the North and North-Western states was around 30% (Patnaik, 2001). This situation of absolute and comparative advantage in agriculture that some regions enjoy may have enhanced India's social welfare if and only if complete markets with non-distortionary pricing mechanisms were present within the borders of a country. However, given India's emerging post-independence economy with incompleteness or absence of agricultural markets in most regions (that have persisted till today), this pattern of regional specialization of agricultural production has meant that the Central Government needed to set up and operate an administered price system of public procurement and distribution to ensure that areas that were food-grain deficient got the required produce for their populations. With this primary objective in mind, the Food Corporation of India (FCI) was set up under the Food Corporations Act 1964, in order to fulfill the following objectives: price support operations for safeguarding the interests of the farmers, distribution of food-grains throughout the country for Public Distribution System (PDS) and maintaining satisfactory level of operational and buffer stocks of food-grains to ensure National Food Security. By the eighties, the PDS through procurement, stocking and sales had a beneficial effect on the price of grain and other related commodities. Even during the drought of 1987-88, the grain surpluses present with the FCI were able to be used for considerable employment creation in the drought hit regions of the country.[8] However over time, a variety of criticisms were brought forth against the PDS, that ranged from cost ineffectiveness (Swaminathan, 2001, 2003), its marginal impact (Niwani, 1994) to a high percentage of leakages (Radhakrishna and Rao, 1993). The marginal impact of PDS seemed to be a function of the universality of its coverage, i.e. – every household irrespective of income could have an entitlement card and use it to obtain food-grain. This non-targeted nature of the PDS meant that grain did not often reach the poorest in the society and gave way to a Targeted Public Distribution System (TPDS) in operation from 1997 that attempted to segment the population into two categories: Above Poverty Line (APL) and Below Poverty Line (BPL), with the latter group obtaining food-grain and essential items at a lower price. Swaminathan (2003) finds that this scheme of targeting is rife with flaws, most of which are related to the definitions of APL and BPL households. More specifically, the system has often passed over people who are the most deserving of food-aid and in certain situations given rise to greater food insecurity than the universal PDS of the pre-targeting era.

An oft-cited reason for an increase in hunger is the demand deflation that accompanies a lowering of agrarian incomes. It is true that today in India the distribution of income within the population is more skewed than it was a decade ago. According to Sen and Himangshu (2004) and Ghosh (2004) the bottom 80 per cent of the rural population who now number almost 600 million, have seen declining per capita consumption since 1989-90. This is in stark contrast to the top 20 percent of the population whose per-capita consumption (and thus income) has gone by about 40 per cent in the nineties. This drop in rural consumption has resulted in about half the Indian population having a lower per head consumption than they did ten years ago. Important reasons for this drop in rural incomes and consumption unfortunately are

[8] The drought of 1987-88 was considered the worst drought of the century (Nawani, 1994). According to a survey conducted by the Indian *Ministry of Agriculture* covering the 1987-88 drought, the gross domestic product of India decreased 7 per cent on account of the loss of crops. Moreover, nearly 286 million people were affected and the total loss of crop production accounted for 36 million tonnes, mainly due to losses in wheat, rice and coarse cereals. (Chaturvedi, 1994)

related to the same factors that have made our economy competitive on the world stage with respect to manufacturing and services. Specifically, policies involving external sector deregulation, export orientation and a lowering of protection to indigenous producers of agricultural and industrial output have been set up and operated under World Bank/IMF guidelines since 1991. According to National Sample Survey (NSS) data, rural development expenditures were cut from the pre-reform 14.5 % OF GDP to 8% of GDP to 1994 and to less than 6% by 1999-2000 (Patnaik, 2004). Coupled with this has been the fact that price for agricultural products in India have been falling from the mid 1990s reflecting the opening up of Indian markets to subsidized food-grain from the United States and Japan, which currently have farm subsidies in place amounting to 60 % or more of the value of agricultural output. The World Trade Organization (WTO) Agreement on Agriculture[9] unfortunately has made developing countries such as India more committed to the "marketization" of agriculture than developed countries like the USA which have continued to maintain their high level of agricultural subsidies. This perverse situation has meant that India, which has converted all its quantitative restrictions on imports to tariffs by April 2001(according to the WTO dictat) with an average tariff level no greater than 35% is finding that its farmers are not managing to sell their output profitably at market prices. Patnaik (2003) finds a stagnation of food-grain output per head over the last decade from even the North-West of India, a region that has always been the most consistent in food production. The loss of livelihood that has ensued from this fall in agricultural production has greatly contributed to food insecurity in the past decade.

