

WORK IN PROGRESS – Draft for comments only

India's Poverty, Agriculture and Social Development in a Global Context: Comparisons with Developing Countries and China

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Summary

This paper is a work in progress. It raises more questions and offers more hypotheses than provides answers. Its objective is to take advantage of this gathering of some of the best minds in and on India, as well as solicit reactions from other India experts, to some basic indicators of performance and their possible explanators. Its intention is to set the stage for developing a better understanding of the “levers” for accelerating India’s socioeconomic performance and help India to truly join the ranks of “emerging economies”. Drawing on a number of comparative data sources and research studies on various aspects of development, the paper shows that despite improvements in India’s performance over the last two decades, India lags far behind many East Asian countries in growth and development, particularly China, the country of the size and complexity comparable to India’s. With widely differing performance over two decades the gap between the two countries has increased substantially. While one can debate the results of individual studies and specific indicators, the consistency of results across many different sectors from many different data sources and analysts leads to a clear conclusion that the growth and development performance of other Asian countries, including China has been superior. The question is why?

The central theme of this paper is that our record in addressing strategic issues of growth and development and, more importantly, in the implementation of many well intentioned development policies and programs is not as good as that of our comparators. Despite a long and rich history of India as a nation of inventors and innovators, recently enshrined in India’s central place in the communication and information technologies, China has fared much better across a broad spectrum of performance indicators, including in overall and per capita GDP growth, population growth, savings, and domestic and foreign investment. In the quality of growth as well, India has lagged behind: in progress on poverty reduction, adult and particularly female literacy, infant mortality, health and nutrition, agricultural production and productivity, and rural nonfarm employment.

These differences in outcomes seem to be a result of a more results oriented and effective incentive structure in China than in India. The substantial difference in the performance ratings of World Bank financed operations across a variety of sectors in China and India is but one illustration.

While there are and will remain vast differences in India and China politically and socially, there may nevertheless be scope for learning lessons from the Chinese experience. Several areas for possible lessons present themselves. First, while both India and China have each moved from central planning to the increased use of market forces, (and both offer scope for further policy reforms as well as reforms in governance), China has clearly been more agile and skillful in adjusting its old command and control approach to the use of market forces and incentives to “get things done”, be they in the economic, social or environmental sectors. Despite a longer history of markets and private entrepreneurship in modern times, India has been slower in dismantling controls. A policy question is: how have the Chinese managed to get around the vested interests grown around old policies, and what lessons do they offer for sequencing, phasing, speed and accountability for the design and implementation of policy reforms in India? Second, apart from strong national ambition about its position in the world, and national leadership to steer the management of its social and economic objectives in that direction, there is also more effective decentralization and devolution of fiscal and administrative responsibility and accountability in China down to the provincial, county, village and household levels. The devolution has occurred despite the lack of a “western style” democracy, i.e., in the form of free and frequent multiparty

national and state level elections as in India. These differences in the nature of decentralization, responsibilities and accountabilities are well worth investigating further to learn lessons. Third, in setting national goals and realizing social objectives, China has no doubt benefited from a less stratified social structure than has historically prevailed in India. Despite the breakdown of some social barriers in India and processes underway for their further dismantling, at least to an outside observer, the democratization process appears to have heightened awareness of the caste and community based social differences in a way which appears to slow down India's social progress, another area in which comparisons with East Asian countries generally and China in particular would be well worth pursuing. The broad comparisons with other countries help to support a view that India's rightful and much deserved place in the global information technology revolution is by itself unlikely to fill the wide gap that exists in its socioeconomic performance vis a vis its comparators.

Introduction

Our country, India is rapidly being recognized globally as a powerhouse on technology. A number of Indians are listed in a recent fortune magazine as some of the 300 richest in Asia, many head or have initiated some of the well known technology companies and other blue chip multinationals and US corporations. This is not surprising to an Indian. After all India's advances in mathematics (India invented the concept of zero), astronomy, medicine, physics, religion, and philosophy are well known. Several major religions originated in India. The decimal system was developed in India in 100 BC. Algebra, trigonometry and calculus came from India. The world's first university was established in Takshila in 700BC. Sanskrit is the mother of many European languages. Ayurveda is the earliest school of medicine known to humans. Bhaskaracharya calculated the time taken by the earth to orbit the sun hundreds of years before the astronomer Smart. The earliest reservoir and dam for irrigation was built in Saurashtra.

Yet South Asia remains the region with the largest number and share of the poor in the world. Nearly 43.5% of the global poor or 522 million people reside in South Asia (See Figure 1). The number of people living below the poverty line (US \$1 a day) has increased in the South Asia and the Sub Saharan Africa regions between 1987 and 1998, but has declined dramatically in the East Asia and Pacific Region (See Figure 2). More than one third of the global poor, or 433 million² people live in India. Even though the countries in the East Asian region suffered during the economic crisis of the late 90s, and some in India congratulated ourselves for not having been so outward oriented, East Asian countries are rebounding from the crisis and are still better off than South Asia and India in terms of poverty levels because their capita GNP growth rates for two decades (1975 to 1995) have been far higher than India's (Table 1).

Table 1: Economic Performance of India and Selected Asian Countries

Country	GNP annual growth rate (%) 1975-95	GNP per capita Annual Growth Rates (%) 1975-1995	GNP per capita Annual Growth Rates Before and After the East Asian Crisis				
			1990	1995	1997	1998	1999
India	5.0	2.8	3	6	3	4	5
China	9.1	7.7	3	8	7	7	6
Korea, Republic of	8.3	7.0	8	8	4	-8	10
Thailand	7.8	5.9	9	8	-3	-12	4
Indonesia	7.1	5.1	7	6	2	-18	0

Source: SIMA data base and UNDP Human Development Report 1999

The per capita GNP performance is a result of a combination of higher GNP growth rates and lower population growth rates, in turn a result of a far greater investment in the social sectors, and a much larger effect of overall economic growth in pulling people out of poverty in the East Asian Region relative to the other two regions. The World Bank's new study on the Quality of Growth has generated much debate on whether and how much the quality of growth matters relative to its quantity³. In the case of India the debate is facile. India needs both faster and better quality growth. An important policy question for India is can it achieve both higher growth and better quality growth *at the same time* and what are its implications for policy. This is an important question because although there are models within India such as the state of Kerala,

² This has been calculated using the International poverty line of US \$1 a day and assuming that the proportion of population living below the poverty line in 1998 was the same as in 1997 i.e. 44.2%.

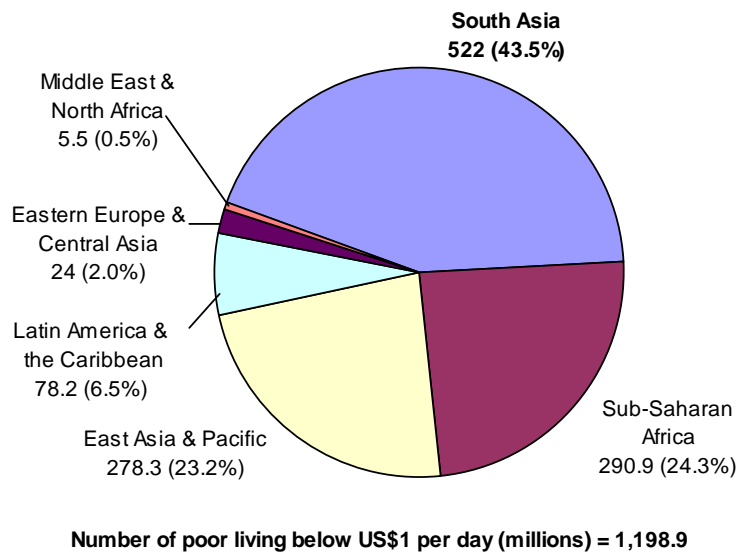
³ Economist September 30 and October 7, 2000.

unlike East Asian countries they have not managed to achieve both rapid growth and high quality growth at the same time.

