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The Environment for Agricultural and Agribusiness Investment in India

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The Environment for Agricultural and Agribusiness Investment in India

Maurice Landes

Abstract

Despite strong overall economic growth and strengthening food demand, investment in Indian agriculture and agribusiness has remained sluggish, and growth in farm output has slowed, since the early 1990s. An array of policies and regulations affecting agricultural production, marketing, and food processing—along with weak infrastructure and a lack of market services—have discouraged private investment by farmers and large, vertically integrated agribusinesses. The policy environment has grown more investor friendly since the late 1990s and private investment appears to be responding, but significant barriers remain and the pace of future reforms remains uncertain.

Keywords: India, agriculture, agribusiness, investment, trade policy, domestic policy, infrastructure

Acknowledgments

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Contents

Summary

Although rising incomes are contributing to expanding and diversifying food demand, investment in Indian agriculture has remained low relative to other sectors and grown slowly since the early 1990s. Lagging private investment in agriculture and agribusiness has corresponded with burdensome regulatory policies, poor infrastructure, and weak institutional support for agricultural markets. Even though India has one of the world's largest agricultural economies, Indian agribusiness is characterized by a multitude of small-scale, nonintegrated processing and marketing firms that use mostly outdated technology and are uncompetitive in global markets.

What Is the Issue?

India, with one of the world's fastest growing and most populous economies and one of its largest farm sectors, is emerging as a potentially large market for global agricultural trade and investment. Despite the rapid productivity gains occurring in India's service and manufacturing sectors, average crop yields remain below potential, agricultural markets are underdeveloped, and growth in farm output has slowed. Policymakers are increasingly focused on how to strengthen agricultural investment and growth, raise rural incomes, and help sustain rapid overall gains in income growth and poverty reduction.

What Are the Major Findings?

Both public and private investment in Indian agriculture and agribusiness have remained weak since the early 1990s, despite accelerating growth in the overall economy and a large domestic market for agricultural products. Growth in farm output has slowed since the early 1990s, and although a turnaround is seen as critical for sustained economic growth, consensus on agricultural reforms has proven difficult.

India's numerous domestic policy interventions—along with weak infrastructure and limited institutional support for agricultural markets—have been a deterrent to agricultural investment, particularly in large vertically integrated agribusinesses. Interventions have included restrictions on transporting, storing, and marketing of agricultural commodities, restrictions on the size of agribusiness firms, high taxes on processed products, high-cost credit, and complex food laws. The climate for private investment is also undermined by weak transport and power infrastructure and lack of key services such as market information, risk management tools, and grading/inspection systems.

For farmers, disincentives have included trade and price policies that maintained low domestic prices for many farm commodities, inefficient markets that dampen returns to growers, and few public and private marketing services. Onfarm investment may also be constrained by India's many small and marginal farmers, who account for nearly 40 percent of farmland, and often have limited access to input and output markets and more limited investment options.

Since 2000, the policy environment seems to be improving and investment in agriculture to be strengthening, as evidenced by higher market prices and input subsidies for farmers. Movement and storage restrictions on essential commodities, like wheat and rice, are becoming less common, restrictions on firm size have been largely removed, State marketing laws are evolving to accommodate private marketing channels, and taxes on agricultural products are being reduced and simplified. And although power, transport, and other infrastructure problems will likely be solved only in the longer term, there is evidence that private investment is now on the rise in those sectors. Food marketing ventures oriented toward development of supply chains and retail outlets represent a turnaround in investor confidence.

Recent investment in India's food marketing sector includes a number of ventures by U.S. and other foreign investors, mostly in collaboration with Indian firms. Since India does not permit foreign direct investment by multi-brand retailers, foreign investment has taken the form of wholesale (or "cash and carry") trading enterprises, or partnerships with Indian franchisees who own the retail outlets.

How Was the Study Conducted?

This study was based on analysis of literature and secondary data from published and online sources, together with interviews of representatives from Indian agribusinesses. Data collection and interviews in India were facilitated by Indian Agribusiness Systems, Ltd, of Okhla, Uttar Pradesh. Financial support for this study was provided by the USDA Emerging Markets Program.

Introduction

Economic growth in India has accelerated since the early 1990s, when a package of market-oriented reforms to domestic, trade, and exchange rate policies sparked investment and productivity gains in the industrial and services sectors. But agricultural investment has lagged investment in the rest of the economy since the 1980s. Output growth has slowed since the early 1990s (table 1), and agreement on reforms to strengthen agricultural performance has proven difficult.[1] With rising incomes, urbanization, and youthful demographics boosting demand for an increasingly diverse array of food and agricultural products, slowed growth in farm output is translating into rising real prices for some foods, as well as more agricultural imports. Although agricultural imports remain low compared with the size of the Indian economy, they have grown about 13 percent annually in real terms since the early 1990s, and India has emerged as a major global importer of edible oils, pulses, and, most recently, wheat.[2]

Despite the robust gains elsewhere in the economy, the poor performance of India's agricultural sector—including both production agriculture and marketing—has become a key concern of Indian policymakers. Agriculture accounts for about 21 percent of economic output (2003/04-2005/06 average; Reserve Bank of India, 2007) and is the primary source of employment and income for about 58 percent the population (Government of India, Ministry of Statistics and Program Implementation, 2005), including a large share of Indians living below the poverty line. Lagging performance in such a large segment of the economy jeopardizes the sustainability of the economy's strong overall growth. It has also prompted political resistance to extending market-oriented domestic and trade policy reforms into a farm sector comprised mostly of small farmers and agribusinesses that are seen as vulnerable and unready to compete in international markets.

The lack of substantive yield growth and the inefficiency of markets in Indian agriculture are correlated with low levels of public and private investment in agriculture and agribusiness. In contrast to the dynamism evident in other sectors, investment in Indian agriculture and agribusiness—public and private, domestic and foreign—has been low and, until very recently, has shown little growth. Public investment has been partially constrained by the

Table 1
Growth of real gross domestic product (GDP) and gross fixed capital formation (GFCF) in India

	Gross domestic product		Gross fixed capital formation	
Period	Total	In agriculture	Total	In agriculture
	Growth rates (percent per year)[1]			
1960s	3.7	2.2	5.9	5.9
1970s	3.2	1.6	4.6	5.1
1980s	5.3	3.4	6.0	0.6
1990-04	5.8	2.9	6.1	2.4
1997-04	5.8	1.8	11.3	3.9

[1]Growth rates between 3-year averages centered on years indicated.
Sources: Government of India, Ministry of Program Planning and Implementation, Central Statistical Organization; Government of India, Ministry of Finance, Economic Survey.

[1]Calculation of representative growth rates in Indian agriculture is complicated by weather-induced fluctuations in annual performance. To minimize the influence of these fluctuations, growth rates are calculated between endpoints based on 3-year average levels of agricultural GDP (see table 1).

[2]Agricultural exports grew just 8 percent annually during the same period, but agricultural exports continue to average about double the size of agricultural imports.

large and increasing costs of farm subsidies. Private onfarm investment has been hampered by policies that have historically taxed producers by maintaining relatively low domestic farm prices, inefficient markets that dampen market returns, and weak institutional support for growers, especially small and marginal farmers. Private agribusiness investors, in turn, have faced state and central regulatory policies—including marketing, interstate movement, storage, and taxation policies—that create disincentives for investment, particularly in larger, integrated agribusiness enterprises. Although foreign direct investment is permitted in most agribusiness—the key exception being retailing—the regulatory policies that impede domestic investors have also been a deterrent to foreign investment.

Trends in Agricultural Investment

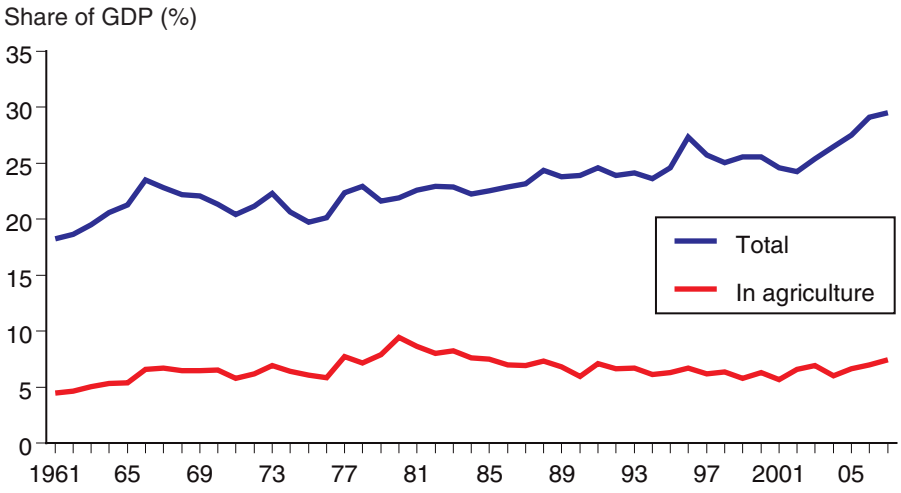
Output and investment in Indian agriculture have not been showing the same robust growth as in the overall economy. For the economy as a whole, real growth in gross domestic product (GDP) and in investment—as captured by gross fixed capital formation (GFCF)—have both been strengthening, particularly since the early 1990s (table 1). In agriculture, however, output growth has been slowing, and investment has continued to lag that in the overall economy. The annual share of GDP that is invested in GFCF averaged a robust 27 percent for the overall economy during 2005-07; by contrast, GFCF in agriculture was only about 7 percent of agricultural GDP during the same period. And while the rate of investment in the overall economy has continued to rise, the rate of investment in agriculture generally declined through 2000 before turning up slightly during 2000-07 (fig. 1).

Although overall agricultural investment in India is low and growing slowly compared with investment in the rest of the economy, some categories of investment have shown signs of growth. Among these are investments in agriculture-related infrastructure and services, and in investment by the private as opposed to the public sector.

Investment "In" and "For" Agriculture

The data on capital formation in agriculture (shown in table 1) include primarily onfarm investment in construction, farm equipment, irrigation, and other land improvements. Omitted from these accounts are investments in off-farm agriculture-related infrastructure such as markets, storage facilities, rural roads, and rural electrification. Trends in these off-farm investments—termed investments "for" agriculture—are characterized in table 2 (Ministry of Agriculture, 2003). These data, which are available only through 2000, show that investment for agriculture has been growing much faster than investment in agriculture, though it too lags overall investment in the economy. And investments both in and for agriculture, combined, still

Figure 1
Gross fixed capital formation in India as share of Gross Domestic Product (GDP)



Source: Reserve Bank of India, Handbook of Statistics on Indian Economy.

Table 2
Growth in public and private gross fixed capital formation in and for agriculture in India

Period	GFCF in Agriculture			GFCF for Agriculture			GFCF in/for Agriculture		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
	Growth rate (percent per year)								
1982-92	-4.3	5.1	1.2	-1.3	5.1	2.0	-2.5	5.2	1.6
1992-99	-0.3	2.4	1.7	1.3	3.0	2.7	0.8	3.5	2.3
1992-97	1.3	2.4	2.0	1.7	3.4	3.2	1.5	4.2	2.8
1997-99	-4.0	2.6	0.7	0.4	2.2	1.3	-1.1	1.8	1.1
	Shares of agricultural GDP (percent)								
1981-83 avg.	4.3	4.0	8.3	6.0	4.7	10.7	10.3	8.6	19.0
1991-93 avg.	2.0	4.8	6.8	3.8	5.7	9.5	5.9	10.4	16.3
1996-98 avg.	1.8	4.5	6.4	3.5	5.9	9.4	5.4	10.4	15.8
1998-00 avg.	1.6	4.5	6.1	3.4	5.8	9.1	5.0	10.3	15.3

Source: Government of India, Ministry of Agriculture, Directorate of Economics and Statistics, 2003.

represent a small share of agricultural GDP—about 15 percent during 1998-2000—compared with the 26-percent share of investment in the overall economy during that period.

Agricultural Investment in India Compared With Other Countries

Comparing agricultural investment across countries is complicated by limited availability of data and by differences in definitions and methods used to report data. Some data are available for China and Brazil which, like India, are large developing economies with large agricultural sectors. Both China (using a narrow definition of agricultural investment) and India (using either a narrow or broad definition) have substantially lower rates of investment in agriculture than in the overall economy (table 3). By contrast, in Brazil, where the data employ a broad definition of agricultural investment, the rate of agricultural investment is substantially higher than for the economy as a whole.

Table 3
Comparisons of total and agricultural investment in Brazil, China, and India

Country/year	Total	Agriculture
	Percent of GDP	
Brazil (2001-03 average)	16.2	48.4[1]
China (2003-05 average)	42.8	9.6[2]
India (1998-00 average)	25.7	15.3[1]
India (2003-05 average)	27.3	6.6[2]

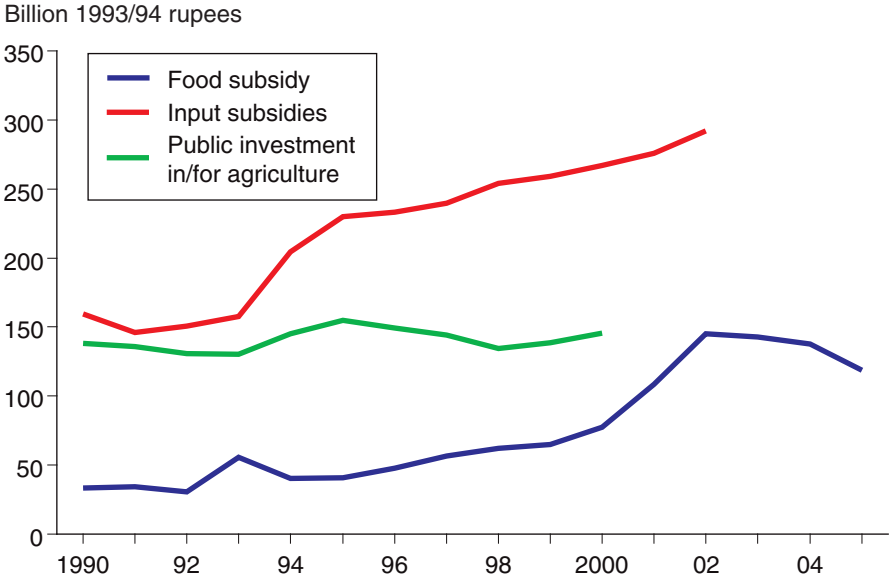
[1] Includes onfarm and rural infrastructure investment.
[2] Includes primarily onfarm investments.
Sources: Banco Central do Brasil; National Bureau of Statistics of China; Reserve Bank of India; Government of India, Ministry of Agriculture, Directorate of Economics and Statistics, 2003.