In summing up, the main reasons for the epidemic nature of food-insecurity in India have been posited well by Patnaik (2004). In India which traditionally has had a significant private ownership of assets, a reduction in state intervention (PDS, Food for Work, Direct Aid programmes) coupled with a rapid opening up of the agricultural sector to foreign competition from vastly subsidized food-grain from developed countries (which leads to among other things, a change in composition of output and a lowering of agricultural prices) leads to a rise in rural poverty and a lowering of food security. *Thus it is a problem from the demand side (where people have unsatiated demand for food) rather than a supply cut as has been observed with droughts and famines from India's past*[10]. This collapse of rural livelihoods and incomes has occurred simultaneously with a high overall rate of growth of GDP as has been seen in the last decade.

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[9] Formalized on 31st July 2004 this agreement calls for freer trade practices on the part of both developed and developing countries with respect to agriculture and seeks an end to agricultural protectionism in a bid to introduce more market orientation to this sector.

[10] Economic Survey (2001-02, 2003-04) tends to categorize this shortfall in demand with respect to supply as a "problem of plenty" where excess stocks of food-grain at the FCI are as a result of excess procurement at artificially high prices and represent production over and above what people in India wish to consume. Nothing could be further from the truth than this 'diversification of diet' argument. Engel's law, a formalization of this argument, which states that the proportion of income spent on essential (or "inferior") goods falls as income rises, implies that people's consumption of superior cereals and high value foods like meats rise as per capita income rises (Engel, 1877). However, the absorption of food-grains in absolute terms *always* rises as a nation's per-capita income rises. This occurs even if we assume (and in India's case the diversification of diet away from grain is most definitely non-voluntary) that people diversify their diets as usage of grain increases to produce the higher value foods (like feed for livestock or in industries for production of processed foods) (Patnaik, 2003, 2004). India on the other has been displaying steadily declining food-grain absorption per capita over the last decade (Patnaik, 2003, 2004; FAO, 1996, 2001, 2002).

Up to now we have concentrated on demand and distribution issues as being central to the problem of food security all over India. We now briefly explore supply side issues like droughts and famines that have led to food insecurity in India. It may be worth noting that since the situation currently observed with hunger is primarily a demand side phenomenon. Supply side cuts contribute to further exacerbate the already existing problems with dwindling agrarian incomes and a failing PDS by causing more hunger and poverty that arise due to shortages in production. India has suffered several crippling famines over this century, including the Bengal Famine of 1943, which killed more than 3 million people. In the recent past, the droughts of 1987 and 2002-03 have created enormous agrarian distress. Devastating as they can be, Sen (1981) and Dreze and Sen (1981) aver that it is mismanagement of food-grain stock and flawed distribution policies and not necessarily a lower output of food-grain that make famines as devastating as they are.[11] A favourable case in point is the Maharashtra drought of 1970-73, discussed in Dreze (1988) and Dreze and Sen (1989), where crippling effects of famine were averted by policy of employment generation supplemented by gratuitous relief for the non-able bodied. In this case, direct public action resulted in food reaching the affected populations from less drought affected areas, illustrating that distribution policy if carefully thought out and implemented, can reduce the incidence of starvation even in the worst drought conditions.

5.1 Demand deflation

The majority of India's population continues to depend heavily on the agricultural sector for their livelihoods today. About 72 percent of the population (roughly 740 million) lives in rural areas and to a large extent their fate depends on the state of the markets for the commodities they produce (either directly through cultivation or other ancillary occupations that depend on the sale of agricultural output). (FAO, 2003) The last decade or so has seen a severe decline in employment and rural incomes leading to a lowering of aggregate demand. Several factors have given rise to this situation. The most important factor may be that Indian agriculture has never been a very income yielding venture for a variety of reasons including the uncertainties associated with the monsoons. Agrarian poverty has thus been a defining characteristic of the Indian economy and has led to various forms of state intervention over the years including the PDS, subsidies for agricultural inputs, food for work programmes and other support led activities on the part of the Central and State governments. In this situation the WTO Agreement on Agriculture required India to replace its non-tariff trade barriers with tariffs and to reduce these under a time bound programme. Accordingly, GOI started the process of removal of quotas on agricultural imports and by July 2001 all quantitative restrictions (QR) were removed on imports and a tariff system was in place. This has meant that over the last half of the nineties, the earlier protection afforded by QRs and high tariff rates on agricultural imports has been shorn away giving rise to an inflow of cheap agricultural imports from Europe, USA and Japan. FAO (2003) shows the fall in net exports and a rise in the import-export ratio for agricultural commodities over 1994-2000.

[11] Sen's studies of famines showed they sometimes occur even when food is in plentiful supply. In World War II-era Bengal, for instance, British colonial authorities hoarded food stocks, fearing a Japanese invasion. That decision was made during a general economic boom that drove the price of food exorbitantly high and beyond the reach of the poor. An evocative illustration of Sen's central hypothesis is his analysis of the famines in the late fifties in China (1958-61), in which as many as 30 million people may have died.

<FIGURE 1 ABOUT HERE>
<FIGURE 2 ABOUT HERE>

Table 2 shows India's exports, imports and net exports of food over various intervals in the last two decades. Compared to the 1992-94 period, the net exports of food is lower than in the 1996-98 period by $106.1 million or approximately Rs. 477 crores.