Poverty Trends and Comparisons

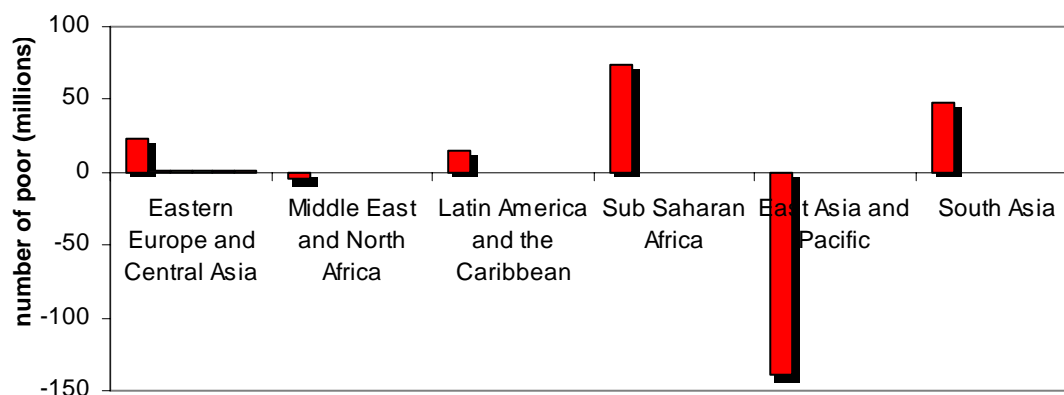
Poverty estimates are sensitive to the data collection methodology and assumptions. In its inter country comparisons the World Bank uses income or consumption figures based on household expenditure surveys to prepare estimates of global income poverty. Survey design varies between countries and over time, often making comparisons difficult. While some countries ask respondents about the food spending over last month, others do so for the past week. One month recall data tends to result in higher poverty estimates than one week recall data. Converting information collected through surveys into measures of well being requires assumptions on how to treat measurement errors, and how to allow for household size and composition in converting household data into measures for individuals (World Bank 2000a). These assumptions underlying the calculation of poverty estimates are the reason for the debate whether the pace of poverty reduction in India slowed down in the 1990's, particularly in the rural areas. If the average consumption figures from National Sample Surveys are replaced by the average consumption figures from the national accounts (NAS) poverty would show a downward trend during the 1990's (Bhalla 2000). Of course, the estimate of consumption from NAS, as a residual, is also subject to measurement errors as a result of ignoring its distributional implications. There is also evidence that the trend of slowing down in rural poverty reduction may be the use of inadequate price deflators for rural areas (Deaton and Tarozzi 1999).

Figure 1: Number of Poor Living below US \$ 1 per day in Developing and Transitional Economies 1998 (millions)



Source: WDR on Poverty and Development 2000/01

Figure 2: South Asia's Increase in the Number of Poor Relative to Developing and Transition Economies (between 1987 and 1998)



However, despite the debate on the precision of the estimates, the gains in poverty reduction over the last three decades⁴ in India are still behind those of other countries. Some would argue that India's "initial conditions" at the time of independence were much worse than those of other countries but when purchasing parity levels of per capita income are considered, the situation in India was quite similar to that of Korea and better than Indonesia in the 1960's (Table 2). And whereas China's per capita income was about 20 percent higher than India's in 1960 in PPP terms, its PPP income level has quadrupled since 1960 whereas India's has only doubled, a growth performance which cannot be explained by the small initial differences.

Table 2: Real GDP per capita (\$PPP) 1960 and 1995 for India and Selected Asian Countries

Country	1960	1995
India	617	1422
China	723	2935
Korea, Republic of	690	11594
Thailand	985	7742
Indonesia	490	3971
All developing countries	915	3068

Source: UNDP Human Development Report 2000.

In poverty reduction, China, Indonesia and Korea have performed much better than India as well. The proportion of population living in poverty is estimated at 18.5% for China (1998), 15.2% for Indonesia (1999), less than 2% for Republic of Korea (1993), as compared to about 44 % for India (1997) (World Bank 2000a)⁵. This significant difference in performance has led T. N. Srinivasan, a leading Indian economist, to argue in his critique of the World Bank's latest World Development Report, *Attacking Poverty*, that instead of relying on anecdotes and cross country

⁴ National poverty estimates show that the percentage of population living in poverty declined from nearly 50% in the 1970's to 35% in 1994. World Bank data and WDR 2000/2001.

⁵ As different countries have different definitions of poverty the World Bank uses an International Poverty line of US \$1 day measured in 1985 international prices and adjusted to local currency using purchasing power parity to make cross country comparisons.

regressions for deriving its conclusions, the WDR should have undertaken a more nuanced and in depth analysis of the comparative performance of China and India, the two countries with an overwhelming majority of the world's poor.

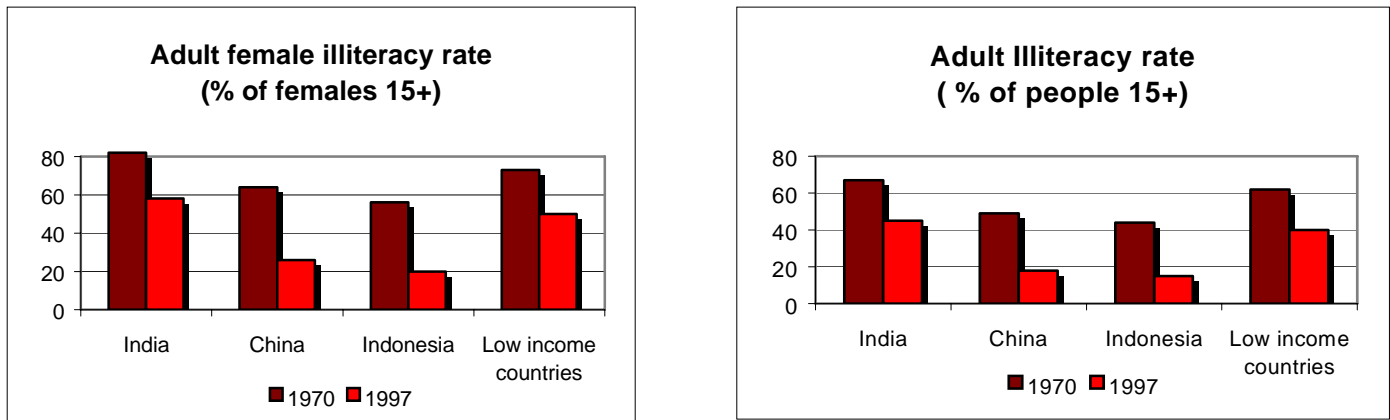
This paper makes a beginning in that direction. It compares the performance of India with that of a few East Asian countries, particularly China, which started from similar levels of development in the sixties, but have achieved impressive economic growth rates, decline in poverty levels and improvements in social indicators. The comparison with China is particularly instructive as it is comparable to India in terms of the share of the global population (21% being China's share and 16.6% India's in 1998) and both are home to large number of world's poor (19% of the global poor in China compared to 36% of the global share in India). The paper explores a variety of pieces of evidence on performance to identify a range of questions that need further urgent analysis to understand the reasons for the differences in the performance, and their implications and lessons. In this way first and foremost the two giant countries can help to move their own development global agendas forward, and second, explore how the global community can help them to accelerate the process of mutual learning given the global implications of the pace of their development.

Social Indicators

Comparisons between India and the East Asian countries on social indicators is complicated by the fact that the level of some of the social indicators of the East Asian countries was higher in the sixties and seventies than India's. But India has also trailed behind China, Indonesia and other low income countries in the sense that India has made slower progress in terms of percentage improvement over its initial conditions. (Annex 1) The adult female illiteracy rate in India declined from 82% in 1970 to 58% in 1997 (24% change) compared to 26% in China relative to its own base of 64% and is much higher than the rate for low income countries. (Figure 3). The infant mortality rate in 1997 was 71 per 1000 live births in India compared to 32 for China and 78 for low income countries (figure 4). Although India had higher life expectancy than China and Indonesia in the 1960 it is now behind them. The gains in life expectancy over the last nearly four decades have been 43% in India compared to 94% in China and 58% in Indonesia. India is also behind China and Indonesia total adult literacy and male literacy rates and female primary school enrollment. Of course there are regional differences among states within India such as Kerala which, in terms of social indicators, are more akin to China than to Bihar. Nevertheless for the country as a whole, according to the UNDP Human Development Index,⁶ India ranks 128 in a ranking of 174 countries compared to China's 99 and Indonesia's 109 (UNDP 2000).

⁶ Human development index measures the country's achievements in terms of life expectancy, educational attainment and adjusted real income(UNDP2000)

Figure 3: India's Slower Gain in Literacy



Communicable Diseases

At the national level, communicable diseases and maternal and pre-natal causes continue to account for a large number of deaths in India: about 470 per 100,000 population (standardized for age), compared to only 117 in China and 187 in the world as a whole. The incidence is likely to be even higher in the poorer states. The annual risk of infection with TB in India is 1.5%, equal to the average for Sub-Saharan Africa and about 55% higher than the global average. An estimated 300,000 deaths are attributed to TB annually; estimates suggest that by year 2000, India may have at least 20 million active TB patients if present rates persist, with one fifth being infectious. India has about 2 million or one third of the world's leprosy victims (World Bank 1995). And after South Africa, India has the largest absolute number of reported AIDS cases in the world. 3.7 million people are HIV positive in India compared to 4.2 million in South Africa although in the share of the affected population many sub-Saharan African countries fare much worse than India.⁷ (UNAIDS 2000) An encouraging story according to a recently completed World Bank funded AIDS project is that project implementation has been effective and there is strong commitment among health officials, and NGOs in some states to address the problem effectively, a situation which regrettably does not prevail to the same extent in Africa.