Agricultural investment averaged 9.6 percent of agricultural GDP in China during 2003-2005. The Chinese data are based on a definition of investment that compares most closely with investment "in" agriculture in India, which averaged 6.6 percent during the same period. Brazilian data, which include investment in rural infrastructure and agribusiness, show investment in agriculture averaging 48 percent of agricultural GDP during 2001-2003 (table 3). By comparison, Indian investment "in" and "for" agriculture, the broadest measure available for India, averaged 15.3 percent of agricultural GDP during 1998-2000, the most recent period for which data are available. While these comparisons suggest that agricultural investment in India is low compared with two other large, developing agricultural countries, definitional differences in the data make it difficult to draw firm conclusions.

Public and Private Investment

Public investment in and for agriculture has averaged roughly half the size of private investment, and grew much more slowly than private investment during both the 1980s and 1990s (table 2). Public investment in agriculture actually declined during the 1980s and showed little growth in the 1990s. Weak public investment in agriculture has corresponded with rapid expansion of public expenditures on price subsidies for the sector (fig. 2), including price supports and subsidized storage and distribution for wheat and rice (the so-called "food grain subsidy"), as well as price subsidies for electricity, irrigation water, and fertilizer (Srinivasan et al., 2007; Landes and Gulati, 2004). No explicit link is apparent between the divergent trends in public outlays on investments versus subsidies in agriculture. However, public investment in irrigation—the major category of public investment in agriculture—has been declining since the mid-1990s. During the same period, political pressure has grown to compensate farmers for rising costs and price instability through input and output price subsidies (Landes and Gulati, 2004).

Figure 2
Public investment and subsidies in Indian agriculture

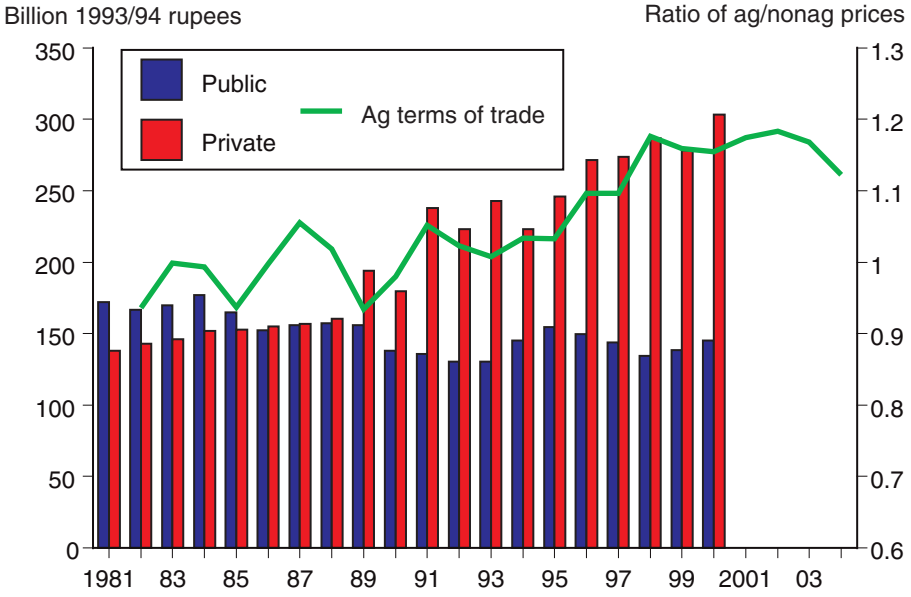


Source: Government of India, Ministry of Agriculture, Directorate of Economics and Statistics, 2003; Government of India, Ministry of Finance, Economic Survey; Mullen, Orden, and Gulatia, 2006.

Studies of investment in Indian agriculture (Chand, 2000; Chand and Kumar, 2004) found that changes in private investment between the early 1980s and the mid-1990s could be explained by the availability of institutional credit for agriculture and improvements in the barter terms of trade—or the ratio of prices received to prices paid—for agriculture. While a significant complementary relationship between public and private investment was evident during the 1960s and 1970s, no such evidence exists since the early 1980s. Further, state-by-state analysis revealed a highly significant positive relationship between private investment and both agricultural output and productivity growth nationally and in most States. Overall, the evidence suggests that since the early 1980s, public investment in agriculture has been less important to overall investment in the sector—and to growth in output and productivity—than has the environment for private investment, defined as profitability and credit availability compared to other sectors.

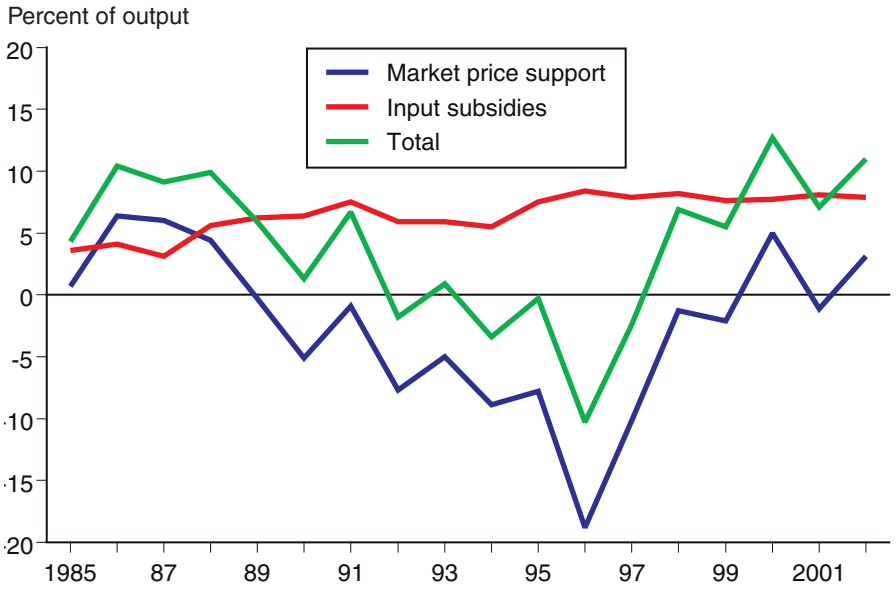
More recent data indicate that improving terms of trade for agriculture—as determined by the ratio of agricultural product prices to prices of manufactured and other nonagricultural goods—may have been an important factor in expanding private investment in and for agriculture through the end of the 1990s (fig. 3). Improvements in the agricultural terms of trade during the 1990s were driven by two key factors (Landes and Gulati, 2004). First, liberalizing reforms to industrial and manufacturing sector policies in the early 1990s led to declining real prices for many nonagricultural goods. Second, agricultural commodity prices tended to strengthen during the late 1990s when the Government implemented large increases in support prices for wheat and rice—India's major farm products and food staples (Srinivasan et al., 2007).

Figure 3
Public and private gross fixed capital formation in and for Indian agriculture



Source: Government of India, Ministry of Agriculture, Directorate of Economics and Statistics, 2003; Government of India, Ministry of Finance, Economic Survey.

Figure 4
Producer support estimates for India



Source: Mullen, Orden, and Gulati, 2004.

Strengthening terms of trade for agriculture are also reflected in producer support estimates (PSEs) for Indian agriculture (fig. 4). These estimates, which account for input subsidies and policy-induced differentials between domestic and international reference prices (termed market price support), indicate that India transitioned from taxing agriculture during the early and mid-1990s to supporting it during 1997-2002. This trend was driven by steadily increasing support of farmers through input subsidies and, particularly, by substantial increases in market price support in the late 1990s.

Increased producer support and strengthening terms of trade for agriculture suggest improved incentives for private investment by farmers and agribusinesses during the late 1990s and early 2000s. Although the most recent available data on the terms of trade for agriculture indicate some weakening during 2004-2005, more recent increases in world and domestic agricultural commodity prices have likely sustained price incentives for domestic producers.

Foreign Direct Investment

Prior to 1991, foreign direct investment (FDI) was negligible in the Indian economy because of highly restrictive policies regarding the permissible types of projects and foreign ownership shares, and the repatriation of earnings. In 1991, the Government began to liberalize FDI policies, initially giving automatic approval for up to 51 percent foreign ownership in 34 industries, including food processing, but with continued restrictions on imports and earnings repatriation.

FDI began to flow into India immediately following the 1991 reforms, growing about 36 percent annually in real terms between 1990-92 and 2003-05, but with only small amounts flowing into agriculture. Overall FDI growth has been aided by the implementation of additional reforms that

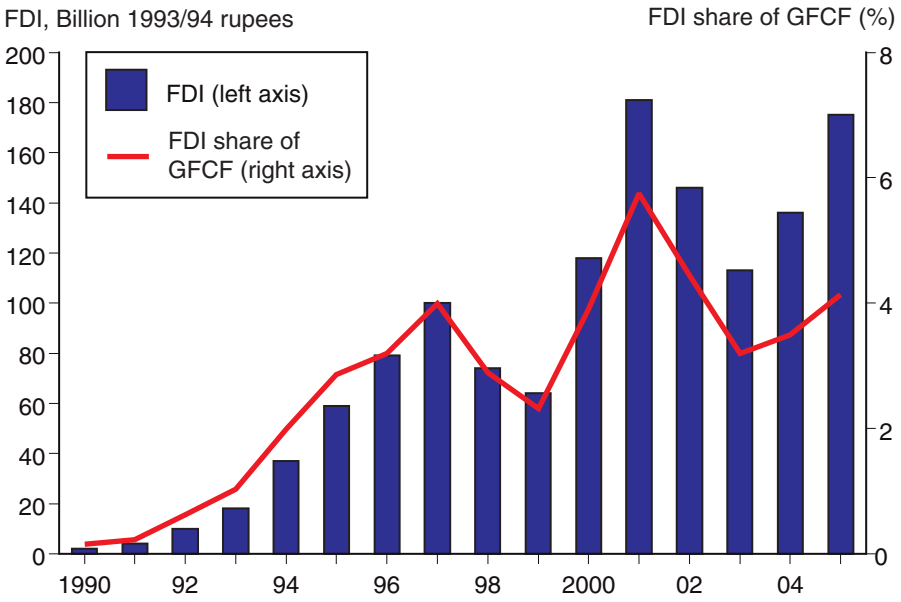
have further eased the approval process, increased permissible sectors and foreign ownership shares, and loosened foreign exchange balancing restrictions. Still, FDI continues to make only a small contribution to annual fixed capital formation in India—now averaging about 4 percent (fig. 5).

Although many agricultural sectors have been open to FDI since the early 1990s, FDI in Indian agriculture has not been significant. Leading sectors for FDI in India have been electrical equipment (17 percent of total FDI during 1991-2006), telecommunications (11 percent), transport (10 percent), services (9 percent), and power/petroleum refining (8 percent). Of the $38.9 billion in total FDI inflows during 1991-2006, about $1.7 billion—or 4 percent—has been in industries that can be identified as specific to agriculture. Food processing accounted for $1.2 billion of FDI, with agricultural machinery ($166 million), timber products ($107 million), and fertilizers ($78 million) accounting for most of the remainder. Some additional FDI that is classified in general activities, such as trading and services, might also be attributed to the agricultural sector.

Sources of Foreign Direct Investment

The United States has been the second largest single-country source of FDI in India, accounting for about 15 percent of Indian FDI during 1991-2006 (fig. 6). The largest source of FDI to India, accounting for 37 percent of the total during 1991-2006, has been the island nation of Mauritius. A bilateral double taxation treaty affords favorable treatment to funds that move through Mauritius, a situation that likely disguises the true origin of much of the FDI flows to India. Other major sources are the European Union, collectively accounting for about 24 percent of FDI into India during 1991-2006, and the countries of East Asia (13 percent).

