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Constraints Facing Indian Agriculture: Need for Policy Intervention

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I

BRIEF OVERVIEW OF INDIAN AGRICULTURE

Even after 50 years of Independence, agriculture continues to be the mainstay of the Indian economy. It accounts for about one-fourth (25 per cent) of the gross domestic product (GDP) and is the source of livelihood for nearly two-thirds (60 per cent) of the population. The green revolution has been the cornerstone of India's agricultural achievement, transforming the country from one of food deficiency to self-sufficiency through enhanced technology adoption, increased public and private investments and certain institutional innovations that have augmented production and productivity gains.

The post-green revolution period has witnessed impressive structural changes (Vyas, 2004) taking place in Indian agriculture. For example, Indian agriculture has been progressively acquiring the small farm character, with 40 per cent of the land now being operated by small and marginal farmers. The output mix in Indian agriculture has also undergone a significant shift from foodgrains to non-foodgrains and within foodgrains from coarse to finer cereals. Use of high-end inputs such as fertilisers, insecticides, improved seeds, mechanical farm implements, etc., have raised the proportion of inputs and consequently the total outlay on inputs.

Despite impressive growth performance, the agriculture sector in India continues to be inefficient and plagued by constraints resulting in sluggish farm sector growth. The present paper attempts to spell out some of the constraints like, stagnancy in production and factor productivity growth, inadequate institutional support, migration of agricultural labour, etc. It also seeks to highlight some of the major areas of concerns facing Indian agriculture: Land Market and Use, Agriculture Labour - Rural Unemployment and Poverty, Capital Formation and Investment, Agriculture Inputs - Supply and Availability, Agriculture Credit - Extent of and Access to Institutional Credit and Agriculture Extension Network.

II

LAND MARKET AND USE

Land is the most important factor of production in agriculture. As a result, the nature of land relations has an important bearing on production, productivity and

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distribution of income and wealth in agriculture. Being a fixed and scarce factor of production, the importance of optimal utilisation of land resources and its use patterns is also influenced deeply by land relations. With regard to the land use pattern over the last decade, one observes that there has been a continuous decrease in the net sown area (NSA), while the area under cultivation, the gross cropped area (GCA) remained stagnant (Table 1). Between 1995-96 and 1999-2000, the GCA increased only marginally by 3.2 per cent, while the NSA decreased by 0.69 per cent. The area under fallow land, both current and permanent fallow, has also been increasing. The area under fallow land witnessed an increase of 4.55 per cent during the period under review. This has raised serious concerns with respect to the sustainability of land resources.

TABLE 1. LAND USE PATTERN

('000 ha)

Year (1)	GCA (2)	NSA (3)	Fallow land (4)	Uncultivable land (5)
1995-96	1,86,561	1,42,215	23,822	28,643
1996-97	1,89,543	1,42,819	23,215	28,551
1997-98	1,90,570	1,42,083	24,013	28,542
1998-99	1,92,620	1,42,598	23,447	28,669
1999-2000	1,89,740	1,41,231	24,906	28,486

Source: CMIE, *"Agriculture"*, February 2004.

There has also been a substantial decrease in common land resources, including pastureland by 1.27 per cent between 1993-94 to 1999-2000 (CMIE, 2004). The problem has been further compounded by the rapid increase in the number of small and marginal farmers. This is attributed to increasing population pressure leading to adverse land-man ratio and increased fragmentations of land holding due to family sub-divisions, often making them non-viable and indivisible for technological use. The land reform measures initiated in the post-Independence period have not been able to address squarely the problem of land fragmentation.

At the time of Independence, India inherited a semi-feudal agrarian structure with ownership and control of land concentrated in a relatively few hands and onerous tenure arrangements over substantial areas, whereby the economic motivation tended towards exploitation rather than investment and improvement. And, without addressing land reforms, it was not possible to overcome the weakness of the structure of agriculture production and enrich the efficiencies of the factor market. With this objective in mind, the land reform programmes were built around three major types of measures (i) abolition of intermediary tenures; (ii) regulation of size and holding; and (iii) settlement and regulation of tenancy. *These reforms were also in pursuance of Article 39 of the Constitution.* Complementary to these objectives were the policies of land ceilings, consolidation of holdings and encouragement of co-operative joint farming.