State of the Children

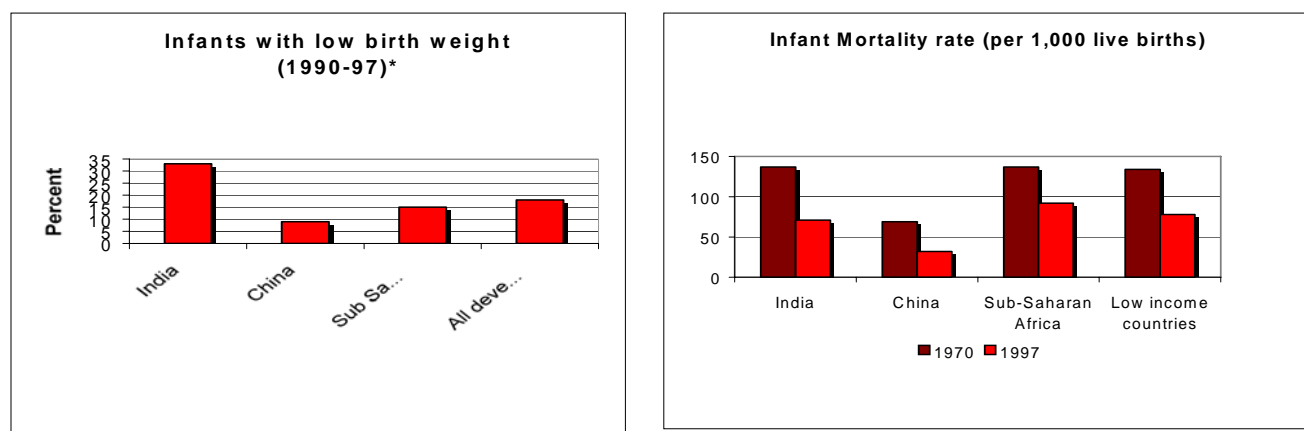
In terms of future human capital and development prospects, the state of the children is even more significant an indicator than poverty levels. Data on infants with low birth weight as an indicator for child malnutrition⁸ shows that nutritional status of children in India is far worse than in Sub-Saharan Africa. 33% of the infants had low birth weight in India compared to 15% in SSA (figure 3) (UNDP 1999). This is disturbing because 54% of young child mortality in developing countries - is associated with malnutrition (WHO 1996) and unlike in Africa India has had a major success in accelerating food production through the green revolution so that its granaries are overflowing with surplus grains. Yet child malnutrition rates in South Asia as a

⁷ The HIV prevalence rate among 15-49 year olds is 0.7% in India compared to a shocking 35.8% in Botswana and 19.9% in South Africa (UNAIDS 2000)

⁸ The term malnutrition is used to refer to a number of diseases, each with a specific cause related to one or more nutrients (for example, protein, iodine or calcium) and each characterized by cellular imbalance between the supply of nutrients and energy on the one hand, and the body's demand for them to ensure growth, maintenance, and specific functions, on the other.

whole (49.3%) are much higher than Sub Saharan Africa (31.1%). Low status of South Asian women is one reason for poor performance of the state of children (Smith and Haddad 2000). Women's low status both explains and is explained by their lower level of literacy. Research has shown a strong linkage between women's education and the quality of child and maternal care they render (World Bank 1988).

Figure 4: Low Rates of Children's Well-being



Basic Health Services

Health progress in India has also not been as rapid as China (Table 3). An OED study on Health Care in India identified the reasons for slow progress to be the high population growth rate that puts strain on government resources, per capita public health expenditures half those of comparable countries and one third of the estimated cost of essential package of health services, inadequate funding of programs used mainly by the poor, limited access of the poor to the programs available, insufficient provision of safe drinking water and sanitation, poor quality of service, inadequate focus on maternal and child health and neglect of important determinants of health and demographic status lying outside the traditional confines of the sector such as environmental pollution, education of mothers, smoking, policies to reduce road and traffic accidents etc. (World Bank 1999b). China in contrast has made impressive progress in the reduction of infant mortality and gains in life expectancy through a combination of reduction of malnutrition, improvements in water supply, hygiene and sanitation, reduction of population growth rates, increased investment in health and improved availability of food (World Bank 1984). One area where India and China have comparable indicators is access to safe water.

Table 3: Health Indicators India and China

	Public Health Expenditure (% of GDP) 1990-97*	% of Population with Access to Safe Water (1995)	% of population with Access to sanitation (1995)	Low Birth Weight Babies 1990-97*	Prevalence of Child Malnutrition 1992 - 1997		Disability Adjusted Life Years (DALYs) 1990
					Weight for Age % of Children Under 5	Height for Age % of Children Under 5	
India	.7	85	16	33	53	52	339
China	2.1	83	-	9	16	31	184

* Data are for the most recent years available

Source: World Bank 1999a, UNDP 1999 and Murray and Lopez 1996.

Rural Development: Farm and Non-Farm Sectors

India's performance on poverty reduction cannot be assessed without understanding its performance in rural development. Three quarters of India's population lives in rural areas, 28 % of GDP comes from agriculture and the agriculture sector provides employment to 256 million people (1997), over two-thirds of its labor force (FAO 1999, SIMA Database). Hence, it is no surprise that the performance of agriculture is critical for poverty reduction – a fact born out by the historical trends in poverty, as well as the changes in the levels of poverty over the last few years, which all show a strong (negative) correlation with the performance of agriculture.

Nevertheless, despite its traditional importance, restricting attention only to agriculture would miss a substantial part of the story, particularly with regard to a holistic strategy for future growth and poverty reduction. Some of our poorest people, tribals, marginal populations, women and children are heavily dependent on the forest and fisheries sectors for their livelihoods, and the performance of the non-farm economy is as important to the welfare of the poor, particularly those without any real assets. Related to the performance of these natural resource based sectors are growing environmental problems. For example, although per capita reported land is greater in India than in other South East Asian countries, the amount of forest cover in India is the lowest (Table 4). Further, the quality of much of the deforested land is questionable for agricultural production, raising not only environmental concerns but also imperiling the livelihoods of the poorest of the poor that have traditionally depended on the forests. Indeed land use, land degradation, land productivity in rural areas are inextricably related to the environment, and non-farm rural employment provides an important source of releasing some of this pressure.

Table 4 : Per capita Rural Land and Forest Area Availability (in ha.)

<i>Country/Region</i>	<i>Per capita Land Availability in Rural Areas* 1997</i>	<i>Per capita Forest Area** 1995</i>
India	0.23	.068
Indonesia	0.14	.6
Thailand	0.36	.2
China	0.15	.1
Philippines	0.16	.1
East Asia & Pacific	0.15	.23
South Asia	0.19	.06
Sub-Saharan Africa	0.26	.83

Source: *World Development Indicators.

**State of the Worlds Forests 1999. FAO Rome.

As in the case of social indicators, it is again instructive to compare India's performance in rural development with that of China. Not only has China done remarkably well in promoting rural growth, but it has also achieved significant success in poverty reduction. The latter is largely attributable to its success in rural development which has been an integral part of its overall poverty reduction strategy. Another important reason to consider this comparative performance is the state of knowledge, with some comparable research of recent vintage, undertaken using data from the two countries.

Agriculture

Agriculture is important not only as a direct source of growth and employment, but also because of its indirect and substantial influence on non farm activity through production, consumption and

labor market linkages. On the production side agriculture requires inputs of fertilizers, seeds , herbicides, pumps, sprayers, equipment and repair services – either produced or distributed by non farm enterprises. Increased agriculture output stimulates forward linkages by providing raw materials that require milling, processing and distribution by non farm firms. Consumption linkages arise when growing farm incomes boost demand for basic consumer goods which can be serviced by firms in rural areas and rural towns. Rising agricultural wages, often driven by rising agricultural productivity, raise the opportunity cost of labor in non farm activities, inducing a shift in the composition of non farm activity to more skilled, higher investment, high return activities. Traditionally, the rural non farm economy in India has been dominated by commerce, service and small scale manufacturing activities that cater largely to agricultural and rural consumer demands. (Hazell and Haggblade 1990).