<TABLE 2 ABOUT HERE>

The chain of events related to the external sector in the nineties described above has had an adverse effect on the agrarian sector. The share of agriculture in India's GDP has fallen sharply in the last decade. This is *not* a function of industrialization but of depression in the agricultural sector.[12] This depression represents underproduction caused by disappearing agrarian livelihoods that are a direct result of falling agricultural prices globally for farm products from 1996-2001. Farmers in most parts of India are not only not making any surplus income from selling their produce, but are actually not able to subsist on the proceeds obtained from selling their agricultural produce. Table 3 (reproduced from Patnaik (2003)) illustrates that calorie intake has diminished in both the rural and urban sectors in India over the last 20 years with the drop in rural calorie intake being particularly severe.

<TABLE 3 ABOUT HERE>

The underproduction on the part of the Indian producers however has not resulted in a lower availability of food, which is a logical outcome of a supply shortfall. Grain imports from the USA and EU have stepped in to take the place of the domestic shortfall, boosting our grain surplus, i.e. - exacerbating the excess supply in the face of a demand shortfall and lowering prices further over time. How is foreign grain exported at such cheap prices? Herein lies the crucial piece of the puzzle. As agricultural sectors began their downward spiral worldwide in the late nineties, most Western European countries and the USA kept their farm supports constant (or increased them in certain situations) subsidizing farmers (in spite of these countries' "commitments" to lower these supports at the WTO) and enabling them to sell grain worldwide at very competitive prices. As according to the WTO mandate, the Aggregate Measure of Support (AMS) reduction for a country is not commodity-specific, this has allowed countries to actually increase support for some products while still meeting reduction commitments. The majority of the products that are heavily subsidized by the developed countries directly compete with products that are cultivated in countries such as India Exports from developed countries that are highly subsidized include dairy products, beef (including other meat), wheat, coarse cereals and sugar, all of which account for a little over 87 per cent share of the total value of export subsidies for all commodities. Of this, dairy products alone account for about a 29 percent share. Because of high subsidies on these products, a handful of countries are able to maintain their competitiveness at the expense of countries, such as India, which are not able to use export subsidies but are efficient producers of a wide variety of agricultural commodities. Indian exports that have been seriously impacted include cereals (wheat), dairy products and, to a certain extent, sugar (FAO, 2003). In 2003, the Total Support Estimate (TSE) to agriculture in OECD countries was $349.81

[12] It is worth mentioning that the share of industry has fallen too in terms of employment and output in the last decade with services and the tertiary sector growing at the expense of both the primary and secondary sectors of the economy.

billion.[13] Out of this the EU accounted for $137 billion (OECD, 2004). Farm-gate (market) prices for most crops over the whole of the EU and the USA are much lower than production costs and are much lower than corresponding Minimum Support Prices (MSPs) in India.[14] However this does not hurt a farmer in the USA or Europe as most governments pay support to farmers over the farm-gate prices at "target price" levels that make farming operations viable. In the USA, the Secretary of Agriculture is required by law to provide support for 20 specified crops including food-grains such as wheat, rice, corn, barley and oats. Empowered by the countercyclical payment corresponding to the target price, farmers in the USA can directly compete and beat prices charged by most of their competitors in Asia, Africa and Latin America.

Coupled with direct farm subsidy most EU countries and the USA have high tariff barriers for agricultural commodities exceeding certain import quotas. Table 4 illustrates that protection may be as high as 185 per cent in North America for a category (edible vegetables) for which imports exceed the quota specified.

<TABLE 4 ABOUT HERE>

In a situation of direct threat to its agricultural sector, the Indian government's policy in the late nineties has been to remove quantitative restrictions and lower tariffs on a significant variety of agricultural output (a fair number of such concessions have been unilateral reductions of trade barriers). What is surprising on the part of the Indian government is not the commitment to free trade, as this is not necessarily harmful and in fact should be emphasized in a longer term in the interest of productive efficiency. It is the myopia regarding the effect of such drastic liberalization with respect to a sector that needed a certain degree of protection through the nineties.

Furthermore, GOI has throughout the nineties attempted to freeze or lower minimum support price (MSP) for procurement of food-grain even as farmers were unable to obtain a basic livelihood from the sale of grain. It may be argued (rightly) by Dreze (2001) that very few of the really underprivileged populations (for example in tribal areas of Gujarat and Madhya Pradesh) produce enough volume to realize the effects of a higher MSP and indeed completely bypass the administered procurement price system. However a significantly lower procurement price itself will not help these vulnerable populations in any significant way and will result in a further transfer of food insecurity from the urban (recipients of cheaper grain but not losing due to lower agrarian income) to the rural sector (who lose extra agrarian income due to

[13] Completely opposed to the spirit of the Agreement on Agriculture in the WTO, the TSEs have been increasing over the last three years. According to OECD (2004), the TSE for 2001 and 2002 have been approximately $308 billion and $314 billion respectively.