The central thesis behind the abolition of intermediaries was that ownership of land be clearly identified with management and operation of land. The owner himself should operate and manage the farm business. Ceilings on land holdings while on one hand were designed to offset the extremely uneven distribution of agricultural land; at the same time, these were designed to lead to consolidation of scattered holdings of individual cultivators to form a single tract to ensure more efficient management. The tenancy reforms were undertaken to confirm the rights of occupancy of tenants, secure their possession of tenanted land and also regulate rents on leased land. However, implementation of the reform programme was affected by legal, administrative and other bottlenecks. *Further, under Indian Constitution, land reform is a state subject.* Therefore, while the main features of the reform legislation in different states were almost identical, there occurred wide differences in its implementation.

In case of tenant cultivation, security of tenancy right/sharecropping right is one of the major factors influencing productivity difference in non-owner operated land. However, with increasing sub-divisions and gradual decrease in land concentration, the land lease market recorded a significant change by the late nineties. The poor cultivators contributed to the demand by leasing-in land primarily due to reasons of subsistence and absence of alternative sources of living. As a result, the share of land-poor lessees form a large proportion among the lessees, leasing-in most of the land (Table 2).

TABLE 2. SIZE CLASS OWNERSHIP HOLDING OF LEASED IN FARMERS

(ha)

Sr. No. (1)	Particulars (2)	Size class of ownership holding <0.5 (3)	0.51-1 (4)	1.01-2 (5)	2.01-4 (6)	4.01-10 (7)	>10 (8)	Total (9)
1.	Per cent to total household leased in	58.68	15.74	14.33	6.76	2.91	0.35	100
2.	Per cent to total leased-in area	42.85	12.25	16.98	15.17	11.51	1.24	100

Source: NSS 48th Round.

Tenancy cultivation is generally characterised by low level of capital investment, inferior quality of land, scattered and fragmented land plots, monocrop cultivation, absence of crop diversification, lower use of improved technology, lower access to institutional credit. However, of late there has been a gradual emergence of lessees belonging to the agriculturally prosperous classes. The tenants considered to be poor cultivators and high in number, their access to lease market has weakened over a period of time, as is evident in some states, viz., Assam, Karnataka, Punjab, Haryana, Tamil Nadu and Rajasthan.

Land relations in India are also witnessing a phenomenon of *reverse tenancy*, whereby the small and marginal farmers lease-out to large farmers or corporate houses. It can be attributed to factors like, (i) migration of farmers with uneconomic land holding to cities in search of employment, (ii) resource scarcity of small and

marginal farmers and (iii) large farmers' desire and ability to maximise income through expansion of operational holdings. It is also evident from the NSS data that between 1981-82 and 1991-92 the percentage of area under tenancy has improved despite a fall in the share of tenant holdings.

III

AGRICULTURE LABOUR - RURAL UNEMPLOYMENT AND PURCHASING POWER

Post-green revolution, agriculture has undergone many changes. Increased use of high-yielding variety (HYV) seeds, better quality inputs, improved irrigation facilities, crop diversification, increase in the cropping intensity, have helped increase the level of output. There has also been a marked increase in the employment elasticity as seen in the aggregate use of labour in agriculture due to increased crop intensity, multi-cropping and crop diversification induced by new technology and changing demand pattern. But despite increased production levels, the agriculture sector is unable to sustain and retain its labour force.