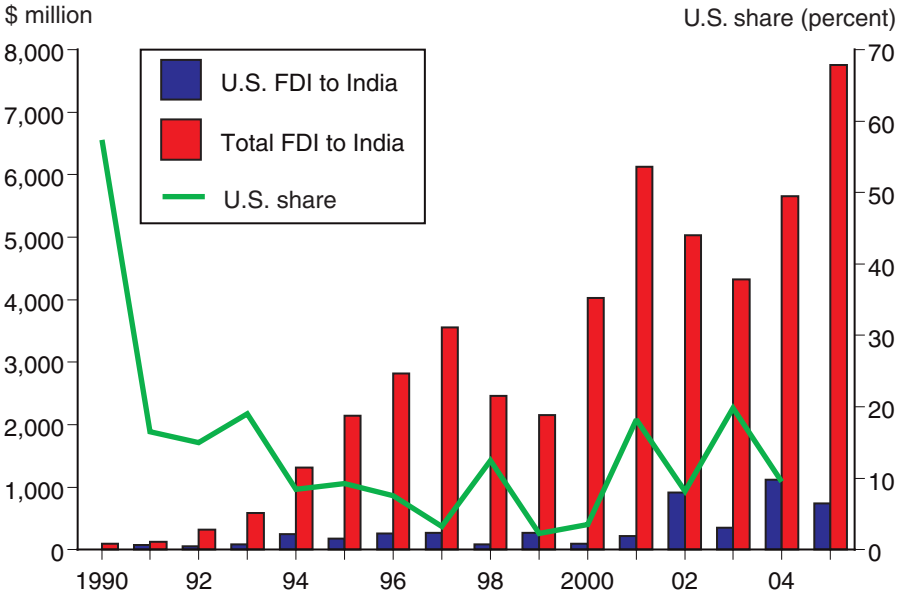
Figure 5
Foreign direct investment (FDI) in India and share of gross fixed capital formation (GFCF)



Source: Reserve Bank of India, Handbook of Statistics on Indian Economy.

Figure 6

Total and U.S. foreign domestic investment (FDI) in India



Source: Reserve Bank of India, Handbook of Statistics on Indian Economy; U.S. Department of Commerce, Bureau of Economic Analysis.

Indian data on inward FDI by industry and country of origin are not available, but U.S. sources suggest that U.S. FDI in food-related industries there has been minor—about $18 million over 1990-2005. However, data for several years are not reported in order to protect the confidentiality of the small number of firms investing.

The Private Investment Climate

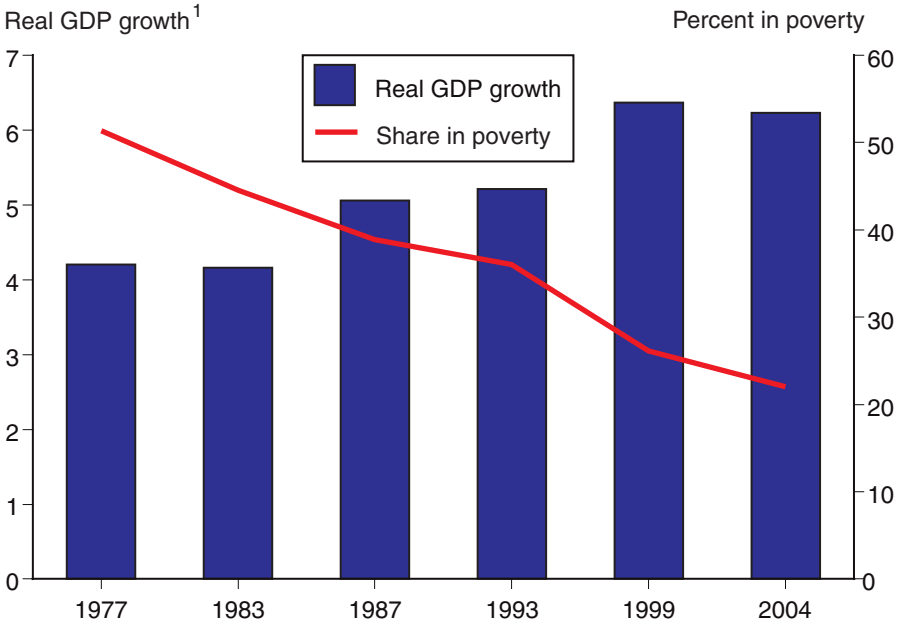
Prospects for agricultural investment hinge largely on the environment for private investment by farmers and agribusinesses. Private investment accounts for the bulk of total investment in agriculture, while fiscal constraints—including growing subsidy outlays—may continue to restrict public investment. Key factors likely to shape the climate for private investment by farmers and agribusinesses include (1) the extent to which domestic demand for agricultural products makes investment potentially profitable; (2) a range of government regulatory, credit, tax, and other policies that affect incentives for domestic and foreign investment in Indian agriculture; and (3) infrastructure constraints.

Consumer Demand

Consumer demand for food products in India has registered significant growth and diversification since the early 1990s, when a package of reforms to industrial, trade, and exchange rate policies launched India on a path of relatively strong income growth. India's youthful demographics and rapid urbanization also bode well for further growth and diversification of food demand (Joshi et al., 2007; Pingali and Khwaja, 2004).

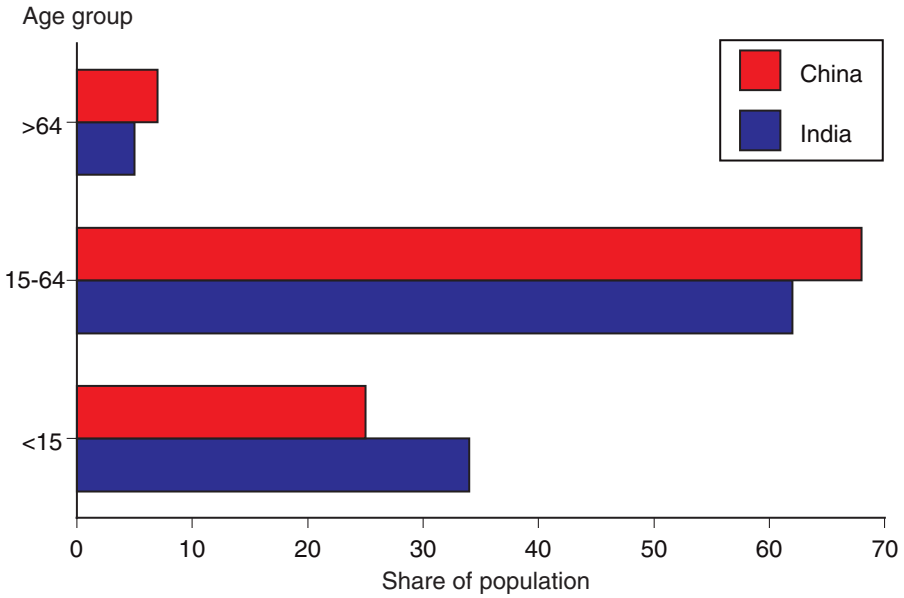
Income growth in India, as measured by growth in real gross domestic product (GDP), has averaged more than 6 percent annually since the early 1990s, and more than 8 percent since 2003, establishing India as one of the fastest growing economies in the world. Rising incomes have contributed to a steady decline in the share of the population living in poverty, with poverty defined as the level of per capita income needed to purchase a nutritionally adequate diet (fig. 7). Although growth has been strong, India's per capita income remains at a level—about $588 annually in 2006—where

Figure 7
Income growth and poverty reduction in India



[1] Real GDP growth for 5 years preceding year indicated.
Source: Government of India, Ministry of Finance, Economic Survey.

Figure 8
Age composition of India's and China's populations



Source: Census of India, 2001.

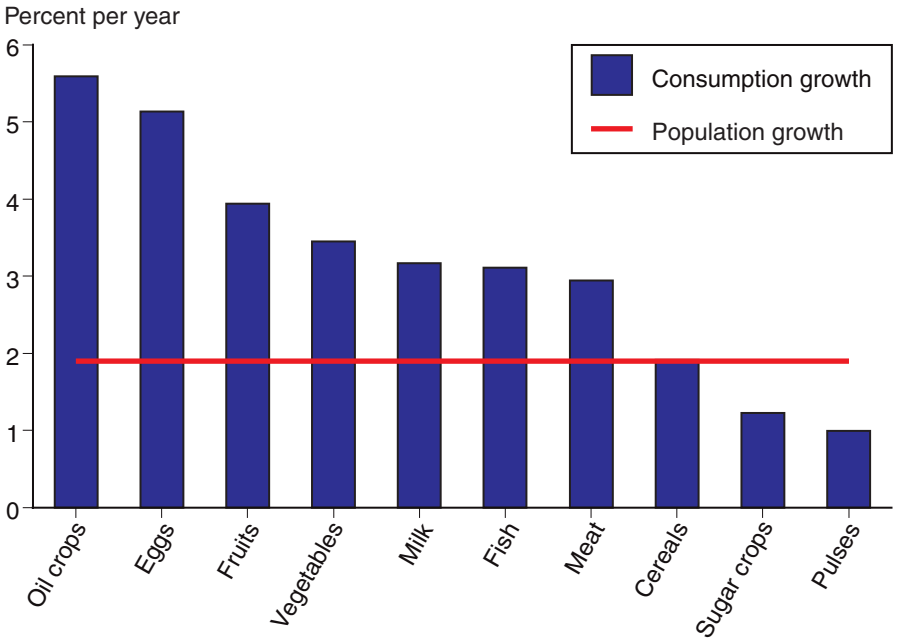
most households continue to spend a large share of new income on food, both to increase caloric intake and to diversify and upgrade diets (World Bank, 2007).

India's youthful demographics—about 34 percent of the population was age 14 or under in 2001 compared with 25 percent in China—is also a driver of food demand (fig. 8). Not only can average levels of daily food intake be expected to rise as more children grow to adulthood, but young adults are often more likely to try new foods and diversify their diets beyond traditional foods. Urbanization is another force that typically contributes to dietary change, through more intense exposure to foods from other cultures and increased demand for convenience foods to accommodate the schedules of two-earner households. The urban share of India's population was 27.8 percent (285 million) in 2001 and is rising steadily. In 2001, India had 35 cities with a population of 1 million or more, with these larger urban areas accounting for more than 10 percent of India's total population of more than 1 billion.

Data on food consumption by major food groups demonstrate the impact of rising incomes, demographics, and urbanization on the growth and diversification of food demand since the early 1990s (fig. 9). While consumption of traditional items such as cereals and pulses continues to expand, other food categories—including vegetable oils, eggs, fruit, vegetables, milk, and meats—have been exhibiting substantially more rapid growth in demand.[3] These patterns are also evident from Indian consumer surveys that provide expenditure data by food group and expenditure class. Expenditures on cereals—the traditional food staples that still account for the bulk of average consumer food expenditure—tend to decline among higher income consumers (fig. 10). For higher valued foods groups, however, consumer expenditure tends to accelerate as incomes rise. Foods in greater demand as

[3]The same pattern of growth across food groups is reflected in consumer survey data collected for selected years by India's National Sample Survey Organization (Government of India, Ministry of Statistics and Program Implementation). The FAO data used here provide broader commodity coverage within food groups and allow use of more stable 3-year average endpoints when computing annual growth rates.

Figure 9
Consumption growth by food group in India, 1991-2004[1]

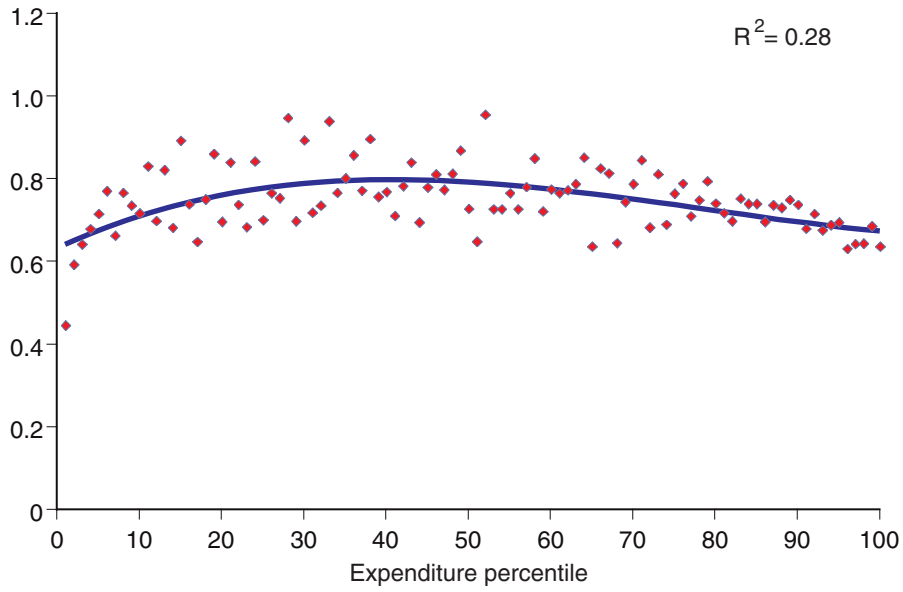


[1] Endpoints based on 3-year year averages centered on middle year; 1991 = 1990-92 average.
Source: Food and Agriculture Organization, FAOSTAT database.

incomes rise include not only fruit, vegetables, and edible oils, but also animal-based products such as milk, eggs, and meat (figs. 11-13).

Overall, the robust prospects for growth and diversification of food demand in India contrast sharply with sluggish agricultural investment. Constraining new investment in and for agriculture are policies that diminish incentives for both domestic and foreign investors, as well as infrastructure constraints that increase costs.