[14] The procurement price of grain by state agencies in India is usually fixed and announced at the beginning of the agricultural marketing season. Depending on the stocking requirements of the FCI this administered price may be raised when more stockpiling is deemed necessary by GOI and lowered when not, allowing in this situation, the farmer to sell his grain to the market. The procurement price has in the seventies and eighties tended to be lower than the free market price but higher than the MSP (which sets a floor for this procurement price). Thus the MSP has historically been the last resort option for a farmer who cannot sell his grain on the market. In a year of surplus food-grain the market price is generally lower than the administered procurement price. This has been observed in the nineties with heavily subsidized food-grain from the EU and USA entering freely into the country. In such a situation the policy determined price floor given by the MSP has assumed importance because it assures a reasonable price for a farmer's yield so as to keep him in solvency and production when the market price dips too low.

lower support price balanced against marginal gains from cheaper food from a badly functioning PDS). This policy of lowering MPS may considerably hurt the small/marginal farmer by reducing his annual income from the threshold of a minimum living standard. A possible solution may be to use the PDS to reach the poorest subsistence farmer referred to by Dreze (2001) and at the same time provide a last-resort price support for the small/marginal farmer that gives him a minimum living standard. According to Sarma (1988) procurement and public distribution are two sides of the same coin and embody a redistributive system that buys at reasonable price from those who can afford to be productive to be able to redistribute to those who are unable to obtain a livelihood from their occupations in the rural and urban areas without the subsidy. What then is required is not to simply lower procurement prices but to reform the distributive role of the PDS so that the grain reaches the poorest of the poor at a reasonable price. A possible compromise has been suggested in 2002 by a high level committee on long-term grain policy headed by Abhijit Sen. The committee has recommended that over time, the MSP be "rationalized" to reflect actual C-2 production costs that are incurred by a farmer.[15] This would result in lowering the distortions that arise from the administered MSP being much higher than the market price but at the same time guarantee a minimum level of support to keep a farmer solvent. If the desired MSP is greater than the C-2 cost level, then procurement should be at the C-2 level with the difference paid separately as income support to farmers. In this way the transfer payment would be de-coupled from official procurement operations keeping the market more efficient. As mentioned earlier in this section this co-existence of a market coupled with support transfers has been the practice in most OECD countries including the USA.

5.2 Failure of the Public Distribution System (PDS)

A large portion of the last section discussed the effect on agrarian livelihoods of opening up our agricultural sector to foreign competition under the process of liberalization. The effect of external factors such as the influx of highly subsidized food-grain from abroad should not however be overemphasized at the cost of what may be overall seen as the failure of the GOI in recent years to target poverty and hunger, and the general unconcern regarding the welfare of 300 million Indians whose India has never been "shining". The most important indicators of this failure to frame and implement consistent internal policies with respect to poverty has been the abject failure of the government to use the TPDS effectively in providing the minimum support for the food insecure vulnerable populations of rural and urban areas.

In 1997, GOI introduced targeting in the PDS to lower the food subsidy for people above the poverty line, while keeping the level of support roughly constant for the people below the poverty line. The Below Poverty Line (BPL) households would face prices for essential commodities at half the "economic cost" borne by the FCI in procuring and distributing these essential items while the Above Poverty Line (APL) households would bear the full "economic cost." (GOI, 1997) Furthermore, unlike in the past, the Central Government would now have the sole authority in deciding on the size of the BPL population and its entitlement from the PDS. According to Swaminathan (2003), the TPDS has failed in the following ways. First, improper

[15] The `C2' costs of agriculture, computed by the Commission for Agricultural Costs and Prices (CACP), comprise all actual expenses incurred in production by the actual land-owner in addition to rent paid for leased land, imputed value of family labour , interest on value of owned capital assets (excluding land) and the rental value of owned land (net of land revenue).

targeting has meant that genuinely needy people have often been excluded. Second, targeting has also adversely affected the viability of public distribution and finally, targeting has undermined one of the main functions that it served in the past, i.e. – procuring from agriculturally rich grain surplus regions of our country to distribute to areas prone to hunger and deficit in food production.

The targeting of the PDS in India has been prone to errors of wrong exclusion (referred to as Type I errors in statistics) as well those of wrong inclusion (referred to as Type II errors). The PDS in the pre-targeting era promoted a universal programme where anyone who wished to avail of the food subsidy could do so. This led to negligible errors of inclusion but very high levels of Type II errors where people who had the wherewithal to afford food on the market availed of FCI rations. A targeted system such as the new TPDS increases significantly the prevalence of Type I errors, where people deserving of the higher level of subsidy are excluded from it due to the non-ownership of the BPL status. Cornia and Stewart (1993) assert that if a high weight is placed by a society on errors of inclusion it may be better with a targeted scheme like the TPDS, which also lowers the budgetary load for a government.[16] According to Weiss (2004), targeted measures of the 1990s in a number of developing countries including India, have cost more modest amounts as a proportion of government budgets, but their leakage rates have also been alarmingly high, as have been their costs per unit of benefit to the poor. Studies like Dutta and Ramaswamy (2001), Sharif (1999) and Misra and Swaminathan (2001) all find a lowering of errors of inclusion from targeting. However, with more targeted schemes, the usage especially by the poorest sections of society falls off steeply, indicating an increasing presence of Type I errors.