In the Indian context, access to land and to economic opportunities linked to land-based activities are indicative of the economic status of a household. The changing structure of land holdings, as it operates over time has also caused the rural work force to shift from farm to off-farm/non-farm activities. Over the years, while land holdings have diminished, the size of the population dependent on it has increased, thus increasing pressure on land. Growth in employment opportunities in agriculture has also not been encouraging. The growth rate of rural employment was around 0.5 per cent per annum between 1993-94 and 1999-2000, as against 1.7 per cent per annum between 1983 and 1993-94 (Dev, 2004). The seasonality condition in agriculture and absence of alternative sources of employment has further accentuated the labour crisis. This has resulted in creating a larger surplus of agriculture/landless labourers (48 per cent in 1999-2000) (Dev, 2004). Another factor that compounds the problem is migration of rural labour to the urban sector, more evident among farmers with uneconomic land holding and landless farmers/share-croppers. This has resulted in (i) scarcity of good quality labour, (ii) farm jobs solely dependent on the female work force, and (iii) problems in adoption of newer technologies.

Another factor that affects the economic condition of the rural population is their purchasing power, which is further indicated, by the level of agricultural wages. There has not been any noticeable increase in agricultural wages over the last decade. At the all India level, the growth of real agricultural wages decelerated by 2.5 percentage points (5 per cent per annum in 1980s to 2.5 per cent per annum in the 1990s) (Dev, 2004). Again, this effect has been skewed with most of the developed states witnessing a decrease in poverty due to higher growth rates of real wages. On the other hand, most of the eastern region experienced an increase in poverty levels. However, the growth rates of real daily wages of female and male agricultural labourers declined during 1993-94 to 1999-2000 in majority of the states. Inspite of

that, an increase in the male-female ratio of wages over time exhibits significant gender disparities in wages.

The concept of minimum wage rate, though welfare-oriented and aimed at protecting the agricultural labourers from exploitation, has in fact promoted disparities. In economic terms, "minimum wage rate is the amount needed by the labour for the sustenance of his body and soul", i.e., the amount in which a worker is barely able to sustain himself. This has created a mismatch between the productivity of labour and wage receivable. Increasing input costs have further accentuated this mismatch. The result is that the profitability of agriculture in terms of a paying employment option has been increasingly eroded.

IV

CAPITAL FORMATION AND INVESTMENT

Capital formation, as in the case of other sectors, is imperative for growth of the agriculture sector. The pace and pattern of agricultural development are largely conditioned by the growth of infrastructural facilities of irrigation, road, market, power, cold storage, etc. Infrastructure plays a critical role on both input and output sides. While on the input front, it helps ensure timely and adequate deliveries to farmers, on the output front, it helps integrate local markets with national and international markets.

However, one of the most disquieting developments in the agricultural sector during the two decades has been the neglect of capital formation, particularly in the public sector. Gross capital formation (GCF) in agriculture as per cent of total capital formation in the economy was only 5.5 per cent in 1998-99. Further, compared with the average economy level of gross fixed capital formation (GFCF) of about 26 per cent of GDP in 2000-02 for the economy as a whole, agriculture GFCF was only 16 per cent of agriculture GDP (of which on farm GFCF was only 6 per cent) (Landes and Gulati, 2004). Investments in agriculture as a percentage of GDP also declined from 1.6 during 1995-96 to 1.3 during 2002-03 (Government of India, 2004).

The gross capital formation in agriculture, at 1993-94 prices, fluctuated between Rs. 15,690 crore and Rs. 18,657 crore during the period 1995-96 to 2001-02 (Table 3, Chart 1). While the share of private sector investments in the capital formation in agriculture increased by 6.6 percentage points from 69.1 per cent in 1995-96 to 75.7 per cent in 2002-03, the share of public sector investments declined by the same magnitude during the same period. The public investments, however, improved significantly from Rs. 3,927 crore during 2000-01 to Rs. 4,538 crore during 2002-03, registering an increase of 15.5 per cent. Private investments also increased from Rs. 12,979 crore to Rs. 14,119 crore (8.8 per cent increase) during the same period. However, public and private investments cannot be treated as substitutes for each other as their compositions are different. This decline in public investment can be

attributed to budgetary constraint as also our inability to reform the agriculture price policy and contain input subsidies.

The problem of lower rate of capital formation in the rural sector is not merely due to lower investments or mobilisation of rural savings for urban lending, but also because of shifting consumption patterns of the rural population. Owing to higher propensity to consume, savings tend to be lower and even the meager amounts saved are utilised for consumption purposes, rather than being channelised into investments.