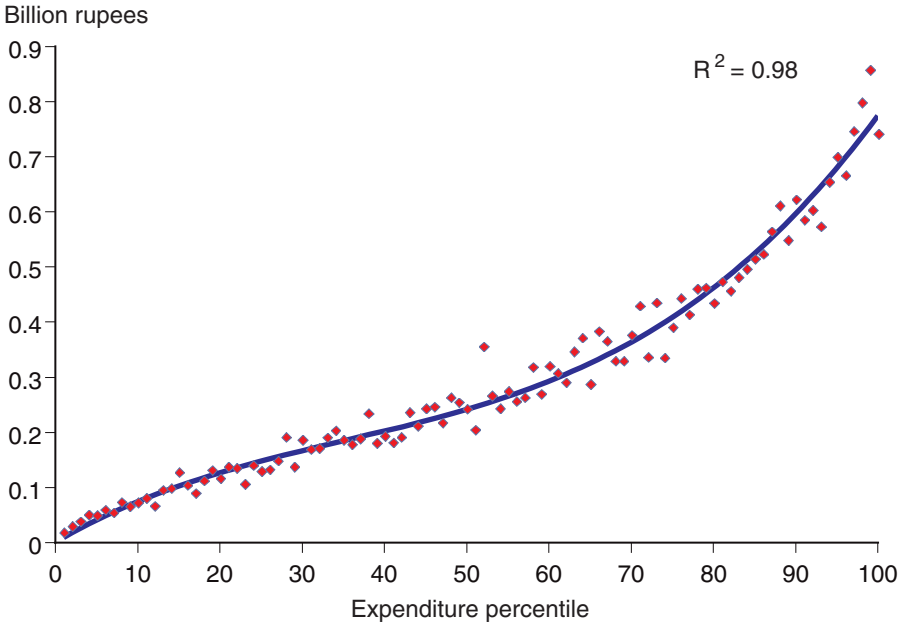
Figure 10
Consumer expenditures on cereals by expenditure percentile in India



Source: National Samply Survey, 1999/2000.

Figure 11

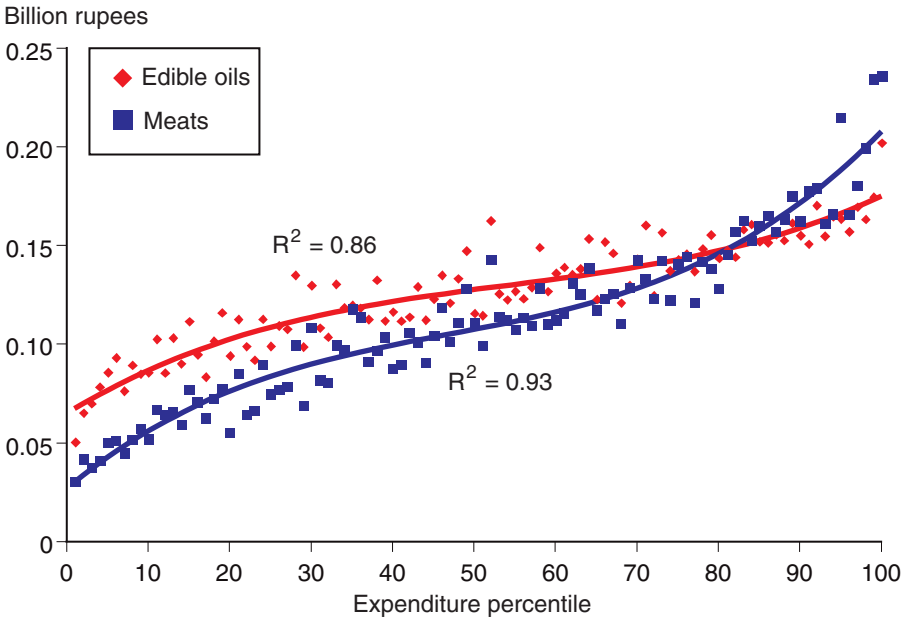
Consumer expenditures on milk products by expenditure percentile in India



Source: National Samply Survey, 1999/2000.

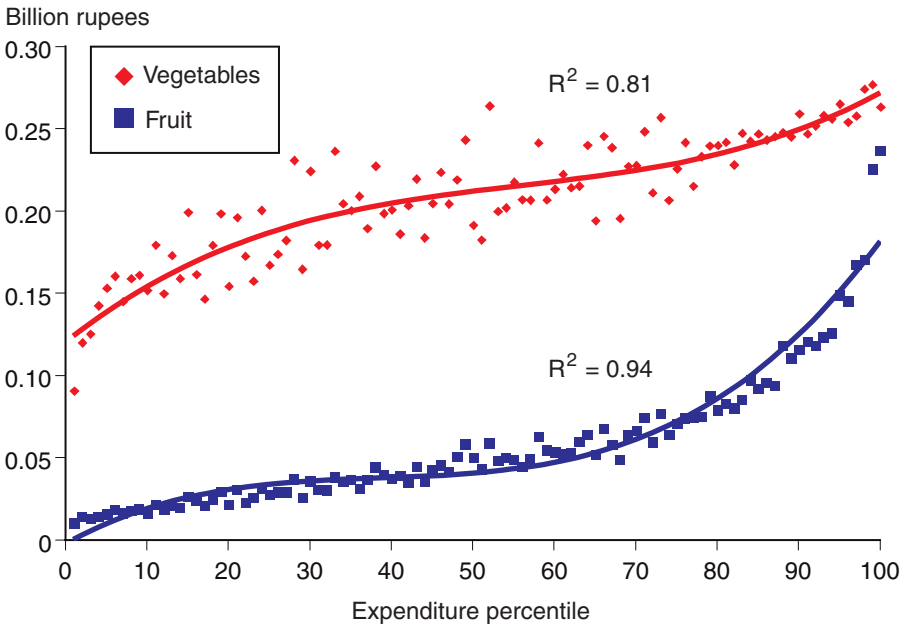
Figure 12

Consumer expenditures on edible oils and meats by expenditure percentile in India



Source: National Samply Survey, 1999/2000.

Figure 13
Consumer expenditures on fruit and vegetables by expenditure percentile in India



Source: National Samply Survey, 1999/2000.

Policy Factors Affecting Investment

India's agricultural sector—including most aspects of agricultural production, marketing, processing, and trade—has traditionally been heavily regulated. Although an earlier study (Chand and Kumar, 2004) identified the importance of credit availability in driving private investment, a broader range of Indian policies and regulatory interventions is at play in shaping the environment for private investment by farmers and agribusiness. To the extent that regulatory and institutional disincentives for investment have resulted in inefficient markets, they can also limit the potential for farmers—including India's many small farmers—to benefit from and respond to signals from India's expanding and diversifying consumer markets.

The primary goals of regulation have been to enhance food security by ensuring adequate supplies of food staples at affordable prices and to support employment growth through labor-intensive import substitution. Historically, regulation of agriculture has included strict controls on foreign trade, domestic marketing and interstate movement of agricultural produce, the scale of agricultural processing firms, and land ownership (in addition to the taxation, labor, and investment measures that applied to all areas of the economy). While regulation has eased since the early 1990s, there has been less reform in agriculture than in the manufacturing or service sectors of the Indian economy.

India's Constitution vests the governments of India's 35 States and Union Territories with most of the authority to make and implement regulations and policies affecting the agricultural sector. Central government influence over the regulations and policies promulgated by the States stems largely from the extent to which States are dependent on the central government for funds. Many States tend to have unique regulations and policies, which

complicates the regulatory climate facing agribusinesses when operating across State lines. The necessity for obtaining State-by-State legislation and implementation can also slow the process of reform.

India has made progress in reforming market interventions and improving the climate for private investment by farmers and agribusiness since the late 1990s. Plant-scale restrictions have been eliminated for most agribusinesses. Regulation of private movement and storage of farm produce is now less restrictive in many States, and restrictions on the private marketing of farm produce are undergoing reform in most States. Farmers and agribusiness face an improved credit environment. Business taxes are being reduced, food laws are being simplified, and tariff barriers, though high, are declining for some commodities. However, most reforms are being implemented gradually and the lack of a clear political consensus on reducing government intervention in agriculture is likely to continue to slow progress and create risk for investors. In addition, political sensitivity has prevented real progress in several key areas of concern to domestic and foreign investors, including easing restrictive labor laws and developing legal systems to support equitable and efficient rental and sale markets for agricultural land.

Overall, the analysis of individual factors below indicates that the regulatory and policy climate is becoming more supportive of new investment by farmers and agribusiness, but it is not clear if the completed reforms will be adequate to stimulate rapid growth in investment, or if the process of implementing reforms will be sustained.

The Essential Commodities Act

The Essential Commodities Regulation & Enforcement Act of 1955 (or ECA) authorizes the Central and State Governments to make broad ranging interventions in the markets for essential food products to ensure their availability and to protect consumers from possible exploitation by commercial traders (Government of India, Ministry of Consumer Affairs, Food, and Public Distribution, 2007). Under the ECA, Ministries and Departments of the Central Government may issue rules for regulating production, distribution, quality standards, movement, and pricing of essential commodities, including cereals, pulses, edible oils, and sugar. Regulations are implemented through "control orders" issued by State Governments, with monitoring and oversight by the Central Government.

The ECA gives authority to the Central and State Governments to intervene at any level of the supply chain, including:

- Regulating production or manufacture of essential commodities;
- Controlling the price at which essential commodities are bought or sold ;
- Prohibiting the withholding from sale of any essential commodity ordinarily kept for sale (stock holding limits);
- Restricting or preventing private movement of essential commodities across district or State borders.

Control orders under the ECA can be issued by State authorities at any time without Central or State legislative action. State governments may, for example, issue control orders when local prices of essential commodities rise sharply, or if there is suspicion of "hoarding" or black market activities by traders.

Although there is evidence that the imposition of ECA-related restrictions has been declining over time—perhaps because of improved local supplies of cereals and other foods—all States continue to have ECA laws and many have some operative controls over commodity storage and movement (World Bank, 1999). Examples include ongoing controls on the storage, sale, and movement of rice in the State of Tamil Nadu, and recent restrictions on wheat and pulse storage in the State of Maharashtra (Government of Tamil Nadu, 2007; Government of Maharashtra, 2007). Even with declining use, the continued existence of the legal authority to restrict commercial trading and movement of commodities is a source of risk for private investors.

Small-Scale Industry Reservations

The small-scale industry (SSI) sector is a major component of the Indian economy, with about 3.6 million firms accounting for about 39 percent of total industrial value added, 20 million jobs, and 45 percent of total exports. From shortly after independence in 1947 until the late 1990s, most of the food processing sector was, by law, reserved for small-scale firms with a prescribed maximum investment. According to the Industries (Development and Regulation) Act of 1951, this policy was intended to promote the small-scale sector with two objectives: (1) ensuring increased production of consumer goods in the small-scale sector, and (2) expanding employment opportunities through small-scale industries (Government of India, Ministry of Micro, Small, and Medium Enterprises, 2007).

The limit for fixed capital assets for small-scale industries (SSIs) has been increased over time and is currently set at Rs 10 million (about $247,000). These limits effectively prevented the establishment of large-scale or vertically integrated food processing firms in the past, and continue to do so in the sectors that remain reserved for SSIs. Additionally, the manufacture of most agricultural machinery and many types of food processing machinery was reserved for SSIs before being "dereserved" during 1997-2007. These constraints limited the availability of modern farm equipment and food processing technology. Although some firms received waivers of SSI restrictions to operate larger enterprises, these special licenses have mostly been made available to firms exporting at least 50 percent of their output (Government of India, Ministry of Micro, Small, and Medium Enterprises, 2007).

Since 1997, when rice and wheat milling were removed from the SSI list, food processing industries reserved for the small-scale sector have grown fewer. At present, just six food processing industries remain on the reserved list (Government of India, Ministry of Micro, Small, and Medium Enterprises, 2007):

- Pickles and chutneys
- Bread

- Pastry
- Hard-boiled sugar candy
- Rapeseed, mustard, sesame, and groundnut oil (except solvent extracted)
- Ground and processed spices (other than spice oil and oleoresin spices).

Perhaps as important as SSI policies to the structure of Indian food processing and marketing are the very small-scale, "unorganized sector" firms. These small enterprises operate outside the legal, tax, and regulatory systems that are pervasive in agricultural processing and marketing, and account for about 75 percent of food processing industry output (Government of India, Ministry of Food Processing, 2007). The unorganized sector firms—which the State, local, and Central governments generally choose not to try to control—benefit from avoidance of taxes and regulations and are often competitive with both SSIs and larger firms in supplying small volumes of relatively low-quality goods.

Although only a few food processing industries continue to be reserved for the small-scale sector, the legacy of the SSI policy is an agricultural processing and marketing industry characterized by small, nonintegrated firms and a generally low level of technology. While this structure is beginning to change—with some former SSIs either supplying larger firms, expanding themselves, or closing—agribusiness investors currently face a general lack of competitive suppliers of intermediate goods and services, which may also discourage new investment.

State Agricultural Produce Marketing Committee Acts

Under the authority of India's Agricultural Produce Marketing Act of 1972 (and its amendments), most Indian States have similar acts (Agricultural Produce Marketing Committee, or APMC, Acts) that regulate the establishment of markets and the marketing of agricultural produce. These acts are intended to ensure that all (or most) trade between farmers and initial buyers occurs through a regulated market, primarily to protect farmers from unfair or exploitative trading practices. But the requirement to market all produce through the regulated markets also facilitates the collection of marketing taxes and fees for State and local governments.

The APMC policies have led to the establishment of more than 7,500 regulated markets in India, each operated by a local marketing committee and supported by the marketing fees collected on each transaction. Marketing fees typically range from 1 to 2 percent, on top of which a market levy is often imposed to support State or local investments in market infrastructure. In general, the quality of marketing infrastructure and services—including roads, marketing floor, weighing, storage, grading, and market information—is poor (Patnaik, 2006). Studies have also found that transactions in regulated markets, where licensed traders can have significant market power, often lack transparency and lead to exploitation of farmers (World Bank, 2006)

The Indian Government has acknowledged that policies established under the APMC Acts have hampered the development of India's agricultural markets and is now promoting reforms by the State governments (Government of India, Ministry of Agriculture, 2000). In addition to the cost,

quality, and performance issues already noted, the policies have prevented private investment in agricultural markets and infrastructure, and have largely prevented development of coordinated or integrated market structures, such as contracting, that more directly connect farmers and buyers. Although some States have permitted contracts between growers and buyers for specific products, the APMC requirement to trade in regulated markets tended to prevent the emergence of contract farming. Although views differ, some analysts and policymakers have noted the potential advantages of contract farming in India, both in helping growers manage risk and in engaging the private sector in the delivery of inputs and technology (Birthal, 2007; Singh, 2007).