Agricultural growth resulting from the Green Revolution is credited as a significant factor in the sustained reduction in India’s poverty from the 1970s to the early 1990s. The performance of agriculture, however, has been episodic, ranging from just above average to impressive depending on the time period under consideration. But the growth has apparently been fast enough and inclusive enough to raise the incomes of many of the former poor rural residents. Crop production growth (Table 5) accelerated from 1.95% per annum in the 1970’s to 3.79% per annum in the 1980’s, a much higher growth rate than most other countries achieved during the same period. But since 1990 production growth has slowed, growing at 3.17% per annum (Fan, Hazell and Thorat 1999). Per capita availability of rice and wheat per day increased from about 280 grams in 1967/68 to 400 grams in 1995/1996 (World Bank 1999d) year to year variability in food supply as well as food prices have declined for the consumers. The market price decline is particularly good news for the poor, including small farmers who are net buyers of food, as they spend a large share of their income on food.

Table 5: Agricultural Production Growth Rates

Year	Annual growth rates	
	India	China
1952-78		2.38
1970-79	1.95	
1980-89	3.79	
1990-95	3.17	
1980-95	3.56*	4.63**

*Average and **1979-97

Source: Fan, Hazell and Thorat 1999 and Fan and Zhang 2000

China’s agricultural performance has also been episodic but overall it can certainly be asserted to have been higher than India’s. Estimated production growth rate for China jumped from 2.38% in 1952-78 to 4.63% in 1979-97 after the reforms were introduced in 1978 (Fan and Zhang 2000).⁹

⁹ Although the definition of agricultural production differs between India and China the coverage of products is quite similar. For China, it includes farming, animal husbandry and fishery. Total production for India include five major crops (rice, wheat, sorghum, pearl millet and maize) and fourteen minor crops(barley, cotton, groundnut, other grain,

In the period following the initial reforms, China achieved a rapid rate of growth of 6.6%p.a., while at the same time maintaining the level of inequality which indicates that the growth was widely shared. The second phase (1985-89) followed with the stagnation of agricultural production, with incomes growing at 3% largely as a result of some efficiency gains and non-farm employment as agricultural price policies and rising input costs worked against further gains in production. Inequality increased and poverty started to rise. The government however entered a new development phase in 1990, introducing further, more bold, marketing and price reforms which helped improved the farmers allocative efficiency, which paid off in a substantial rebound in production growth rates of close to 7%. Overall, data for comparable period (1980-95) show China's production growth rates have been 30% higher than that of India.

Given the association of agricultural growth with poverty reduction in both countries, with the proximate cause behind the growth being the Green Revolution in India (although there has been considerable debate on the causal factors underlying the continued poverty reduction even in the apparent "post-Green Revolution" period), and the market, price and other institutional reforms in China, it is important to understand the sources of production growth. This is important not only to explain past performance, but also to guide future policy as the traditional "levers" of raising agricultural output quickly are being fully extended.

The recent findings by IFPRI on the trends in Total Factor Productivity (TFP) in agriculture (Table 6) provide some important insights. The results show that TFP growth rates in India were significantly higher in the eighties than in the seventies, but that the pace slowed in the 1990s (Fan, Hazell and Thorat 1999). The first important insight here is that both the production and productivity growth rates have been higher in the presumed post-Green Revolution decade of the 1980s. Further, using data for a comparable period (1980 to 95), while China's TFP growth rate is higher than that of India, it is not as high as the difference in the production growth rates. It should be noted, however, that the IFPRI's Indian estimates of total factor productivity include fewer number of inputs than China so the TFP estimates for India may be biased upwards. (TFP numbers for India include labor, land, fertilizer, tractor, buffaloes and for China labor, land, machinery, capital of animals, fertilizer, pesticides, seeds, feed and irrigation). The direction of the bias in the TFP growth rates, however, is unclear.

Table 6 : Agricultural Total Factor Productivity Growth Rates

Year	Annual growth rates	
	India	China
1952-78		-.03
1970-79	-0.17	
1980-89	2.52	
1990-95	2.29	
1970-95	1.75	
1980-95	2.43*	2.75**

*Average and **1979-97

Source: Fan, Hazell and Thorat 1999 and Fan and Zhang 2000

other pulses, potato, rapeseed, mustard, sesame, sugar, tobacco, soybeans, jute and sunflower) and livestock (sheep and goat meat, milk and chicken). Fishery is not included in the production figures for India.

The differences in growth rates for production and productivity suggest that the overall level of productive efficiency is not much different between India and China but the superior performance of China in production increases has been a function of other factors. One is increased use of productivity raising inputs, particularly fertilizer. According to FAO data, on average, Chinese farmers were using 30 kg/Ha of fertilizer more than Indian farmers in 1970. And while fertilizer use has gone up in both countries, and even at a relatively faster rate of growth in India, in 1997 the Chinese farmers were using about 189/Ha kg more than their Indian counterparts. Another important factor has been a significantly greater degree of diversification into higher value added crops and non-crop activities - the livestock and fisheries sector outputs have increased at a significantly greater rate of growth in China than in India.

A significant share of the poverty reduction impact of growth is through employment generation. As with production, agricultural employment in China is also reported to have grown as a result of agricultural reforms by 15% (overall) between 1989 and 1996. The major factor behind the agricultural employment growth were increased production of relatively labor intensive crops and expansion of animal husbandry and aquatic production. Most employment growth occurred after 1993, years which saw important agricultural reforms including a major liberalization of grain policies. The reforms were characterized by rising farm prices, rapid expansion of free market trade in farm products, developments that raised returns to agriculture, permitted diversification into high value crops and encouraged expansion of high value employment(World Bank 2000b). The annual growth rate of agricultural employment in India also picked up pace in the 90's from a negative rate in the 80s to 1.78% between 1990 and 1993. But despite the growth, overall, in the last decade, a period for which data are available (1983-93), employment in agriculture is reported to have fallen by 2. 6 million in India unlike China(Fan, Hazell and Thorat 1998)

An important sector, both from environmental and poverty perspectives is the forest sector. In most policy and analytical debates, however, this sector is often ignored or relegated to a very minor status. However, some of the poorest marginal and ethnic minorities make a living out of forestry in India and China. World Bank financed 18 projects in the forest sector in China with forest specific commitments of US \$ 855 million and supported 11 projects in India with forest specific allocations of US \$ 639.3 million between 1992 and 1999 (Rozelle et al. 2000 and Kumar et al. 2000). Forest sector development has helped the poor in India and China with creation of wage employment, upgrading of skills, development of assets, reducing risks and diversifying incomes and formation of social capital. In China the Bank has successfully supported the expansion of tree cover by nearly 3.3 million hectares through tree planting on different scales and under a wide array of tenurial arrangements—from the involvement of the poorest minority households on individual, community and public lands, watersheds, and shelterbelts to large-scale public plantations (Lele et al. 2000). Moreover, an additional 800,000 hectares have been planted in China through agricultural projects in the form of horticultural trees on the farmers' plots through the World Bank funded agricultural projects. While in India the Bank financed social forestry projects in the eighties and Joint Forest management (JFM) projects with local communities in the nineties. Although the precise data on increase in forest cover resulting from joint forest management is not available the social forestry plantations added an estimated 18,865 million trees to the country's stock between 1980 and 1987, or 19,500 new trees per village (Saxena 1995).

But there has been a major difference in the approach used to increase tree cover in both countries. Unlike in China, where the government has devolved control of forest margin lands either to communities or individuals in the communities, in India under JFM the government is attempting a major *redistribution of the annually generated income* from the forest lands to the populations living on forest margins by giving them greater voice in the management and protection of forest lands. Currently, this community participation strategy requires large

budgetary support from the government to create alternative income streams to reduce pressure on forests and sustain the interest of the community in the short run until the forests regenerate. China in contrast has adopted an innovative responsibility system that, rather than relying on subsidies generates counterpart funds, by extending the responsibility system from the forest administration to provinces, prefects, counties, towns, each of which including the beneficiary households are expected to contribute to this system (Kumar and Lele 2000, Rozelle et al. 2000.)

Production and Productivity Growths in Rainfed and Irrigated Areas¹⁰

Besides aggregate trends in the composition of output, productivity growth, and input use, the geographical concentration and patterns of growth are equally important for sustained and rapid poverty reduction. The importance of the role of good agricultural performance for poverty reduction is reconfirmed by the correlation of the regional variation in growth with the regional distribution of poverty in both China and India. In the case of China, the remaining challenges in poverty reduction lie in addressing the problems of the western and mountainous provinces, which have participated to a lower degree in the rapid pace of growth over the past two decades. In India as well, there are wide differences in poverty across states, with the relatively less endowed states (in terms of natural resources, among other factors) still saddled with high rates of poverty. A useful classification of regional differences is by irrigated and rainfed agricultural areas, which have in the past shown distinct patterns of growth and poverty reduction.