If the universal scheme is untenable because of its budgetary drain but a targeted scheme is fraught with errors of wrong exclusion, it is necessary to reform the process by which a household is adjudged BPL to get the maximum amount of the food subsidy. According to Patnaik (2003), the criteria for identifying a household as below poverty line is arbitrary and varies from state to state and in most situations based on superficial criteria that end up excluding the truly deserving. An evaluation study of the TPDS in Uttar Pradesh by Kriesel and Zaidi (1999) find that over half the proportion of households in the lowest 5 percent of the population did not get BPL cards. The official expenditure poverty line as estimated by the Planning Commission in 1993-94, puts the target BPL group as 37.3% of the rural population and 32.4% of the urban population in 1993-94 (Economic Survey, 1997-98). Low and variable incomes (often with respect to seasons) imply that a much larger section is vulnerable to income shortfalls than can be characterized by an average measure. If the Body Mass Index (BMI) is used, then the National Nutrition Monitoring Bureau (NMMB) estimated that in 1993-94, 48 % of the adult population of India was BPL (NMMB, 1996). According to the National Sample Survey (NSS) in 1994, using food share (food expenditure as a fraction of total expenditure) only the top 5 percent of the population had a food share lower than 50%. As a point of reference, 50 % food share is the benchmark that is used to classify individuals as above or below poverty line in China. Given the confusion of estimates, the biggest hurdle to increasing coverage for the TPDS may be the identification of more accurate criteria for categorizing the status of households as above or below poverty line. Moreover, statistical estimates

[16] However, Besley and Kanbur (1991) assert that in general a high leakage universal program may have more support from the more politically influential middle class and may actually generate more gains for the poor than a more finely targeted scheme that may tend to be badly implemented and under funded.

from academic studies confuse the picture further by presenting figures for rural poor in 1999-2000 as low as 25% (Deaton, 2003; Deaton and Dreze, 2002) and an overall poverty rate in 1999-2000 of approximately 13% (Bhalla, 2003; Bhalla and Das, 2004). According to Patnaik (2004a), a large number of estimates arise out of different indirect estimation methods that use a basket of food items adhering to a calorie norm in a certain base year and apply a new price index to this original basket. This allows us to get threshold levels of consumption much lower than the World Bank's dollar-a-day measure and make it harder for authorities to reach a decisive measure for demarcating the poverty line.[17] Ray and Lancaster's (2005) study on setting the poverty line based on estimated nutrient prices concurs with Patnaik (2004a, 2004b) in the importance of continuously re-evaluating the cost of obtaining the minimum energy requirements by not only updating the basket of commodities used but also reflecting the true inflation of the items in the bundle. Their study robustly finds the poverty situation in India worse than official estimates suggest. On the other hand it is true that direct methods of estimating the poverty line by calculating headcounts of the population who consume less than 2400 calories per day may give us results that are as difficult to believe as those that assert that poverty in India is less than 15 percent (Bhalla, 2003; Bhalla and Das, 2004). According to Meenakshi and Vishwanathan (2003) who use the direct headcount of people consuming less than 2400 calories a day in 1999-2000, find the ratios as high as 80 percent (Andhra Pradesh), 81.2 per cent (Kerala), much higher than the BIMORU states which are clearly observed to be more poverty ridden. Lowering the calorie requirement to 1800 and 2200 calories does not alter the rank ordering of poverty for both Meenakshi and Vishwanathan (2003) and Ray and Lancaster (2005) whose analysis find the Southern states of Tamil Nadu, Kerala and West Bengal as the poorest states in India. According to Dev (2005), public policy should not use any of these studies in order to frame support led strategies, using instead studies that use caloric norms related to the lifestyle of different populations, i.e. – there should not be one poverty line but many, based on the characteristics of the population being surveyed.