The Ministry of Agriculture is currently promoting the reform of State APMC regulations, including those impeding contract farming and private investment in primary markets, by urging States to conform to a new "model" agricultural marketing act (Government of India, Ministry of Agriculture, Department of Agriculture and Cooperation. 2007). Significant progress has been made in implementing the suggested policy changes, with 25 of India's 35 States and Union Territories having completed or partially completed the suggested reforms as of January 2007 (table 4). With these reforms and past waivers granted by States to specific enterprises, contract farming activities, particularly for horticultural crops and poultry, are becoming increasingly common. In addition, the recent initiatives by central and State governments to build new terminal markets in Punjab, Haryana, Chandigarh, and Madhya Pradesh, and by the National Dairy Development Board to build the new Safal fruit and vegetable market in Bangalore—all with majority private-sector ownership—indicate an improved climate for private investment (Sharma, 2007; Patnaik, 2006).

Table 4
Status of State Agricultural Produce Marketing Act reforms (as of January 2007)

Stage of reform	Number	States and Union Territories
Reforms completed as suggested by the model act.	12	Andhra Pradesh, Arunachal Pradesh, Chandigarh, Chattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Nagaland, Orissa, Punjab, Rajasthan, Sikkim
Reforms suggested by the model act partially completed.	5	Delhi, Gujarat, Haryana, Karnataka, Uttar Pradesh
Existing act already provides for reforms suggested by the model act.	1	Tamil Nadu
No existing act; no reforms required.	7	Andaman & Nicobar Islands, Bihar, Dadra & Nagar Haveli, Daman & Diu, Kerala, Lakshadweep, Manipur
Reforms suggested by the model act initiated but not completed.	10	Assam, Goa, Jammu & Kashmir, Jharkhand, Meghalaya, Mizoram, Pondicherry, Tripura, Uttaranchal, West Bengal

Source: Ministry of Agriculture, Government of India, 2007.

Land Tenure Policies

Operational holdings of agricultural land in India are small and fragmented, reflecting the pressure of a large rural population on available cultivable land, as well as laws that set landownership ceilings and weak legal frameworks to support the sale and rental markets for farmland. About 63 percent of India's land is farmed in operational holdings of less than 4 hectares, and holdings are becoming more fragmented as farms are divided through inheritance (table 5). India's average operational holding of just 1.3 hectares is larger than in China and some other developing countries, but small relative to holdings in other major agricultural regions such as the United States, the EU, Brazil, Argentina, Canada, and Australia.

Such small operational holdings discourage agribusiness investment by complicating vertical coordination or integration by traders and processors because of the need to assemble produce from so many farmers. Throughout India, national and State laws prevent private companies, as opposed to individuals, from owning agricultural land except for specific approved purposes, such as producing seed or conducting scientific research. It is unclear whether Indian marketing firms and processors will be able to work successfully with large numbers of small farmers. If unsuccessful, this factor could limit the economic viability or scale of vertically integrated food marketing and processing enterprises.

With laws typically capping landholdings at 15-20 hectares, far above the current average holding size, progress in improving land rental markets may be an important step in allowing operational holdings to grow to more efficient scales. Land rental and tenancy laws vary by State, with relative freedom of land rental in some States (Assam, Punjab and Haryana), and a total ban on rentals in others (Bihar, Gujarat, Karnataka, Kerala, Manipur, Orissa, Rajasthan, Jammu & Kashmir and Uttar Pradesh). Lack of clear landownership records is often a key impediment to reform, although a number of States have made progress in land registration and computerization of land records. Also, legal frameworks often place landowners at risk by giving tenants ownership rights after land is rented and operated for several years. This precedent reportedly discourages the rental of farmland and results in near-term rentals that discourage investment in land improvement.

Table 5
Distribution of operational agricultural landholdings in India

	1995/96		2000/01	
Size	Share of holdings	Share of area	Share of holdings	Share of area
		Percent		
Marginal (< 1 hectare)	61.6	17.2	63.0	18.8
Small (1-2 hectares)	18.7	18.8	18.9	20.2
Semi-medium (2-4 hectares)	12.3	23.8	11.7	24.0
Medium (4-10 hectares)	6.1	25.3	5.4	23.8
Large (>10 hectares)	1.2	14.8	1.0	13.2

Source: Ministry of Agriculture, Directorate of Economics and Statistics, *Agricultural Statistics at a Glance 2006*.

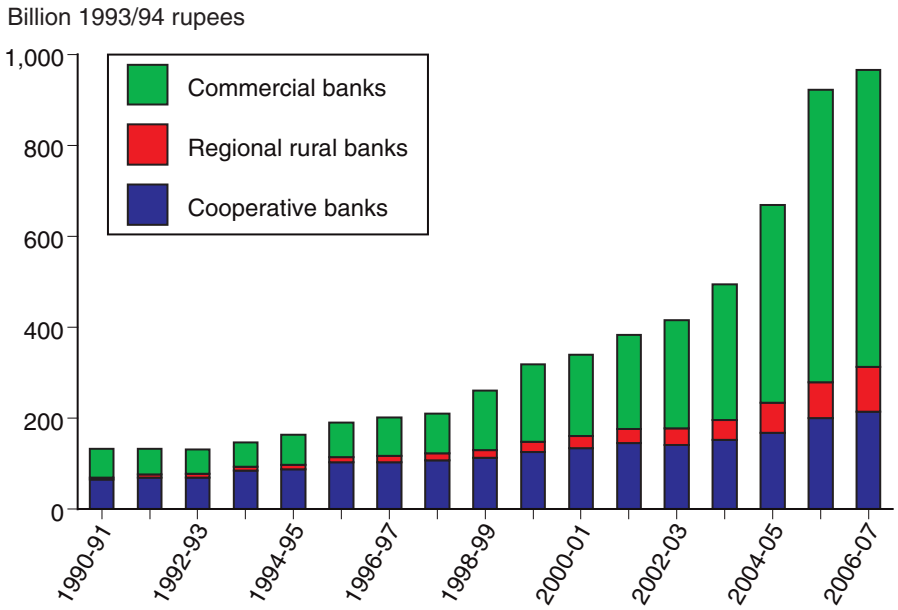
Some States, including West Bengal, have achieved success in improving tenant registration and strengthening land rental and sales markets. Recent policy statements—including the National Agricultural Policy, 2002, and 10th Five-Year Plan document—urge the reformulation of tenancy laws to encourage advanced commercialization of agriculture.

Credit Policies

India's agricultural credit system—an extensive network of cooperative, public sector, and commercial banks—has significantly improved both the availability and terms of credit for agriculture and allied activities since the late 1990s. Following sluggish growth in availability during most of the 1990s, institutional agricultural credit has expanded about 19 percent annually in real terms since 2000, with private commercial banks accounting for most of the expansion (fig. 14). The surge in credit availability has been particularly strong since the announcement of a "Farm Credit Package" in 2004 that aimed at doubling farm credit within 3 years, but has exceeded its annual targets with increases of 37 percent and 40 percent in the first 2 years of implementation.

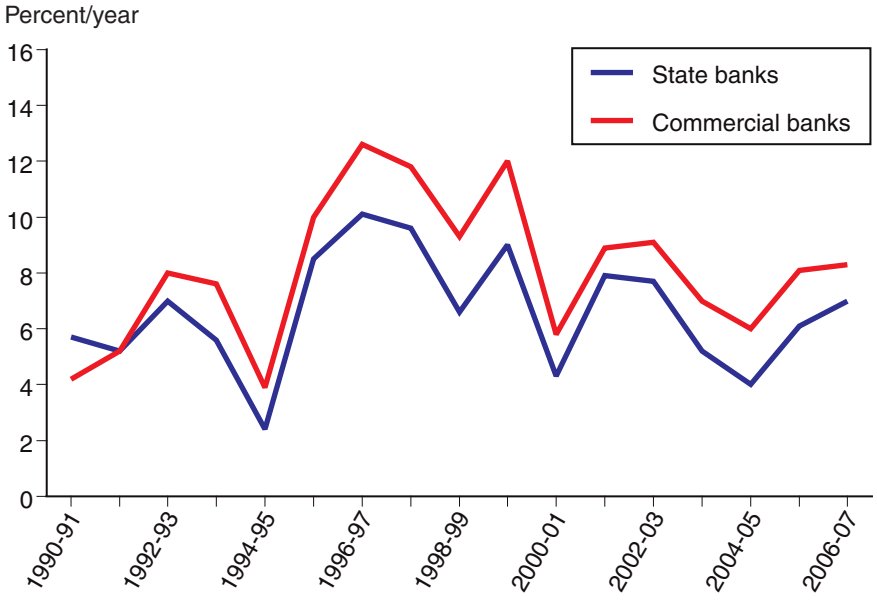
An important mechanism for expanding the availability and use of credit by producers has been "Kisan (Farmer) Credit Cards." The cards were introduced in 1998 and, by 2006, were available to about 64.5 million farmers (Government of India, Ministry of Finance, Economic Survey, 2008). Despite the improved availability of institutional credit, about 41 percent of Indian farmers, often those with smaller landholdings, remain dependent on traditional moneylenders at other noninstitutional sources of credit (Government of India, Ministry of Statistics and Program Implementation, 2005).

Figure 14
Direct institutional credit for agriculture and allied activities in India



Source: Reserve Bank of India; Government of India, Ministry of Agriculture, Statistics at a Glance, 2006.

Figure 15
Prime real lending rates in India



Source: Reserve Bank of India; Government of India, Ministry of Agriculture, Statistics at a Glance, 2006.

Credit availability has also improved—and interest rates have generally declined—for business investors. Ensuring a supportive monetary and interest rate environment for investment has been a top policy priority of the Indian Government. Despite rapid economic growth, inflation has averaged about 5 percent and interest rates have generally declined since the late 1990s. Overall, business investors have enjoyed relatively low and stable real interest rates since 2000 (fig. 15).

Tax Policies

Indirect taxes, including tariffs on imported goods and excise taxes on domestically manufactured products, are a major source of government revenue in India, accounting for about 52 percent of the tax receipts and 41 percent of the total revenue receipts of the central government. Agricultural marketing and retail sales taxes are also important sources of State revenue. Declining excise tax rates and tariffs have reduced the share of indirect taxes in total government revenues since the early 1990s, while direct taxes on personal and business income have accounted for an increasing share of revenues.

In 2005, the Central and State governments began implementing a central value-added tax (VAT) system that will eventually unify the central excise and State sales tax systems across all States. The VAT system imposes taxes only on the value added at each step of the supply chain through a system of firm credits for taxes paid on purchased intermediate inputs, thus preventing the cascading of taxes on final products. Introduction of the VAT, together with simplification and reduction of State sales and marketing taxes and indirect taxes, will lower business costs, particularly for larger and integrated firms operating across multiple States.

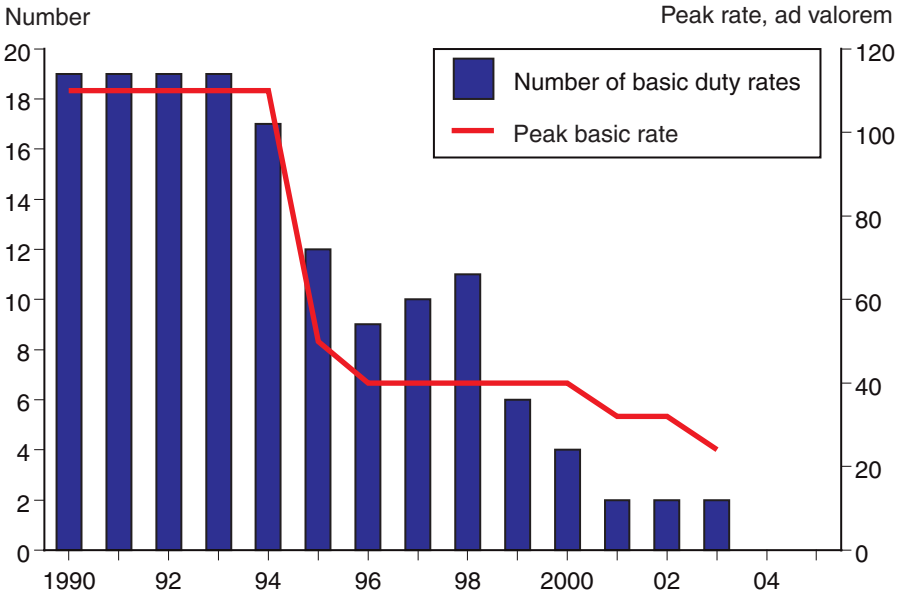
Excise taxes. India's traditionally high excise taxes have been reduced significantly since economywide reform began in the early 1990s (fig. 16). The excise tax system has been steadily simplified with fewer basic rates, and peak tax rates have been reduced from 110 percent (ad valorem) in 1991 to 24 percent by 2004. However, despite declining rates, excise tax revenues have remained buoyant—growing more than 9 percent annually in real terms since 1999/2000—due to rising demand and improved tax compliance (Government of India, Ministry of Finance, *Economic Survey*, various issues).

Traditionally high excise tax rates for many processed agricultural products have also been reduced (table 6), stimulating demand through lower consumer prices and improving the investment climate for food processors. For "organized" sector firms—those that pay taxes—lower excise taxes will also improve their competitiveness with firms qualifying as small-scale industries, which receive concessional tax treatment, and with unorganized sector firms, which often pay little or no taxes.