Given these differences, from a policy perspective the geographical allocation of future investment is an important question: should India invest more in irrigated or in rainfed areas? Irrigation has been an important factor in promoting productivity growth, primarily through the Green Revolution technology, in both rainfed and irrigated areas. In the past, understandable concerns about food security have shaped the allocation of investment with 52% of the government investment in 1987 allocated to irrigated areas that cover only 30% of the geographical area. This investment has certainly paid off. The policy issue for the future concerns the direction of new investments. One IFPRI study argues that increased investments in irrigation in rainfed areas will generate bigger productivity increases than irrigated areas (Fan and Hazell 1997). Moreover, while production growth *rates* in irrigated and high potential rainfed areas seem to be falling in the 1990's they are increasing in low potential rainfed areas (Table 7).

Table 7: Agricultural Production Growth rates Irrigated and Rainfed Areas

<i>Annual growth rates</i>	<i>Irrigated</i>	<i>Rainfed Area</i>	
		<i>High Potential</i>	<i>Low Potential</i>
1970-80	1.88	2.15	1.67
1980-90	3.49	4.68	2.26
1990-94	2.67	4.47	3.77
1970-94	2.68	3.58	2.26

Source: Fan and Hazell 2000.

An important possible reason for this could be that complementary investments, particularly research and extension, have traditionally focused on irrigated areas. While this surely benefited the irrigated areas initially, the technology also appears to have spread to other areas (both with increased irrigation as well as in rainfed areas), sustaining the initial boost in the growth rates in

¹⁰Fan and Hazell classify districts as irrigated if more than 25 percent of the cropped area (averaged from 1970 to 1995) is irrigated and as rainfed if the irrigated share is less than 25 percent.

overall agricultural production and productivity. This explanation could also shed light on some of the issues in the debate (mentioned earlier) on agriculture's contribution to poverty reduction even in the post-Green Revolution times. There are, however, limits to how far this "catching" up can take India without focussing more attention to the issues specific to rainfed agriculture. For example, the adoption rate of HYV's in irrigated areas has now reached well over 85%. But in rainfed areas, more than 40% of the cropped area was still planted with traditional varieties in the 1990 (Fan and Hazell 1997). It is clear that far more location specific adaptive research is needed in rainfed areas per unit of land due to variability in production conditions.

Rural Non-Farm Sector

A strategically critical area for future rural development is the performance of the Rural Non-Farm Sector (RNFS), another area where comparisons with China in particular are revealing. The RNFS in India is playing an increasingly important role in contributing to employment, income and poverty reduction in rural areas. The RNFS share of total employment has been rising steadily from 19% in 1972/73 to 25 percent in 1993/94 and the share of rural income has also increased from 25 percent in 1972/73 to between 30 and 35 percent in 1993/94 (Table 8). The growth rate of non agricultural employment also accelerated from 1.79% per annum in the eighties to 2.59% per annum between 1990-93. The rural non farm sector employed an estimated 58.2 million people in the 1990 and is believed to have created 10. 2 million new jobs between 1983 and 1993 (Fan, Hazell and Thorat 1998). The poor have particularly benefited from the growth in non farm employment, since they obtain half or more of their income from non agricultural activities (World Bank 1999c).

Table 8: Rural Non farm Employment

	India	China
% of rural labor force in non farm sector	18%	31%
Share of income from non farm	30-35%	37%
Annual growth rate (1980-90)	2 %	12 %
Size of the non farm sector (millions employed in 1990)	58.2	92.6

Despite this reasonably good performance, comparisons with China are sobering. Although the share of income from non farm sources in China is similar to that of India, a significantly larger percentage of the rural labor force is employed in the non farm sector in China (31% compared to 18% for India) and the annual rate of growth of employment in rural enterprises between 1980-1990 was six times that of India (World Bank 1999c, Nyberg and Rozelle 1999, Fan, Hazell and Thorat 1998). These differences manifest the different strategies pursued in the two countries with respect to the development of the RNFS. In India, a large share of the non-farm investment, particularly in the 1980s, has come from public investment works, which in addition to developing infrastructure, have served as safety nets and provided employment incomes to the rural poor. These investments have also helped spread rural growth to areas outside traditional bread baskets of the country, but have been very taxing on the government budgets. With increasing fiscal problems, sustaining this type of expenditures has proved difficult, contributing to the slowdown in such public investment induced poverty reduction in the 1990s.

In contrast, pattern of development in China's RNFS has been different. Although investment in infrastructure and other services has played an important role, rural industries have proved to be the most dynamic and fastest growing sub sector of the off farm labor market in China. They created more than 5 million jobs annually over 1978-96 and in 1997 employed 130.5 million people. Moreover, they accounted for more than 25% of the aggregate GDP in 1997 and contributed nearly 40% to the national gross industrial output in 1996 (Nyberg and Rozelle 1999, Fan, Zhang and Robinson 1999, Dong and Putterman 1997). As an integral part of the overall poverty reduction strategy, non-farm enterprises have mushroomed at an alarming rate following liberalization and adoption of market economy principles by the Chinese policy makers. This is not to say that all in the Chinese development process has proceeded perfectly – there remain large inefficiencies in public investment, not all non-farm enterprises have done well – especially those sponsored by the local county governments, and targeting of the poverty expenditures has been far from perfect. Nevertheless, the strategy has paid off handsomely by promoting poverty reduction in the 1990s, even though agricultural performance has not been as good as in the past.

Majority of the poor in India are landless or marginal farmers who as casual wage laborers rely on rural labor markets for their economic survival. The observations that non farm wages are higher than agricultural wages and that less poverty is found among non agricultural workers indicates that non farm economy is a route out of agriculture and not a distress phenomenon into which destitute agricultural workers have been pushed (Bhalla et al. 1991). Although non farm employment has benefited the poor, low level of assets and education, gender bias, and other labor market imperfections (caste status and contacts) confine them to casual wage or self employment in low income or residual activities (Lanjouw and Stern forthcoming, Unni J 1997). In contrast, the members of more well off and better educated rural households earn a higher percentage of their incomes off farm and find jobs in occupations where wages are higher. While labor market imperfections weaken the direct impact of non farm economy on poverty the poor benefit indirectly because of the positive relationship between agricultural wages and the extent of non farm employment (World Bank 1999c).

The growth in off farm employment in the poor regions of China in the nineties has been below the national average but the growth in employment exceeded growth in labor supply by a large margin, and the poor have benefited to some degree from increased employment in rural enterprises. However, the extent to which poor have benefited from the expansion of agricultural employment is unclear. As the dominant source of income for the poor is grain and the 1990's has seen diversification in agriculture away from grain, evidence from the field suggests that at least some households have taken advantage of these trends to escape poverty. But some poor households have been held back in taking advantage of new employment opportunities both in agriculture and non agriculture by the fact that their labor time is often absorbed by necessary low income tasks. For example, poor households are more likely than rich households to travel long distances to reach the water supply (Liu and Wu 1997). It is difficult to say whether the increase in off farm employment has been the main reason behind the decline of rural poverty from 31.3% of the population in 1990 to 11.5 % in 1998¹¹. Because while the national estimates show that during the 1990's wage income has grown at about the same rate as the other sources of income, data on the changes in importance of wage income to the poor over time is not available(World Bank 2000b).

¹¹ These estimates are based on the international poverty line of US \$ 1 a day.

Implications for Priorities

Strategic Choices for Investment: Returns to Government Investments

In general there seems to be a consensus that government expenditures that are good for agricultural growth such as roads, irrigation, education and research and development also help reduce poverty (and while the direct and indirect effects of individual interventions may vary with respect to their impact on growth versus poverty, many are clearly “win-win” investments, i.e., have a strong beneficial impact on both). This is confirmed by recent econometric evidence from both India (Table 9) and China (Fan, Hazell and Thorat 1998, and Fan, Zhang and Zhang 2000).

Table 9: Poverty and Productivity Effects of Government Expenditures in India

<i>Expenditure Variable</i>	<i>Elasticities</i>				<i>Marginal Impact</i>		
	<i>Poverty</i>		<i>TFP</i>		<i>Poverty</i>	<i>TFP (%)</i>	<i>No. of</i>
					<i>(% point)</i>	<i>point)</i>	<i>Poor</i>
							<i>Reduced</i>
					(per 100 billion	(per million	
					Rs. At 1993	Rs.)	
					prices)		
R and D	-0.060	-2.06*	0.255	1.82*	-0.45	6.01	84.5
Irrigation	-0.009	-1.96*	0.036	2.23*	-0.05	.61	9.7
Road	-0.050	-2.55*	0.057	2.69*	-0.65	2.37	123.8
Education	-0.053	-3.64*	0.047	2.63*	-0.22	.62	41
Power	-0.003	-1.64	0.004	0.64	-0.003	.12	3.8
Soil and Water	-0.001	-1.52	0.0015	0.37	-0.12	.43	22.6
Rural Development	-0.019	-3.68*	0.022	0.63	-0.13	.49	25.5
Health	-0.001	-1.13	0.012	0.39	-0.09	.38	17.8

* indicates significance at 10% level.