The often inaccurate classification of APL and BPL categories has also resulted in big decline in the offtake of food-grain. What is observed in this context is that not only has the demand from APL consumers fallen off but also alarmingly, the offtake among BPL consumers has fallen. An important reason for this is the fall in demand due to a lowering of income. Furthermore, due to the exclusion of the APL customers, viability of some of the fair price shops (FPS) has declined and a significant number operate only on a semi-regular basis. The lowering of demand for PDS output along with the rise in costs (primarily procurement and storage, see Swaminathan (2001)) has also meant higher prices to already acutely poor BPL customers. It has also led to perverse pricing situations such as the sale price for rice by the AP government to drought hit regions (Rs. 6.40 per kg) being higher than the government's export price per kg for wheat (Rs. 5.65 per kg) (Sainath, 2001).[18]

[17] The most bizarre example of this method of "eradicating" poverty is seen in the case of Andhra Pradesh (AP), which has an official estimate of poverty at 11%. This is clearly ludicrous given that the rural population of AP is caught in deflationary income spiral with over 4000 debt related farmer suicides and rampant and acute rural poverty. For more on rural poverty in Andhra Pradesh see Sainath (2004)

[18] The costs involved in running TPDS operations also include the payments that need to be made to corrupt functionaries resulting in significant losses per quintal (Dreze, 2002) for FPS owner. The non-remunerative nature of FPS has thus made selling on the black market a sine qua non of the existing TPDS system.

In the new TPDS system, the BPL classification is performed by the Central Government according to an expert committee of the Planning Commission. In 1997 a certain total number were eligible for BPL cards all over India according to this expert committee. States were then asked to distribute APL and BPL ration cards to the identified number of families. This form of distribution according to the number of BPL card holders seriously undermines the PDS's role in stabilization of grain prices by transfer from cereal-surplus areas to cereal deficit areas of the country (Swaminathan, 2003). In the grain deficit areas of the country prices on the market are more elevated than in the grain rich areas. The earlier universal PDS, by setting a lower price than the price on the market would moderate price hikes in situations of scarcity, stabilizing the market price and acting against the development of black markets. Under the new system of targeting, with the problem of access to FPS, identification of the BPL category (whose allocation quota is small and fixed) and a large percentage of the APL customers priced out of public distribution, the effect of stabilization on market prices is negligible. Though the stabilization function of the PDS is important, we feel that the failure of the PDS on this count may not be so important if more accurate targeting of the BPL population could provide food at substantially low prices to the most underprivileged sections of the population. If the demand for the BPL customers were satiated in this manner, this would effectively lead to a stabilization of prices on the market.

6. Conclusion

We look at the problem of food insecurity as it prevails in India today. In doing so we examine numerous data sources as well analytical viewpoints that are reflected in the literature on the topic, infusing them with our observations where required. In conclusion, the main cause of food insecurity in India today is a lowering of purchasing power among the poor and vulnerable populations in rural and urban centres of the country, coupled with the inefficient functioning of the TPDS and a slowdown of policy initiatives to step up support led security measures. The latter include food-for-work programmes and development expenditures on essential infrastructure like power, primary health and basic education. Lastly, though states like Bihar, Orissa and Madhya Pradesh show low levels of food security in almost all studies conducted at an all India level, it is the prevalence of high inequality states like Gujarat and Rajasthan that have a moderately food secure population in the urban areas coupled with a severely food insecure rural population, that should cause policy makers some concern as it is in these states that framing of support led measures is likely to be a tricky, long drawn process.

In a broader sense, there is no one set of measures that will promote food security and alleviate poverty particularly in India. Some of the factors that have always stood in the way of development of the most vulnerable sections of society have to do with the rigid hierarchical socio-economic structure that prevails in our country. The conservatism that stems from these hierarchical structures has been responsible for the discrimination suffered by SCs, STs, minorities and other backward classes who account for a large section of the deprived population. Furthermore, the commercialization brought about by the reform policies of the nineties has deprived our economy of the communal modes of economic activity that characterized it even fifty years ago (Chakravarty, 1987). A fallout of this has been the high level of extant inequality, and even in the era of 'India Shining' it is virtually impossible for us to imagine that the rural poor can have even a fraction of the access that is possessed by

the top 10 per cent of the country's population. It is clear though that implementing development strategy in a piecemeal manner will only have the effect of providing short term relief to disadvantaged sectors with low intertemporal sustainability. *In other words, growth needs to be self-sustaining in order to make a difference*. Small farms need to be made viable again. The rural sector requires credit policies that lead to cooperative formation and the creation of actual productive assets rather than mere employment creation, which can only be the first stage of the rural developmental process. Further, the planning process in India has always been fraught with errors in not just the implementation of policies *but in their actual conceptualization*. Examples of such misgovernance are everywhere and a large portion of them today are related to the blind desire to privatize and deregulate all sectors of the economy. It must be very clear to all lawmakers today that reducing rural credit, dismantling the PDS, reducing services in essential healthcare and lowering taxes in order to promote a 'trickle down' effect leads to nothing but a rise in inequities, narrow sectoral growth at the expense of the human development and a rise in the dualism that has plagued our planning process right from the start. In a recent Times of India editorial, MIT economist Abhijit Vinayak Banerjee cites India as having a *declining* ratio of the share of income tax in the GDP (Banerjee, 2005).[19] It must be understood by all that what the government gives with one hand (tax relief) it takes away with the other (lowering of state provided services). If a 'bubble up' (rather than trickle down) effect on growth is desired, then basic services have to be emphasized. This includes providing the access needed by vulnerable populations so that they can participate in economic life rather than be awash in an exploitative informal labour sector and risky rain-fed agriculture. Thus, policies need to be framed that account for both the expenditures involved as well as the *revenues* that will allow the social sector to provide essential services, along with the regulatory wherewithal to ensure that the services reach the people who need them.