State sales and agricultural marketing taxes. State taxes on retail sales and transactions in regulated agricultural markets are typically major sources of State revenue. Tax rates vary by State as well as by product. In 2005, prior to introduction of the value added tax (VAT) system, sales tax rates for processed agricultural products ranged from 8 to 23 percent, with most of the largest States imposing taxes of 12-16 percent. With the VAT, these rates will likely decline and converge across States, although it is not clear how quickly this will happen (World Bank, 2005).

Agricultural marketing taxes imposed on all agricultural produce at the first point of sale also vary significantly by State. These taxes typically include marketing fees of 1-2 percent and development or infrastructure "cesses" (fees) as high as 5 percent, on top of mandatory commissions and fees for

Figure 16
Trend in central excise taxation in India



Source: Government of India, Ministry of Finance, Economic Survey various issues.

Table 6
Changes in India's excise taxation of food products since 2001

Year and product	From	To
2001/02:		
Fruit & vegetable preps	16%	0
2002/03:		
Tea	2 rupees/kg	1 rupee/kg
2003/04:		
Branded, packed refined edible oils	0	8%
2004/05:		
Processed meat, fish, and poultry prod.	16%	8%
Cakes and pastries	8%	16%
2005/06:		
Surcharge on refined edible oils	1 rupee/kg	0
2006/07:		
Condensed milk	16%	0
Ice cream	16%	0
Processed meat, fish, and poultry prod.	8%	0
Pasta	16%	0
Ready-to-eat processed foods	16%	8%
2007/08		
Packed biscuits	16%	0

Source: Government of India, Ministry of Finance, Economic Survey, various issues.

cleaning, weighing, bagging, and other services paid to private agents in the market (World Bank, 2005). The reform of State Agricultural Produce Marketing Committee laws—already underway—may create more competition with private markets and eventually reduce these fees.

Direct taxes. India has also taken steps to extend direct tax incentives to the food processing industry. In 2004/05, the Government announced a package of incentives for new firms that process, preserve, and package fruits and vegetables, including a 5-year waiver of direct taxes plus a 25-percent reduction in taxes for the next 5 years. In 2005, India also increased tax incentives for the development of Special Economic Zones (SEZs) and for firms, including agro-processing firms, operating in SEZs, among them:

- Duty-free import of goods for development, operation, and maintenance of SEZ units;
- 100-percent income tax exemption on exports from SEZ units for the first 5 years, 50-percent exemption for years 6-10, and a 50-percent exemption of reinvested export profits for years 11-15;
- External commercial borrowing by SEZ units up to $500 million/year, without restriction, through recognized banking channels;
- Exemption from central Government sales and service taxes;
- Exemption from State sales taxes and other State levies.

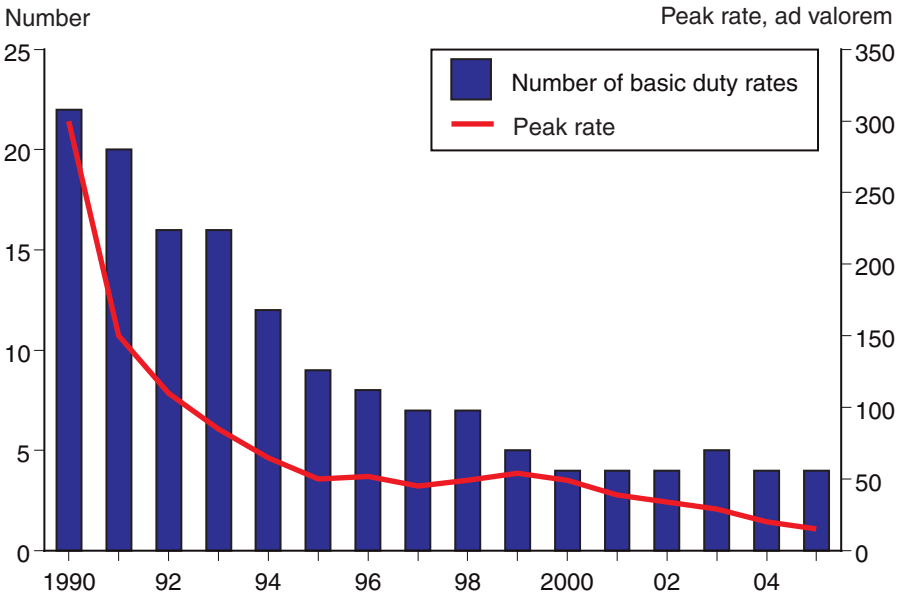
As of April 2008, six new food and agri-processing SEZs have been approved. How quickly the SEZ policy will improve investment in these sectors is uncertain due to ongoing disputes over the acquisition of land—particularly agricultural land—to accommodate the SEZs.

Tariff Policy

Import tariffs have also been simplified and reduced since the early 1990s (fig. 17). Peak tariffs—the rates charged for the most highly protected products—for nonagricultural goods dropped from 300 percent in 1991 to 12.5 percent by 2006. In agriculture, import access has improved due to the removal of quantitative restrictions in 2001 and some reductions in applied tariffs, but bound agricultural tariffs remain high relative to other sectors of the Indian economy, and relative to most other countries. Although the Government has been reluctant to reduce agricultural tariffs that protect India's many small farmers and small-scale agribusinesses, many agricultural tariffs are now set well below World Trade Organization bound rates (table 7). There has been a tendency in recent years to reduce tariffs when domestic shortages lead to significantly higher consumer prices for essential food commodities. Setting applied tariffs well below bound rates has led to India's emergence as a major importer of pulses and vegetable oils since the 1990s. More recently, India has reduced its applied tariffs for wheat and corn to zero and sharply lowered its tariffs on palm oil products to help augment domestic supplies and stabilize prices.

Reduced tariff protection presents both challenges and opportunities for investors in agriculture and agribusiness. On the challenge side, lower tariffs imply more competitive pressure to reduce costs and improve quality through increased scale, improved technology, and vertical integration. Reduced agricultural tariffs may tend to discourage some new investment aimed at serving rising domestic demand. However, competitive pressure could foster gains in efficiency and quality that allow agriculture and agribusinesses to expand in both domestic and global markets. Some agribusinesses may benefit from freer trade in raw materials and intermediate products. For example, greater access to imported oilseeds could benefit producers and consumers by allowing greater oilseed processing

Figure 17
Trend in nonagricultural tariffs in India



Source: Government of India, Ministry of Finance, Economic Survey various issues.

Table 7
India's bound and applied tariffs for selected agricultural products

	Bound rate	Applied rate[1]
	Percent	
Grain and oilseeds		
Pulses	100	0
Wheat	100	0
Rice	70	70
Corn	70	0
Oilseeds	100	30
Horticulture		
Apples	50	50
Oranges, lemons, grapes	100	30
Potato	100	30
Onions	100	5
Meats		
Poultry, whole	100	30
Chicken, leg	150	100
Processed products		
Wheat flour	150	0
Milk powder	60	60
Cheese	40	30
Sugar	150	60
Frozen vegetables	150	30
Oilcake	100	15
Crude soybean oil	45	40
Crude palm oil	300	45
Refined soybean oil	45	45
RBD palm olein	300	52.5

[1]As of January 2008.
Source: Ministry of Agriculture, Directorate of Economics and Statistics, *Statistics at a Glance, 2007*.

efficiency (Persaud and Landes, 2006). And, access to competitively priced feed can be critical to contain production costs and maintain growth in consumption and production of poultry meat and eggs (Landes et al., 2004).

Labor Policies

Under the Indian constitution, labor law is on the "concurrent list," giving both the Central and State governments the authority to enact legislation on most labor matters. India's comprehensive labor laws—aimed primarily at protecting the rights of employees—are often seen as a disincentive to new investments by larger, organized sector firms. For example, firms with more than 100 employees are required to obtain government permission before laying off workers and can remain obligated to pay workers even after a unit has gone out of business. There are approximately 45 central government laws addressing labor practices and roughly four times that number of additional laws enacted by States (Basu, 2006). Some of the major central government laws are:

- Workmen's Compensation Act, 1923: Specifies compensation to be paid in case of injury or death of a worker.

- Payment of Wages Act, 1936: Specifies when and how wages must be paid and what deductions are permitted.
- Industrial Employment (Standing orders) Act, 1946: Requires employers to clearly define the conditions of employment in conformance with model "standing orders" dealing with worker classification, holidays, shifts, payment of wages, leaves, termination etc.
- Industrial Disputes Act, 1947: Provides for investigation and settlement of disputes; sets conditions for laying off workers.
- Minimum Wages Act, 1948: Sets minimum wages for all employees.
- Employees Provident Fund and Miscellaneous Provisions Act, 1952: Requires minimum employee and employer contributions to "Provident Fund" or retirement accounts.
- Maternity Benefit Act, 1961: Requires payment of maternity benefits and/or medical bonus and maternity leave for women employees.
- Payment of Bonus Act, 1965: Requires payment of specified bonuses to employees of firms with 20 or more employees.
- Payment of Gratuity Act, 1972: Requires payment of specified gratuity, or separation allowance, to employees of firms with 10 or more employees, (Embassy of India, 2007).

Significant reform to India's labor laws to give employers more flexibility in hiring and laying off workers has proven difficult at the central government level, but several States have made changes to support growth in the information technology industry or to attract foreign investment. To avoid falling under the purview of these laws, many larger firms prefer hiring contract labor or organizing into a number of units small enough to avoid the regulations. Locating within an SEZ, where labor laws are sometimes less restrictive, may also be increasingly attractive to new investors.

Food Laws

Until the new Food Safety and Standards Bill was passed in August 2006, India's food processing industry was subject to regulation by eight government ministries administering more than a dozen legislative acts dating as far back as 1954. The complex, overlapping, and sometimes contradictory regulatory environment was seen as a deterrent to investment and innovation in food processing.

The 2006 bill, which awaits implementation, consolidates the laws relating to food and establishes a Food Safety and Standards Authority of India to set science-based food standards and regulate the manufacture, import, processing, distribution, and sale of food. The "Food Authority" is to be established in the Ministry of Health and supported by scientific committees and panels in setting standards. According to the legislation, the goal is to have an effective and transparent regulatory framework that will allow the food industry to work efficiently and attract investment. The new legislation is to be enforced by State Governments, State Commissioners for Food Safety, and local government bodies.

Foreign Direct Investment Policy

Indian investment rules currently permit FDI up to 100 percent ownership in most sectors, and in most cases with automatic approval. This includes investment in India's Export Oriented Units and, more recently, in India's planned Special Economic Zones. Key agricultural areas where FDI is currently not permitted (Government of India, Ministry of Finance, Union Budget, various issues) are:

- Retail trading, except for wholesale trading and single-brand retailing.
- Agricultural production, except for floriculture, horticulture, development of seeds, animal husbandry, fisheries, cultivation of vegetables under controlled conditions, tea plantations, and services related to agriculture and allied sectors.
- Housing and real estate.

Foreign investors and firms can enter India as either incorporated or unincorporated entities. Incorporated firms can be established through joint ventures with existing firms, or as wholly owned subsidiaries of foreign companies. Unincorporated entities can take the form of liaison, project, or branch offices of foreign firms. All profits, dividends, and foreign investment may be freely repatriated, except for special cases where nonresident Indians invest in specific schemes that do not permit repatriation (Government of India, Ministry of Commerce and Industry).

Restrictions on agricultural production and, particularly, multi-brand retailing likely deter some foreign firms from investing in Indian agribusiness. In the absence of a competitive and efficient domestic food retailing industry, the inability to integrate forward into retailing likely reduces the potential profitability of investments in food supply chains by multinational retailers. However, it is likely that foreign investors are as discouraged—and perhaps even more so—by the same regulatory and policy disincentives faced by domestic firms investing in agribusiness.

Infrastructure Factors Affecting Investment

The climate for agribusiness investment in India is also shaped by the availability, quality, and costs of various infrastructural services required by agricultural producers, traders, and processors. In general, India's transport, power and water infrastructure, while often available at low cost, is of poor quality. Similarly, the institutions that provide important agricultural services, such as market information and grading/inspection services, are generally considered to be weak, while the agricultural research and extension system is criticized for being unresponsive to emerging needs of the farm sector. These infrastructural and institutional deficiencies impose additional costs and risks for new investors.

Power

India's economy labors under a chronic shortage of electrical power. During 2003-2005, the average energy deficit was more than 7 percent and the average peak shortage was about 11 percent, gaps that have not been closed

Table 8
Estimated average power tariffs and costs in Indian States, 2001-02

Category	India average	Andhra Pradesh	Uttar Pradesh	Rajasthan	Tamil Nadu	Haryana
			Rupees per kilowatt-hour			
Agriculture	0.42	0.14	1.19	0.46	0.01	0.48
Domestic	1.95	1.74	1.81	1.90	1.81	2.80
Industry	3.79	4.41	4.82	3.95	3.95	4.51
Overall	2.40	2.22	2.59	2.21	2.37	2.25
Cost of supply	3.50	3.61	3.83	3.68	3.09	4.12

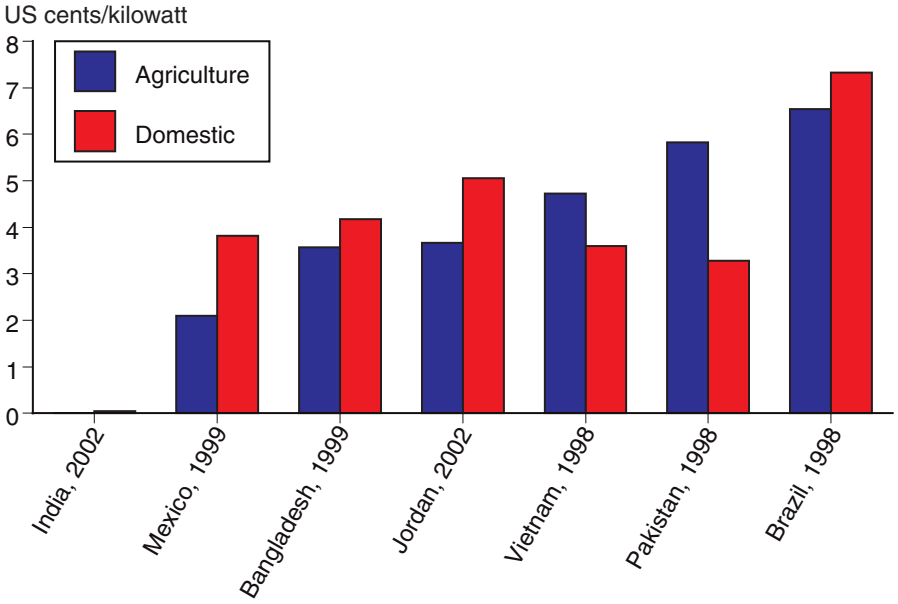
Source: Planning Commission, May 2002.

significantly in the last decade. About 64 percent of India's power is generated by thermal plants, 25 percent from hydroelectric facilities, 8 percent from wind and other renewable sources, and 3 percent from nuclear plants (Ministry of Power, 2008). Plans to reduce the energy deficit by expanding public and private investment in power generation and transmission are ambitious, but have generally fallen below target.