Source: Fan, Hazell and Thorat 2000

Geographical Allocation of Investment: Need for More Knowledge

Recent research done by IFPRI suggests that given the current state of development, the marginal returns to investment, both in terms of raising agricultural growth and poverty reduction, may now be higher in the rainfed (both the high potential and low potential zones) areas than in irrigated areas (Table 10). These findings can have important strategic implications, but need to be treated with caution. The answer as to the critical question of whether to invest more in rainfed areas depends in part on the unit cost of doing research in rainfed vs. irrigated areas per unit of production generated as well as on the need for other inputs and investments in marketing, and the extent to which poverty is alleviated in the two areas both in the agricultural and nonagricultural areas. Currently research provides few answers to these questions although it suggests that agricultural research and extension, improved roads, irrigation have been important in promoting productivity increases (Fan, Hazell and Thorat 1998) and that direct and indirect growth linkages of increased agricultural production and productivity (through increased used of inputs, marketing and processing and through the consumption of increased income) were much higher in irrigated than in the rainfed areas.

Table 10: Higher Marginal Returns to Infrastructure and Technology Investments in Rainfed Compared to Irrigated Areas

<i>Economic Returns to Production (1990 prices)</i>		<i>Irrigated Areas</i>	<i>Rainfed Areas</i>	
			<i>High Potential Areas¹²</i>	<i>Low Potential Areas¹³</i>
HYV	Rps/ha	63	243	688
Roads	Rps/Km	100,598	6451	136,173
Markets	Rps/number	(276745)	7808,112	(4794,073)
Canal Irrigation	Rps/ha	938	3310	1434
Private Irrigation	Rps/ha	1000	(2,213)	4,559
Electrification	Rps/ha	(546)	96	1274
Education	Rps/ha	(360)	571	102

<i>Economic Returns to Production (1990 prices)</i>		<i>Irrigated Areas</i>	<i>Rainfed Areas</i>	
			<i>High Potential Areas</i>	<i>Low Potential Areas</i>
HYV	Persons/ha	0	.02	.05
Roads	Persons/Km	1.57	3.5	9.51
Markets	Persons/number	(2.62)	537.79	(313.72)
Canal Irrigation	Persons/ha	.01	.23	.09
Private Irrigation	Persons/ha	.01	(.15)	.30
Electrification	Persons/ha	.01	.07	.10
Education	Persons/labor	.01	.23	

The numbers in parentheses are negative, in most cases they are not statistically significant.

Source: Fan and Hazell 2000

Similarly, more knowledge is needed on important socio-economic issues. Increased research is needed to identify the non-technological factors underlying rural growth, development and poverty reduction. For example, past research indicates that the income multipliers of agricultural growth in irrigated areas are higher than in non-irrigated areas.¹⁴ But what have been the multipliers given the recent increase in growth rates in the non-irrigated areas? Another important area for investigation is the role of education in agriculture, for example, does investment in education improve agricultural productivity? Again existing research provides no useful guide. Earlier IFPRI studies had argued that improvements in literacy have had little effect on Total Factor Productivity in both irrigated and rainfed areas (Fan and Hazell 1997). In their more recent paper the authors argue that there is link between investment in education and TFP growth (Fan, Hazell and Thorat 2000). The importance of education for poverty reduction in general, however, should not be underestimated. As stated earlier the primary benefits of investment in education, particularly of girls, however may be in the quality and number of children rather than in agricultural productivity. Besides knowledge is an important consumption good in its own right and education is an important means of increasing knowledge among women on a variety of matters. In a rapidly advancing technologically connected world, it will remain an important ingredient of broadbased growth.

¹² Rainfed districts with better soils, longer growing season and higher rainfall are classified as high potential areas.

¹³ Rainfed districts with poor soils, short growing season and low rainfall are classified as low potential areas.

¹⁴ Hazell and Haggblade(1990) analyzed the relationship between agricultural growth and non farm economy in India with the aid of two models. The first an econometric analysis of cross sectional state and district level data lead to a larger multiplier in high income agricultural regions; Rs. .93 in Punjab and Haryana versus Rs .46 in low productivity agricultural states such as Madhya Pradesh and Bihar. The second, a semi input output model fitted into national input output table for 1979/1980 gave an income multiplier of Rs. 1.56 for irrigated agriculture but only Rs. 1.23 for rainfed agriculture.

Urgent Need to Increase Efficiency of Investments

Yet another set of comparative studies shows that India spends more than most Asian countries on agriculture but the results for the outlays appear to be poorer (Table 11). While better than some of the others, the efficiency of government expenditure is clearly much worse than in China. The inefficiencies in Indian public expenditures are well demonstrated by the performance of the public distribution system as well as the effectiveness of input subsidies for agriculture.

Table 11: Public Spending on Agriculture as a Percentage of Agricultural GDP

	<i>Public Spending on Agriculture as a Percentage of Agricultural GDP Average 1990-93</i>	<i>Agriculture Growth Rate 1990-96 (% per year)</i>
India	12.8	2.46
China	6.4	6.5
Indonesia	7.7	2.8
Pakistan	3.4	3.7
S Korea	19.2	1.73
Thailand	17.5	2.82
Malaysia	9.4	2.75

Source: Government spending on Asian Agriculture: Trends and Consequences. S Fan and PG Pandey 1997

The Public Distribution System (PDS) is the largest and most visible of the food subsidy programs, which together constitute about 55% of India's expenditures on Anti-Poverty Programs. However access of the poor to the Public distribution system is not only weak overall but particularly weak in states with the highest incidence of poverty (Radhakrishna and Subburao 1997). By one estimate, less than a quarter of the grain distributed through the PDS actually reaches the poor (Ahluwalia 1993). PDS is not only costly but some have argued it is the costliest in terms of income transfers to the poor. It costs the government Rs 4.27 to transfer one rupee of income to the poor. In comparison with other antipoverty programs, PDS delivered 100 k cal of nutrients at three times the cost incurred under the direct nutrition program of Integrated Child Development Services (Radhakrishna and Subburao 1997). The food subsidies majority of which are delivered through PDS were estimated to be 0.7% of GDP in 1993-94. Realizing the shortcomings the government of India has launched the Targeted PDS and instituted a two tier pricing systems for the poor and not poor(World Bank 1999d) and the Prime Minister has recently announced a major new initiative of food distribution to the poor. But it is too new to know the outcomes of these efforts, particularly the extent to which they would reduce the notorious inefficiencies in India's public grain distribution system.

How does China handle its food distribution? Although information on the volume of China's grain reserve stock is unavailable the estimated costs of holding the grain reserves are also high in China. The carry over costs of rice and wheat which had farm gate grain prices of \$ 271.9 and \$ 180.6 per ton in 1998 were estimated to be \$58 and \$43.8 per ton respectively (Nyberg and Rozelle 1999). China's more decentralized public distribution system with much of the food stored at the local level appears to ensure that the food gets to the poor. Again this is an area in which more comparative analysis would be useful. The Sen hypothesis that a democracy helps avoid temporary food shortages such as those resulting from droughts but cannot help alleviate chronic hunger seems too insufficient to understand why with massive grain reserves which are highly demanding of budgetary resources, the poor remain hungry in India.

A common theme in reviews of agricultural input subsidy programs is that public subsidies (e.g., for power, irrigation and fertilizers) take such a large share of the public spending on rural development that they crowd out public capital formation and non wage expenditures in physical and social infrastructure known to encourage private investments, productivity growth, the non farm economy and poverty reduction. Input subsidies for productivity enhancing inputs such as power and irrigation, although well intentioned, end up being counterproductive as they constrain budgetary resources needed to expand delivery. In effect, they compel farmers to make do with highly rationed, unreliable power and canal irrigation services (World Bank 1999c). Such inadequate, inefficient, and unreliable supplies of canal water and power to pump ground water results in a productivity gap in irrigated agriculture which is so large that a ten percent improvement in efficiency of water use alone would add some 14 million hectares to the gross total of irrigated areas (World Bank1998).

An important efficiency issue is whether to invest more in irrigation or in the improvement of its maintenance. Investment in irrigation in India has fallen from about 23% of annual development budget before 1970 to about 7 per cent in the 1990's, essentially due to resource constraints. A World Bank water sector review shows that improvements in irrigations operations (i.e., investment in delayed maintenance) brings considerably higher average economic rates of returns than modernization and rehabilitation projects, and even higher returns than construction of new major or medium irrigation schemes (Table 12) (World Bank, 1998). The government will have to strike the right balance between investing in irrigated areas as distinct from improving its efficiency.