TABLE 3. GROSS CAPITAL FORMATION IN AGRICULTURE (AT 1993-94 PRICES)

Year	Public	Private	Total	Investment in agriculture as per cent of GDP
(1)	(2)	(3)	(4)	(5)
1995-96	4,849	10,841	15,690	1.6
	(30.9)	(69.1)		
1996-97	4,668	11,508	16,176	1.5
	(28.9)	(71.1)		
1997-98	3,979	11,963	15,942	1.4
	(25.0)	(75.0)		
1998-99	3,870	11,025	14,895	1.3
	(26.0)	(74.0)		
1999-2000	4,221	13,083	17,304	1.4
	(24.4)	(75.6)		
2000-2001	3,927	12,979	16,906	1.3
	(23.2)	(76.8)		
2001-2002	4,127	13,201	17,328	1.3
	(23.8)	(76.2)		
2002-2003*	4,538	14,119	18,657	1.3
	(24.3)	(75.7)		

Source: Government of India, 2004.
*Quick estimates
Figures in parentheses refer to percentage share.

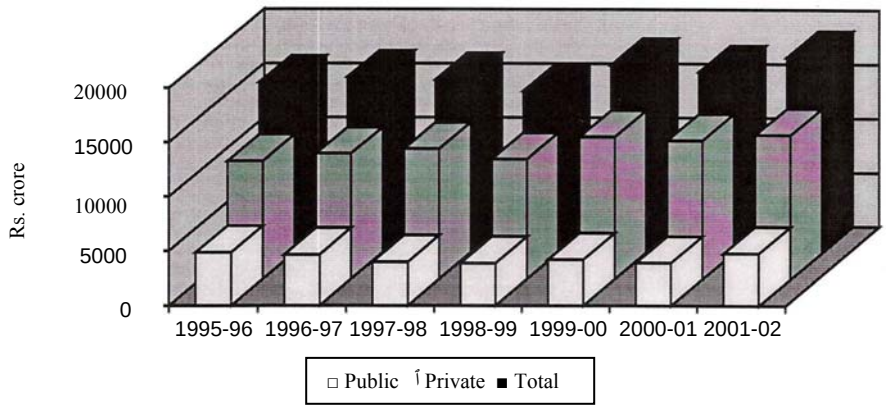

Figure 1. Gross Capital Formation in Agriculture (At 1993-94 prices)

V

AGRICUTLURE INPUTS-SUPPLY AND AVAILABILITY

Lack of timely and hassle free availability of agriculture inputs like HYV seeds, fertilisers, pesticides, farm implement, etc., are the most important constraints of agriculture production. Though the Green revolution got off the ground with ensured availability of good quality seeds, increased use of chemical fertilisers and pesticides to boost agriculture production in fact, it remained concentrated in only a few areas and was effective in improving production of a few crops only. The ground level reality shows the existence of a huge gap between the demand for input and its availability owing to a deficient delivery mechanism. This has choked the flow of institutional credit and impacted private capital formation in the core sector, with concommitant impact on use of fertiliser, improved seeds, irrigation technology, etc.

The bulk of agricultural input is supplied through the public channel, which unfortunately is unable to cater to the requirement. Supply of fertiliser through public and co-operative storage system is not smooth and farmers have to make multiple visits to lift fertiliser. Further, the availability of inputs is not timely, as a result of which the farmers have to compromise with inferior quality seeds, leading to poor germination rate, application of higher seed rate or sowing seed for the second time. The problem is further compounded by inadequate arrangements of seed multiplication, gradations, certification and distributive network. Spurious pesticides and non-availability of desired extension support destroys the standing crops. Even the supply of HYV seeds either through private traders or public agencies also remains much to be desired.