In conclusion we would like to emphasize that an anti-growth backward looking policy regime that completely does away with markets is not what we wish to advocate for India. However complete faith in a system which cannot be availed of by over 60 per cent of the population as they stand today cannot be a system that is efficient for the country as a whole even though it may serve the needs of certain groups within the country. One reason why markets have worked well in countries of Western Europe and the USA (though even there they have often promoted inequity) is the existence of simpler regulatory frameworks that have led to better market signals and very importantly endowments of economic agents that have allowed them to not be rationed out of the market. Thus along with market formation there is a strong need to promote countervailing measures on redistributive policies that may indeed allow the most vulnerable sections of the population to over time make markets a viable option for the conduct of their economic activities.[20]

[19] Banerjee (2005) asserts that the main reason for this is the tendency of GOI to change the band of incomes that are tax exempt in order to attempt to keep multiple sectors of the economy happy. This tendency to put something in for everyone in the budget has resulted in a growth of revenues at a rate far lower than the growth in the GDP. An example of a country that has seen growth in tax revenues that paralleled its growth in GDP is China where the share of income taxes in the gross domestic product grew from approximately 0.1per cent in 1990, to about 1 percent in 2001, and is projected to cross 4 per cent by 2010.

[20] An example of the co-existence of redistributive elements along with a fully functioning market has been proposed in agricultural procurement by Abhijit Sen in 2004 (see section 5.1)

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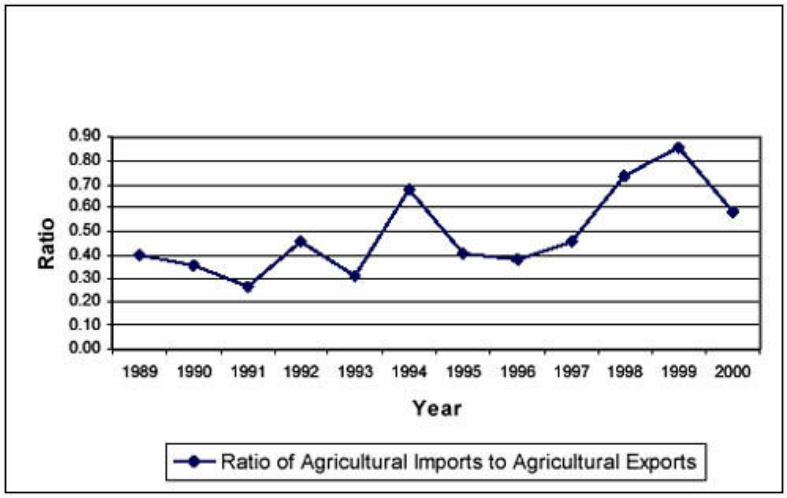
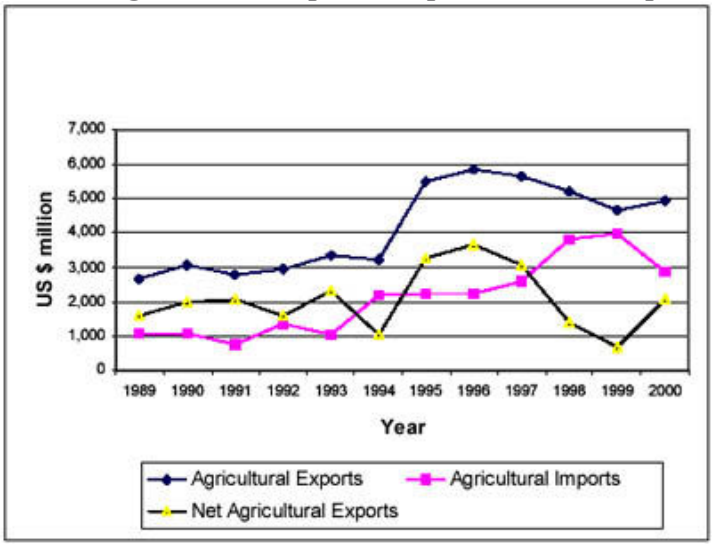
Tables and Figures

FIGURE 1: India's Ratio of Agricultural Imports to Agricultural Exports



Source: FAO (2003)

FIGURE 2: India's Agricultural Exports, Imports and Net Exports



Source: FAO (2003)