Table 12: Performance Improvement vs. New Investments in Canal Irrigation (Expected Economic Rates of Return %)

	<i>Mean ERR (range)</i>	<i>Estimated cost per ha.(US\$)</i>
<i>Operations Improvement</i>	38(29-45)	35
<i>Modernization</i>	25.1 (15-35)	210
<i>New Projects</i>		
Major	16.6 (13-21)	2,000
Medium	18.3 (18-19)	1,750

Source: World Bank 1998.

A major difference between India and China is the absence of significant cost recovery in India and a high degree of cost recovery in China due to a decentralized accountability system. Some World Bank reviews report that the low cost recovery in India is causing large budgetary problems. In the worst affected states they amount to as much as 30% of the potential revenue budget. Water charges not only increase government revenues but by increasing the cost of water, promote its more judicious use. Another reason for attention to improving efficiency of irrigation is the growing competition between agriculture, industry and domestic water needs. By 2025 the industry and domestic demand for water is expected to increase from 17% to 27% of overall water consumption (World Bank 1999c). In the past, however, water in India has tended to be developed for a single purpose rather than being managed for multiple uses in an integrated way. The competing demands are straining groundwater resources, which also provides 80% of rural and 50% of urban water supplies.

Another possible reason why public spending on agriculture may seem small in China relative to India is that a great deal of it is in the form of local labor contributions to the establishment of a variety of local infrastructure. Farm households provide considerable amount of labor to the provision of public infrastructure. Those who have now become prosperous enough not to want to

contribute their own physical labor can pay others in the communities to contribute labor on their behalf. This may explain better maintenance of irrigation systems in China.

Focus on Performance and Results: Need to Improve Implementation

Based on the experience of the World Bank investments, the Bank reports that water projects (irrigation and water supply) in China have performed better than projects in India. China's completed water projects have uniformly received high ratings on their relevance, efficacy, sustainability and outcome while there has been a decline in satisfactory project outcomes in India. Projects are said to have followed the traditional "supply side" engineering dominated approach. Bank reports also argue that policy and institutional reforms, financial sustainability of state run delivery systems have not received the attention they urgently need. They argue that there is need in India to manage water resources comprehensively, efficiently and in an intersectoral context, from the demand side to manage the growing competition between agriculture, industry and households and from the supply side considering declining availability of water from groundwater and surface systems. This calls for strong coordination between national and state agencies and between different agencies within the States, a coherent planning and development effort in the water resources sector.

Unlike in China, the World Bank assessment has concluded that its projects have had little impact on the water sector apart from adding a small share to Indian investments to increase water supply. However, a definite paradigm shift is taking place both in the Government of India and the Bank with increased emphasis on integrated approaches to land and water management, beneficiary participation, cost recovery and institutional capacity building from users groups to irrigation departments (Pitman and Singh).

In contrast some of the notable features of the Bank's water investments in China, as indeed in the forest sector, have been a strong emphasis on cost recovery from beneficiaries and a sense of final accountability since Chinese provincial governments (equivalent of states) are responsible to pay back World Bank loans.¹⁵ The provinces in turn expect households to pay back to the provinces. Visiting World Bank funded project areas in China it has been noteworthy to the authors to see the extent to which households in the rural areas understand the financing terms of Bank loans and their responsibility to pay back. Indeed the Chinese government has often "used" the World Bank to introduce cost recovery in its rural projects, a step that it would have found difficult to do on its own, for some of the same reasons of political pressure from the provinces as that exercised by the states in India.

Among the various performance ratings of World Bank funded projects, one important rating relates to the implementation performance in projects (wholly the responsibility of the borrower). The ratings for Indian projects, consistently across all sectors, are poorer than for most other countries (Table 13). It is important to note here that although one may debate on what and how is being evaluated, the methodology is consistent across all projects and countries. It is clear that the implementation of a large number of projects in India has been unsatisfactory. The performance of China is significantly higher, and surprisingly, even projects in Sub-Saharan Africa, where overall project outcomes are worse than in India, the performance of implementing agencies is marginally higher than in India. Clearly there is need to investigate what the problem is. Accountability and incentives are probably at the root of this. The challenge in India is to devise, given its complex administrative and political structure, appropriate incentives to "get things done" on the ground.

¹⁵ World Bank. Draft China World Bank Assistance for Water Resources Management.

Table 13: Implementation Performance

Country/Region	No. of projects (1991-2000)	Implementation satisfactory (%)
India	121	58
China	99	83
South Asia	308	63
East Asia and Pacific	385	78
Sub Saharan Africa	743	59

Source: OED database

Puzzles

Notwithstanding the many examples in China of decentralization, a responsibility and accountability system relative to that in India there are a number of puzzles in explaining the comparative performance of the two countries. As the tables below (Tables 14 and 15) show the gross domestic savings and investment rates are far higher in China (and some of the other East Asian countries—e.g., Indonesia, Korea and Thailand) than in India that ranks with the Philippines on investment rates. The Gross foreign investment is also much higher in these countries both on an annual basis and as percentage of GDP than in India. When compared to the overall economic growth rates these investment rates suggest that China has been more efficient than India in terms of average and marginal capital output ratios.

Table 14: Differences in Gross Domestic Investment and Saving (% of GDP) in 1997

	<i>Gross Domestic Investment</i>	<i>Gross Domestic Saving</i>
India	24	20
China	38	43
Indonesia	31	31
Korea, Republic of	35	34
Philippines	25	15
Thailand	35	36
Low income countries	22	17

Source: World Bank 1999a. World Development Indicators

Table 15: Differences in Foreign Direct Investment (as % GDP) in India and Selected Asian Countries 1980 and 1997

Country	1980	1997
India	0.0	0.9
China	0.0	4.9
Indonesia	0.2	2.2
Korea, Republic of	0.0	0.6
Philippines	-0.3	1.5
Thailand	0.6	2.4
Low-income countries	0.0	1.3

Source: World Bank 1999a. World Development Indicators

With their higher saving and investment rates the East Asian countries generally and China in particular have invested in two sets of activities that are woefully lacking in India—the social sectors (health and education) and the physical infrastructure—roads, power and telecommunications. One requires substantial recurrent resources (in addition to trained personnel who are willing to live in rural areas—whose supply is increased with investment in education in rural areas) and the lumpy forms of capital used to develop infrastructure. The most visible difference to the eye between India and East Asian countries including China is in these two areas. Less visible are the building of substantial foreign exchange reserves. None of these activities may ensure an immediate jump in the rate of economic growth. But they do ensure long term sustained growth. With India's limited investments in both these areas, with growing population pressure, the threat of infectious diseases and other social ills it may become difficult to sustain the rates of growth India has been able to achieve to date.

Therefore issues of governance, federal state relations/centralization/decentralization are of considerable importance. Comparative studies of decentralization applied to 20 countries in Asia, Africa and Latin America but excluding China suggest that in decentralization India is at a stage not much different from other developing countries. Broadly speaking Indian states are politically more decentralized than other countries, but on fiscal decentralization are at a comparable level with other countries/states, and Indian states lag substantially behind others on administrative decentralization such that the administrators at the local level are held responsible and accountable for concrete development outcomes. (World Bank 2000c). The reverse is the case in China. China is highly decentralized fiscally. In 1996 the central government administered only 27% of all expenditures and received only half of all the revenues, a share much lower than other developed and developing countries, including India, where the central government received as much as 61.8 % of the revenues and administered 54.7 % of all the expenditures in 1993 (World Bank 2000d). China is also highly decentralized administratively although more centralized than India politically. Political centralization normally receives the most attention in western press and among western trained economists. It is the fiscal and administrative decentralization that make a difference to the extent of responsibility and accountability, although it can also increase regional inequalities. Such regional inequalities are high in China but so are they in India.

References

1. Ahluwalia D. 1993. Public Distribution of Food in India: Coverage, Targeting and Leakages. *Food Policy* 18(2):33-54.
2. Bhalla S. 2000. *Growth and Poverty in India: Myth and Reality*. Oxus research and Investments, New Delhi.
3. Bhalla S, A Sen, R Nayyar and MD Sathe. 1991. Report of the Study Group on Employment Generation in *Report of the National Commission on Rural Labour*. Vol. 2. Ministry of Labor, Government of India, New Delhi, India.
4. Deaton A and A. Tarozzi. 1999. *Prices and Poverty in India*. Princeton University, Princeton, New Jersey.
5. Dong Xiao-yuan and Louis Putterman. 1997. China's Rural Industry and Monopsony: An exploration. Unpublished working paper.
6. Evenson R.C., C.E. Pray and Mark W. Rosegrant. 1999. *Agricultural research and Productivity Growth In India*. Research Report no. 109. International Food Policy research Institute, Washington DC.
7. Fan S and P G Pandey. 1997. *Government Spending on Asian Agriculture: Trends and Production Consequences*" mimeo, International Food policy Research, Washington, DC.
8. Fan S and Hazell 2000. Should India invest more in less favored areas? An empirical analysis of Rural India. *Economic and Political Weekly* April 22, 2000.
9. Fan S, P. Hazell and S. Thorat. 2000. Government spending, Growth and Poverty. *American Journal of Agricultural Economics* 82(4): 1038-1051.
10. Fan S. and Hazel P. 2000. *Returns to public investment: Evidence from India and China*. 2020 Vision brief 5. International Food policy Research Institute, Washington DC.
11. Fan S. and Peter Hazell. 1997. *Should India invest more in less favored areas?* EPTD discussion Paper no. 25, International Food Policy Research Institute, Washington, DC
12. Fan Shenggen. 1997. *How fast has Chinas Agricultural production and productivity really been growing? New measurement and evidence*. EPTD Discussion Paper no. 30. International Food Policy Research Institute, Washington DC.
13. Fan S and X Zhang. 2000. *Production and Productivity growth in Chinese Agriculture: New National and Regional Measures*. International Food Policy Research Institute, Washington DC.