Low cost recovery is a fundamental problem of the power sector, leading to underinvestment in new generation and transmission capacity, as well as poor maintenance of existing capacity. Large subsidies on household and agricultural power use, together with significant theft, are key sources of low cost recovery. Power rates for agricultural uses are heavily subsidized throughout India, while industrial users are charged high power rates that cross-subsidize agricultural and household users. Overall, however, the average power tariff accounts for only about 70 percent of the costs of generation and transmission (table 8).

Power costs for both agricultural and household (domestic) uses in India are low by international standards (fig. 18). This cost advantage for farmers

Figure 18
Agricultural and domestic (household) power tariffs, selected countries



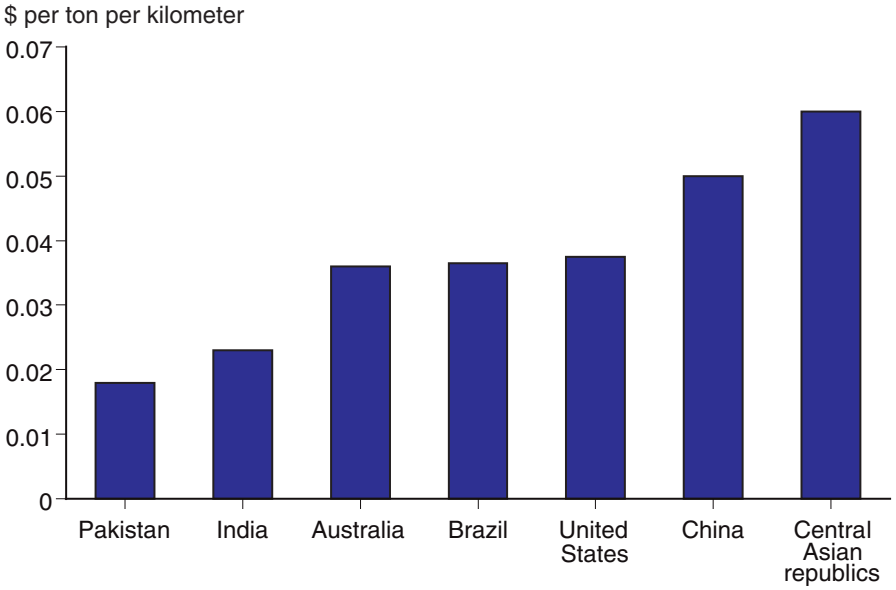
Source: Kapoor and Barnes, 2003.

and farm households is at least partially offset by power rationing, frequent power interruptions, and voltage fluctuations that damage pumps and make water supplies unreliable. In addition, India's power subsidies are hastening the depletion of groundwater resources due to the low cost of operating electric irrigation pumps (Gulati and Narayanan, 2003).

The industrial and commercial sectors account for about 36 percent of India's power use, compared with 29 percent by agriculture, 21 percent by households, and 14 percent by other users. However, because of problems with power availability and quality and the high cost of power to industrial users, a growing number of firms (and households) are investing in their own "captive" power generation facilities to supplement supplies from the power grid. Captive power capacity is estimated to be about 20,000MW, or 16 percent of the total capacity operated by public utilities (Hindu Business Line, 2005; Government of India, Ministry of Power, 2008).

In June 2003, the Government of India enacted the Electricity Act, which provides a framework for comprehensive power sector reforms. The act authorizes the Central Government to harmonize central and State laws, enforce national policies, and establish a competitive environment for the power sector. Power generation no longer requires a license, and new rules are established to strengthen transmission and support private investment in power generation and distribution. The act progressively reduces cross-subsidies and moves tariffs toward the actual cost of supply. Progress on power reform has been mixed. Additions to generating capacity are expected to meet only 57 percent of the current 5-year planning target, while the weighted-average power tariff increased 13.4 percent between 2003 and 2007, led by large hikes in agricultural tariffs (Government of India, Ministry of Finance, Economic Survey, 2006/07).

Figure 19
Average truckload freight rates in selected countries, 2002



Source: World Bank, India Road Transport Service Efficiency Study, Energy and Infrastructure Operations Division, South Asia Regional Office, November 1, 2005.

Transportation

More than two-thirds of India's domestic freight is transported by road, with the remainder shipped primarily by rail. Although India has an extensive rail transport system, the use of road transport grew from 51 percent of all freight in 1991 to 67 percent by 1998. Users have grown to regard road transport as more readily available, reliable, and cost-effective than rail transport (Cook et al., 1999; World Bank, 2005a).

India's road freight transport sector, while competitive and low-cost compared with other countries (fig. 19), tends to be slow and unreliable. For example, average transit time for the 1,408-kilometer (875 mile) trip between Delhi and Mumbai is 3 days, and for the 2,019-kilometer (1,255 mile) trip from Delhi to Bangalore it is 4-5 days, both about twice the time that would be expected in the United States. Slow and unreliable transit times stem from low speeds associated with poor roads and mixed traffic, lack of urban bypasses, and delays for inspection and fee collection at internal border checkpoints. Checkpoint delays alone typically account for 15-25 percent of the transit time (World Bank, 2005a).

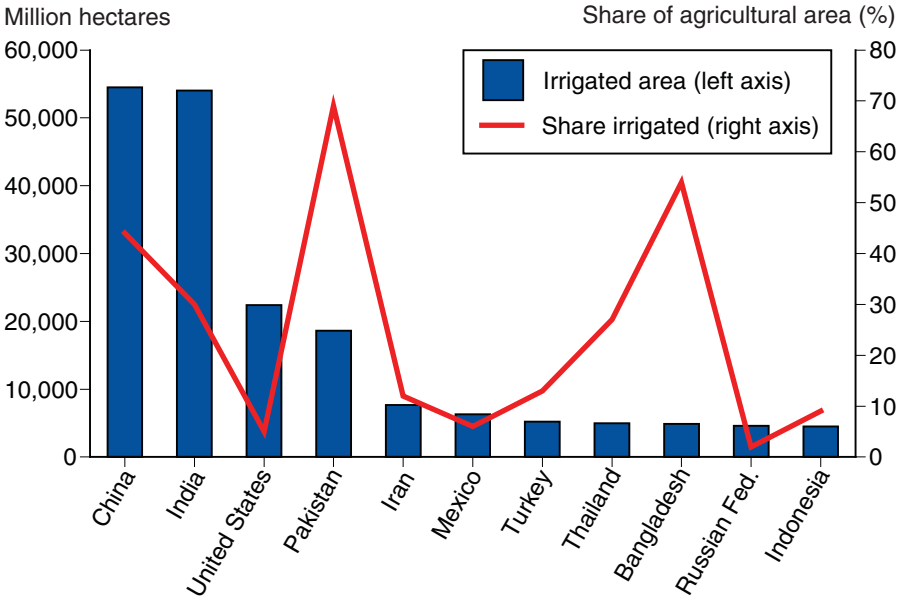
Both road and rail transport systems have very limited capacity for bulk handling and transport of agricultural commodities. With a few exceptions, cereals, oilseeds, and other basic agricultural commodities in India are handled and transported in gunny sacks via standard, multi-purpose trucks or railway wagons. Refrigerated rail or road transport of perishable agricultural products is also limited. However, private investment in refrigerated road transport is growing, with subsidized financing available through government programs.

Water

Growth in irrigated area has boosted Indian farm output through both higher yields and increased cropping intensity. About 54 million hectares—or 30 percent of all agricultural land—is now irrigated, making India second only to China in irrigated area (fig. 20). The largest share of and most of the growth in irrigated area is associated with private investment in wells and diesel/electric pumps for groundwater irrigation. Power subsidies have prompted the expansion of groundwater irrigation. Surface-water irrigation—which is dependent on public investment in dams, reservoirs, and canals—accounts for about a third of irrigated area, a share that has been declining. Rising public investment costs for new surface-water projects, together with the cost of subsidies for canal water, are contributing to the slowed growth of surface irrigation. In some areas, particularly in north India where intensively irrigated wheat and rice have become common, agriculture is increasingly threatened by water logging and salinity problems associated with high rates of canal irrigation and extraction of groundwater (Gulati and Narayanan, 2003; Gulati et al., 2005).

With the expansion of irrigation, agriculture now accounts for 84 percent of total water use in India (Government of India, Planning Commission, 2002). Many regions face a growing challenge as agricultural, industrial, and household uses compete for water resources. Industrial uses now account for 3-5

Figure 20
Countries with the largest irrigated area



Source: Food and Agriculture Organization, FAOSTAT database.

percent of water use, about half from surface-water and half from groundwater sources. While most States promise adequate water supplies as part of their industrial policies, highly water-dependent industries tend to locate facilities only in water-surplus areas. Water demand by domestic and industrial users is projected to grow 27 percent and 14 percent, respectively, between 2010 and 2025 (Rosegrant et al., 2002), necessitating more government emphasis on water use regulation, pricing of water, and water resource development.

Agricultural Research and Extension

India has one of the largest public sector agricultural research and extension systems in the world, as well as a growing private sector research and extension industry. Both public and private research and extension have been important factors in agricultural productivity growth in India, with public research accounting for about 30 percent of total factor productivity growth between 1956 and 1987 and private sector research accounting for about 11 percent (Evenson et al., 1999).

The public agricultural research system—governed by the Indian Council for Agricultural Research (ICAR)—includes 47 central research institutes, 32 national research centers, and 37 State agricultural universities with more than 30,000 research staff (Government of India, Ministry of Agriculture, Indian Council of Agricultural Research, 2007). ICAR and the public research system have been criticized for failing to adapt research priorities to the changing economic and scientific environment for agriculture (Government of India, Planning Commission, 2005; World Bank, 2004). Key issues include making research more demand based to meet the needs of an increasingly diverse agricultural consumption basket, adapting research and extension to new agricultural technologies, and developing more effective public-private research partnerships. A new multi-year

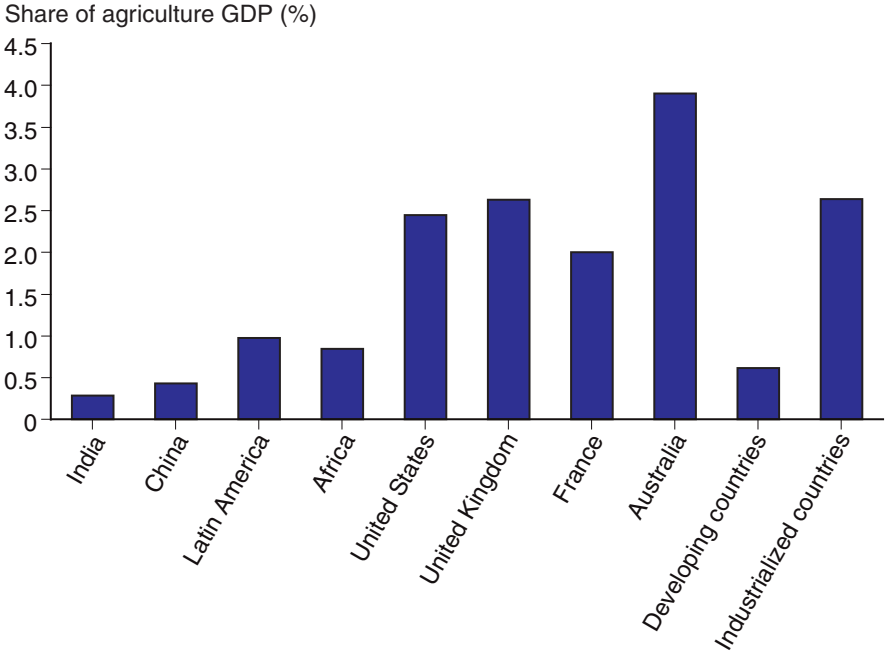
National Agricultural Innovation Project funded by the World Bank seeks to address these issues through research capacity building and the formation of public-private consortia focusing on research questions across agricultural supply chains.

Private sector participation in agricultural research is increasing. Government efforts to promote biotechnology research and recent steps to strengthen and clarify intellectual property protections—including passage of the Plant Variety Protection and Farmers' Rights Act (2002) and formulation of the National Seed Policy (2002) and the National Seed Act (in draft)—provide an impetus for private sector involvement in research. At present, private sector research tends to focus on higher value crops (Bt cotton, Bt eggplant, etc.) and on plant types (hybrid seeds) with high expected returns to private investment.