TABLE 1 - Malnourishment in the Developing World

DEVELOPING WORLD	Total population			Number of people undernourished			Proportion of undernourished in total population		
Region/subregion/country (undernourishment category)	1979-81	1990-92	1998-2000	1979-81	1990-92	1998-2000	1979-81	1990-92	1998-2000
		millions			millions			%	
DEVELOPING WORLD	**3 240.2**	**4 050.0**	**4 638.9**	**920**	**818.5**	**798.8**	**28**	**20**	**17**
ASIA AND THE PACIFIC	**2 303.5**	**2 812.1**	**3 162.5**	**727.3**	**567.3**	**508.1**	**32**	**20**	**16**
East Asia	1 060.9	1 241.1	1 342.4	307.7	198.2	128.4	29	16	10
China* [3]	998.9	1 169.5	1 264.6	303.8	193	119.1	30	16	9
Dem. People's Rep. of Korea [4]	17.2	20.3	22.1	3	3.7	7.5	18	18	34
Hong Kong SAR of China [1]	5	5.8	6.7	0.1	0.1	0.1	-	-	-
Mongolia [5]	1.7	2.3	2.5	0.3	0.8	1	16	34	42
Rep. of Korea [1]	38.1	43.3	46.4	0.5	0.8	0.7	-	-	-
OCEANIA	**3**	**3.9**	**4.7**	**0.7**	**0.9**	**1.3**	**24**	**25**	**27**
Papua New Guinea [4]	3	3.9	4.7	0.7	0.9	1.3	24	25	27
SOUTHEAST ASIA	**354.8**	**444.8**	**509.4**	**88.4**	**76.5**	**63.5**	**25**	**17**	**12**
Cambodia [5]	6.7	10	12.8	4	4.3	4.6	60	43	36
Indonesia [3]	150.3	185.6	209.3	36.6	16.7	12.3	24	9	6
Lao People's Dem. Rep. [4]	3.2	4.2	5.2	1	1.2	1.2	33	29	24
Malaysia [1]	13.8	18.3	21.8	0.5	0.6	0.4	4	3	-
Myanmar [3]	33.7	41.3	47.1	6.2	4	3.1	18	10	6
Philippines [4]	48	62.5	74.2	12.8	16.2	16.8	27	26	23
Thailand [3]	46	55.5	62	10.4	15.6	11.5	23	28	18
Viet Nam [3]	53	67.5	77.1	16.8	18	13.7	32	27	18
SOUTH ASIA	**884.9**	**1 122.4**	**1 306.1**	**330.5**	**291.6**	**314.9**	**37**	**26**	**24**
Bangladesh [5]	85.5	112.7	134.6	33.8	39.2	47	40	35	35
India [4]	689	861.3	992.7	261.5	215.6	233.3	38	25	24
Nepal [3]	14.6	18.6	22.5	7.1	3.5	4.3	49	19	19
Pakistan [3]	81.3	112.5	137.6	25.1	28.2	26	31	25	19
Sri Lanka [4]	14.6	17.2	18.7	3	5	4.3	21	29	23

Source: SOFI (2002)

TABLE 2: India's Food Exports, Imports and Net Imports

Period	Exports (US$ million)	Imports (US$ million)	Net exports (US$ million)
1996 -1988	977	1 356	-378
1992 -1994	1 410	1 054	355
1998 - 2000	2 747	2 770	-23
Percentage change			
1992 -1994 over 1986 -1988	44.3	-22.2	194.0
1998 - 2000 over 1992 -1994	94.9	162.7	-106.5
Coefficient of variation			
1989-1994	16.29	44.40	81.82
1995-2000	7.92	31.90	149.20

Source: Computed from FAOSTAT database (FAO, 2003).

TABLE 3: Average Calorie Intake Per Diem in Rural and Urban India (1983 – 1998)

Year	Rural	Index	Urban	Index
1983	2309	100	2010	100
1987-88	2285	99	2084	103.7
1993-94	2157	93.4	1998	99.4
1998	2011	87.1	1980	98.5
2002-03 (est.)	1750 (approx)	83.7	1950 (assumed)	97

Source: Patnaik (2003)

TABLE 4: Average in and over quota tariff rates in the EU and North America

Product	EU-15		North America	
	In quota tariff rates	Over quota tariff rates	In quota tariff rates	Over quota tariff rates
Meat and edible meat offal	14	89	17	164
Dairy produce	30	74	11	121
Coffee, tea, mate and spices			50	72
Cereals	16	72	25	80
Sugars and sugar confectionery	6	114	28	109
Edible vegetables	5	56	50	185
Edible fruits and nuts	6	42		
Preparations of vegetables, fruits, nuts and other parts of plants	28	105	26	132
Preparations of meat, fish, etc.	28	55	3	205
Preparations of cereals			8	44

Reproduced from FAO (2003)
Source: Gibson et al. (2001).
Note: Tariffs are bound Most Favoured Nation (MFN) rates based on final Ururguay Round Agreement on Agriculture (URAA) implementation.