14. Fan S, P Hazell and S Thorat. 1998. *Government Spending, Growth and Poverty: An Analysis of Interlinkages in Rural India*. EPTD Discussion Paper no. 33. International Food Policy Research Institute, Washington DC.
15. Fan S, X Zhang and S Robinson. 1999. *Past and Future Sources of Growth For China*. EPTD Discussion Paper no. 53. International Food Policy Research Institute, Washington DC.
16. Fan, S., L. Zhang, and X. Zhang. 2000. *Growth and Poverty in Rural China : the Role of Public Investments*. Environment and Production Technology Division Discussion Paper 66, International Food Policy Research Institute. Washington D.C.
17. Fan S, PB Hazell and S Thorat. 1999. *Linkages between Government Spending , Growth and Poverty in Rural India*. Research Report 110. International Food Policy Research Institute, Washington DC.
18. FAO. 1999. *State of the World Forests*. FAO, Rome.
19. Hazell PB and S Haggblade. 1990. *Rural and Urban growth linkages in India*. WPS 430, Agricultural and Rural Development Department, the World Bank, Washington, DC.
20. Kumar, N. and Uma Lele. 2000. *Preliminary Review of the Implementation of the Bank's 1991 Forest Strategy and Its Implementation in the South Asia Region*. Draft. Operations Evaluation Department, The World Bank, Washington, DC.
21. Kumar, Nalini, Naresh Chandra Saxena, Yoginder K. Alagh, and Kinsuk Mitra. 2000a. *Alleviating Poverty through Forest Development*. Evaluation Country Case Study Series, Operations Evaluation Department, The World Bank, Washington, DC.
22. Lanjouw P and N. Stern. forthcoming. *A Growth of Sorts: Palanpur 1957-1993*. New York: Oxford University Press.
23. Lele U, N Kumar, SA Hussain, A Zazueta and L Kelly. *The World Bank Forest Strategy : Striking the right balance*. Sector Study no. 20626. Operations Evaluation Department, The World Bank, Washington, DC.
24. Liu Wenpu and Guobao Wu. 1997. *Diqu Jingji Zengzhang He Jianhuan Pinkun*. Taiyuan: Shanxi Economic Press.
25. Murray CJL and AD Lopez eds. 1996. *The Global Burden of Disease: A comprehensive assessment of Mortality and Disability from Diseases, Injuries and Risk Factors in 1990 and Projected to 2020*. Harvard School of Public health for the World Bank and World Health Organization, Cambridge , Massachusetts.

26. Nyberg A and S Rozelle. 1999. Accelerating China's Rural Transformation. Report no. 19852. World Bank, Washington DC.
27. Pitman GK and I. Singh. World Bank assistance for water resource management India.
28. Radhakrishna R and K Subbatao. 1997. *India's Public Distribution System. A National and International Perspective*. World Bank Discussion Paper No. 380, World Bank, Washington, D.C.
29. Rosegrant MW and PBR Hazell. 1999. *Rural Asia Transformed: the quiet Revolution*. forthcoming, International Food Policy Research Institute, Washington DC.
30. Rozelle, Scott, Jikun Huang, Syed Arif Husain, and Aaron Zazueta. 2000. From Afforestation to Poverty Alleviation and Natural Forest Management: An Evaluation of China's Forest Development and World Bank Assistance. Evaluation Country Case Study Series, Operations Evaluation Department, The World Bank, Washington, DC.
31. Smith L.C. and L. Haddad. 2000. *Explaining child malnutrition in developing countries: A cross country analysis*. International Food Policy Research Institute Research Report 111. Washington, DC.
32. Saxena, N.C. 1995. Forests, People and Profit, Natraj, Dehradun, India.
33. Unni J. 1997. *Non agricultural employment and rural livelihoods*. Background paper.
34. UNAIDS. 2000. Report on the Global HIV AIDS Epidemic.
http://www.unaids.org/epidemic_update/report/index.html
35. World Bank. Draft China World Bank Assistance for Water Resources Management.
36. World Bank. 1984. *China Health sector*. Report no. 4664. Population, Health and nutrition Department, World bank. Washington DC.
37. World Bank 1988. *Maternal education and the vicious cycle of high fertility and malnutrition: an analytic survey* (Vol. 1). Policy Research Working Paper no. 130. Washington, DC.
38. World Bank .1995. *India policy and finance strategies for strengthening primary health care services* .Vol.1.Report No.13042. Washington DC.
39. World Bank 1998. *India-Water Resources Management Sector Review: The Irrigation Sector*. Washington DC
40. World Bank 1999a. *World Development Indicators*. Washington, DC.
41. World Bank. 1999b. *Case Study of the World Bank Activities in the Health Sector in India*. Report no. 19537.
42. World Bank 1999c. *India Towards Rural Development and Poverty Reduction*. Report No. 18921, Rural Development Sector Unit, South Asia Region.

43. World Bank.1999d. *India Food Grain Marketing Policies: Reforming to meet the Food Security needs*. Report No. 18329, Rural Development Sector Unit, South Asia Region.
44. World Bank.2000a. *World Development Report 2000/2001: Attacking Poverty*. Oxford University Press, New York.
45. World Bank 2000b. *China Overcoming Rural Poverty*. Report No. 21105, Rural Development and Natural Resources Unit, East Asia and Pacific Region. Washington DC
46. World Bank 2000c. Overview of rural decentralization in India. South Asia rural Development department, Washington, DC.
47. World Bank 2000d. *China- Managing public expenditures for better results: country economic memorandum* (Vol. 1). Economic Report 20342, Washington, DC.
48. World Health Organization. 1996. *Child malnutrition*. Fact Sheet No. 119. Geneva.
49. World Health Organization. 2000. *India Epidemiological Fact sheet on HIV/AIDS and sexually transmitted infections*. Geneva.
50. The Economist .September 30, 2000. US edition.
51. The Economist October 07, 2000. US Edition.
52. UNDP. 1999. *Human Development Report 1999*.
53. UNDP.2000. *Human Development Report 2000*.
54. Thomas V, M Dailami, A Dhareshwar, D Kaufmann, N Kishor, R Lopez, Y Wang 2000. *The Quality of Growth*. World Bank, Washington , DC.

Annexes

Annex 1: Social Indicators in India – Improving but Still Poor

Social indicators	India			China			Indonesia		
	1960/ 1970	1990/ 1997	%cha n-ge	1960/ 1970	1990/ 1997	%cha n-ge	1960/ 1970	1990 / 1997	%cha n-ge
Illiteracy rate, adult total (% of people 15+)	67	45	22	49	18	31	44	15	29
Illiteracy rate, adult female (% of females 15+)	82	58	24	64	26	38	56	20	36
Illiteracy rate, adult male (% of males 15+)	53	34	19	34	10	24	31	9	22
School enrollment, primary (% gross)	61	97	36	109	125	16	71	115	46
School enrollment, primary female (% gross)	40	84	44				58	114	56
School enrollment, primary male(% gross)	80	110	30				86	117	31
School enrollment, secondary (% gross)	20	44	24	21	49	28	6	44	38
School enrollment, secondary female (% gross)	10	33	23				3	40	37
School enrollment, secondary male (% gross)	30	55	25				10	48	38
Life expectancy at birth, total (years)	44	63	43	36	70	94	41	65	58
Mortality rate, infant (per 1,000 live births)	163	71	56	132	32	76	138	44	68

Note : Illiteracy rates are compared to the data in 1970 and

The comparison for primary and secondary school enrollment is made between 1960 and 1990

Life expectancy at birth is compared between 1960 and 1997

Infant mortality rate is compared between 1960 and 1997.

Source: World Development Indicators

Annex 2: Macro-Decentralization in India in an International Comparison