Historically, public investment in agricultural research in India has been low relative to many other countries (fig. 21), but investment has increased since the late 1990s (fig. 22). During 2000-2007, available data indicate that public investment grew about 6 percent annually in real terms, implying a continued increase in investment as a share of agricultural output.

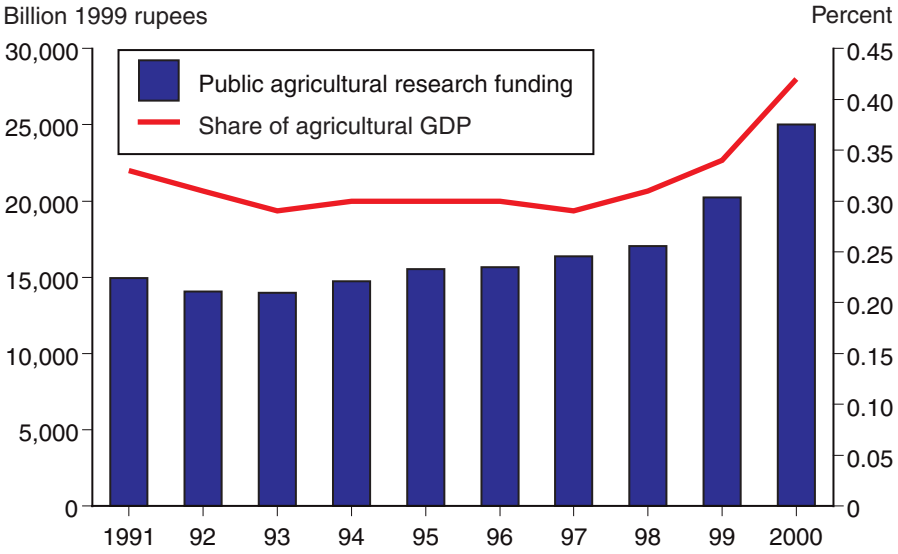
Public agricultural extension is primarily the responsibility of State governments, and has been much criticized for lack of effectiveness (Government of India, Ministry of Agriculture, Department of Agriculture and Cooperation, 2002; Planning Commission, 2005). Key problems include understaffing, lack of coordination, and difficulty in shifting from the historical focus on food grain production to a more diverse set of crop and marketing issues. The Government's New Policy Framework for Agricultural Exten-

Figure 21
Public agricultural research expenditures in selected countries and regions[1]



[1] 1995 data for all countries except the United States (1993) and Australia (1994).
Source: Pal and Byerlee, 2003.

Figure 22
Public agricultural research funding in India



Source: Pay and Byerlee, 2003.

sion (2002) seeks to instill a new approach that concentrates on increasing farm household income through agricultural diversification. The goal is to make the extension system more market-oriented and farmers more competitive in domestic and international markets.

Along with the government effort to strengthen and improve funding for public extension services, private companies and nongovernmental organizations (NGOs) are becoming more active in providing extension services. Models employed by private firms and NGOs include fee-for-service extension, extension linked to input supply or marketing services, and extension linked to contract farming or vertical coordination (World Bank, 2004).

Cold Chain Capacity

Although cold chain capacity is expanding due to public and private investments, India's capacity for cold storage and refrigerated transport of perishable food products is limited. Cold storage capacity in 2006 was 21.7 million tons, reflecting growth of about 11 percent since 2004 (Government of India, Ministry of Food Processing, 2007). As of 2003, approximately 90 percent of total cold storage capacity was used to store potatoes, with other fruit and vegetable products accounting for about 7 percent and dairy products about 1 percent.

Only a few integrated cold chains are established in India, including two serving the dairy industry (Gujarat Cooperative Milk Marketing Federation, and Mother Dairy Foods Processing Ltd), one serving the franchises of McDonald's India, and Snowman Frozen Foods Ltd, which operates the only countrywide cold storage and refrigerated transport network. Most cold storage and refrigerated transport capacity is operated by small, nonintegrated firms that do not make use of state-of the-art technology or management practices (U.S. Trade and Development Agency, 2006).

A number of programs now aim at expanding investment in cold chain capacity:

- A capital investment subsidy scheme for construction, expansion, and modernization of cold storage for produce is being implemented by the National Horticulture Board of the Ministry of Agriculture. Between 2001 and 2004, this scheme facilitated private investment in about 4.7 million tons of new cold storage capacity (Government of India, Ministry of Agriculture, Department of Agriculture and Cooperation, 2005).
- The Central Warehousing Corporation (CWC), the largest owner of warehouse capacity in India, is developing a large cold storage facility near Delhi, with plans to develop other modern cold storage facilities throughout the country.
- The Agricultural Processed Food Products Export Development Authority (APEDA), part of the Ministry of Commerce and Industry, is promoting the development of world-class perishable cargo facilities at air cargo terminals.
- The Container Corporation of India Ltd is building cold storage units across the country, as well as refrigerated containers, to support agricultural exports.

Institutional Services for Agriculture

Many of the institutional services needed to support agricultural markets are in the early stages of development in India. In some cases—such as grades/standards and market information—the services have been the responsibility of government agencies that have not adapted to provide the services needed by expanding and diversifying markets. In other cases—such as futures trading—government policies that have regulated markets to protect consumers or farmers have prevented or slowed the evolution of market services.

Grades and standards. The Agricultural Produce (Grading and Marketing) Act of 1937 empowers the Government to fix quality grades, authorize commodity grading, specify labeling and packaging requirements, and confiscate substandard produce. In practice, government decisions on grades and standards issues are seldom rendered in cooperation with the private sector. Although government agencies establish and revise grades and standards for many commodities, there are generally no inspection services in Indian markets and commodities are seldom bought and sold based on these grades and standards. Most Indian grain, for example, is traded based on the broad standard of "fair-to-average quality (FAQ)" with no formal grading, although some private buyers and sellers trade grains at premiums or discounts to the FAQ price based on their independent quality assessments.

Market information. There is a critical shortage of objective, reliable, and timely public information on most major Indian commodity markets, including traded volumes and prices, production, consumption, and stock levels. Although public market reporting by the Ministry of Agriculture and State governments is improving, current reporting includes a limited range

of variables—mostly wholesale prices and production estimates—of uncertain quality. The lack of adequate public market information tends to raise the transaction costs and price risk faced by market participants, creates the potential for information asymmetry between large and small players in the market, likely reduces marketing efficiency, and limits information available to support policy formulation. Several private sector firms now sell market information based on their proprietary data collection, and others provide marketing data through their village-level agricultural service centers.

Futures trading. The Government removed its longstanding prohibition on futures trading in most agricultural commodities in 2003/04, leading to the immediate formation of several exchanges to trade futures contracts in major farm commodities (Government of India, Ministry of Finance, Union Budget, 2004/05). However, except for a few commodities that have had a longer history of futures trading—most importantly soybean oil, which has been traded since 2000—traded volumes remain small compared with overall market size and contracts often lack liquidity, thus limiting the utility of the markets for hedging risk.

While the availability of futures contracts and traded volumes have tended to increase, there continues to be concern over the impact of speculators and unscrupulous traders on the stability of consumer prices for essential commodities. In 2006/07, a government panel determined that futures market activity was contributing to a runup in consumer wheat and rice prices, leading the Government to announce a cessation of wheat and rice trading in February 2007, which remains in effect (U.S. Department of Agriculture, Foreign Agricultural Service, 2007). As a result of limited contract liquidity and uncertain government policy, prospective investors in agricultural production, marketing, and processing enterprises continue to face limited and uncertain access to risk management tools.

Prospects for Agricultural Investment

Continued sluggish private investment in Indian agriculture and agribusiness since the early 1990s, despite sustained high growth in consumer incomes and food demand, suggests that policy and infrastructure factors have been a deterrent to new investment. Historically, extensive policy intervention in markets and industries has created disincentives and risks for investments in agriculture, including farmers and agribusinesses, and particularly large-scale vertically integrated agribusinesses.

During much of the 1990s, agricultural trade and price policies resulted in taxation of agricultural production despite substantial and rising farm subsidies. At the same time, movement, storage, and private marketing restrictions for agricultural commodities, scale restrictions on agribusinesses, high taxes on processed products, the high cost of credit, and complex food laws were among the disincentives and risk factors facing investors. This uncertainty was compounded by weak transport and power infrastructure and lack of key market services such as market information, risk management tools, and grading/inspection systems. Through the late 1990s, public investment in agriculture remained sluggish despite rising food demand, while more public funds went to meet the rising cost of subsidies on food grains and farm inputs.

Since 2000, however, there is evidence that the policy environment is improving and that investment in agriculture and agribusiness is beginning to strengthen. Movement and storage restrictions on essential commodities are less common, plant scale limitations have been largely removed, State marketing laws are beginning to permit development of private marketing channels, and taxes on agricultural products are being reduced and simplified. And, although power, transport, and other infrastructure problems will likely be solved only in the longer term, private investment is seemingly on the rise. Private investment in food marketing ventures has increased noticeably in the last several years (table 9). These new ventures collectively amount to $10-$20 billion over the next 5-7 years to develop supply chains and "front-end" retail outlets. This activity represents a turnaround in investor confidence.

Recent investment in India's food marketing sector includes a number of ventures by foreign investors, including a Wal-Mart collaboration with the Indian conglomerate Bharti. Since India does not permit foreign direct investment (FDI) by multi-brand retailers, foreign investment has taken the form of wholesale (or "cash and carry") trading enterprises, or partnerships with Indian "franchisees" who own the retail outlets. Other than multi-brand retailing, all other areas of agricultural processing and marketing are open to FDI. While the FDI restrictions on retailing may be deterring some foreign investment in agricultural marketing, the increased activity in chain food retailing by many of India's largest domestic companies indicates their confidence in a supportive policy environment.

While there is evidence that the investment climate is improving for agriculture and agribusiness and that private investment is beginning to respond, it is unclear how quickly or how much agricultural productivity and marketing efficiency will respond. If rapid income growth is sustained, the growth and diversification of food demand will likely continue to outpace production

for the next several years, leading to continued pressure on domestic food prices and demand for imports. However, given India's extensive land and water resources and low current farm yields, there is scope to expand output of many farm products and become more globally competitive in the longer term.

Table 10

Growth of India's chain food retailing industry, 2007

Retailer	Year entered	Ownership	Formats	Outlets/plans	Locations
Nilgiri's	1971	Local (Part ownership by Actis, UK)	Supermarkets, convenience stores	40; plans for 500 stores by 2010	Major cities in south India
Trinethra & Fabmill	1986	Local (Aditya Birla Group)	Supermarkets, convenience stores	170	Major cities in Andhra Pradesh, Tamil Nadu, Karnataka, and Kerala
Margin Free	1994	Local Cooperative (Consumer Protection and Guidance Society)	Discount stores, supermarkets	350	Major cities in Kerala, Tamil Nadu and Karnataka
Spencers	1996	Local (RPG Group)	Hypermarkets, supermarkets, convenience stores	97; plans to add 50 hypermarkets by 2008	Major cities in South India
Subhiksha	1997	Local (Subiksha Trading Services Pvt. Ltd.)	Discount stores	520; plans for 1,200 stores all over the country by 2007/08	Major cities in Tamil Nadu, Andhra Pradesh, and Pondicherry, and Delhi region
Foodworld	1999	Local (Subsidiary of Dairy Farm International)	Supermarkets	55; plans to expand in south India	Bangalore, Hyderabad
Trumart	2001	Local (Pyramid Retail)	Supermarkets, convenience stores	29; plans for 90 stores by end of 2007	Maharashtra and Gujarat; Bangalore, Chennai, Hyderabad, and Kolkata
Food Bazaar	2002	Local (Future Group)	Hypermarkets, supermarkets	90; Plans for 250 stores by 2010	National (major metros and large cities)
Metro Cash & Carry*	2003	Foreign (Metro AG, Germany)	Wholesale "cash & carry"	3; plans to add 15-18 new outlets by 2009	Bangalore, Hyderabad, Mumbai, Kolkata, Chennai
My Dollar Store	2004	Local (Franchisee of My Dollar Store of the U.S.)	Convenience stores	50; plans for 400 stores by 2010	Nationwide
Shoprite	2004	Local (Subsidiary of Shoprite (PTY) Ltd., South Africa)	Hypermarket	1; plans to add 2-3 new outlets by 2007	Mumbai
Star India Bazaar	2004	Local (Trent; division of Tata Group)	Hypermarket	3; plans to add 23-	Nationwide

—Continued

Table 10—*Continued*

Retailer	Year entered	Ownership	Formats	Outlets/plans	Locations
Reliance Retail	2006	Local (Reliance Industries Ltd.)	Hypermarkets, supermarkets, convenience stores	230; plans for 3,000 stores, 2,500 supermarkets and 500 hypermarkets by 2010	Nationwide
Spinch	2006	Local (Wadhawan Retail)	Supermarkets	89; plans to add 1,500 stores in 90 cities by 2010	Nationwide
Max Hypermarkets	2007	Local-foreign joint venture (Spar International, Neth.)	Hypermarkets	Plans to develop 7 stores by 2009	Nationwide
Bharti[1]	2007	Local (Bharti Enterprises)	Hypermarkets, supermarkets	Plans to invest $2.5 billion by 2014	Nationwide
Bharti Walmart	2007	Local-foreign joint venture (Wal-Mart USA)	Wholesale "cash & carry"	Plans for 15 stores by 2014	Nationwide

[1]Retail partner of Walmart.
Source: U.S. Department of Agriculture. Foreign Agricultural Service. 2006; updated from various press reports.

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