VI

AGRICULTURE CREDIT - EXTENT AND ACCESS TO INSTITUTIONAL CREDIT

Apart from inputs, credit forms another major requirement of the farmers, which enables them to meet their working capital and investment needs. But what is important to note, is that in agriculture, like other sectors, availability of credit needs to be easy, adequate and timely. But despite a large network of Rural Financial Institutions (RFI), a sizeable proportion of the rural population continues to be outside the fold of the formal banking system.

Over the last thirty years, while the ratio of agricultural credit to GDP arising from agriculture has increased from 5.4 per cent (in 1970s) to 8.7 per cent (in 2001-02), the share of agricultural credit to total credit declined from 20.5 per cent to less than 10 per cent by March 2003. The major setback has been in the case of direct loans. Between 1992-93 and 1999-2000, the ratio of indirect to direct loans, expressed as percentage rose by 48 percentage points to 75 per cent. This situation is much more pronounced in the case of small borrowers. In fact, the growth rate of agricultural credit for small and marginal farmers declined in the 1990s as compared

with the 1980s (Reserve Bank of India, 2002), though no decline in growth in credit for large farmers during the same period was witnessed (Dev, 2004). The growth rate of direct finance to marginal farmers decelerated to 13 per cent from 18.1 per cent during the same period (RBI, 2003). The fall out has been that while the growth of short-term credit has stagnated, the growth in long-term credit has declined over time. This is an alarming trend because factors like rising income, crop diversification, and production of high-income elastic agri-products have raised the investment costs and con-sequently the credit needs of the farmers. But, the inability and/or the reluctance of RFIs to cater to such increased credit requirements of the farmers has caused the farmers to take recourse of non-formal sources, i.e., input suppliers, traders and big landlords to obtain credit.

Another fact that has also contributed to the decline in direct lending by the financial institutions has been the financial sector reforms. Since the reform measures initiated in the 1990s, the banks are required to maintain prudential norms, reduce transaction cost and improve viability of their lending programmes. However, agriculture lending involves relatively higher resource costs in terms of delivery and monitoring of credit. The banking sector has so far, not been able to manage these conflicting situations. The result is that lending to agriculture has been consistently lower than the target of 18 per cent. Only five out of the 27 public sector and two out of 29 private sector banks, now meet the stipulated target (Ghosh, 2005). The mandatory requirement of depositing the shortfall in priority sector lending by the banks in the Rural Infrastructure Development Fund (RIDF) has also come as a boon for them. It is also preferable to direct lending, RIDF gradually becoming a low risk-easy investment option.

Other factors that too hinder credit flow through the formal channels are lack of flexibility in the lending process and security based lending. Further, formal credit institutions continue to cater to structured production credit requirements of the farmers and not to their credit needs for consumption purposes. The need for providing bank guarantee and absence of proper land title deeds has also resulted in keeping a majority of the farmers outside the fold of formal credit institutions. For example, tenant farmers/sharecroppers are unable to avail of credit facilities due to absence of title deeds and tenancy position. Also, in the case of North-Eastern States, where agricultural land is held under community ownership, farmers are unable to avail credit from the financial institutions and have to depend on non-formal sources alone. Though measures have been initiated to address these problems, much needs still to be done. Rural credit needs to expand at a much higher rate or the system will choke itself.

VII

AGRICULTURE EXTENSION NETWORK

Extension services in the form of information dissemination, market access, etc., are also important to the rapid growth of the agriculture sector. Public research and

extension played a major role in bringing about the green revolution. But post-green revolution, agriculture extension faces important challenges in the areas of relevance, accountability and sustainability.

India has the world's largest extension system, capable of addressing the needs of all sections of the farmers. But unfortunately, the role of the extension institutions in acting as a conduit between the scientists and users is not very effective. Rather, the inability of Indian agriculture to respond and adjust to the changing environment in the post-liberalisation period can be attributed to a large extent, to inadequate support of the extension system. The efficacies of the existing extension mechanism, remains much to be desired in terms of lower outreach and poor coverage, as large segments of the farmers continue to remain deprived of the new ideas and access to market and price intelligence support. The absence of the required professional and technical manpower support, coupled with uneven ratio of manpower presence in the field and restricted mobility and accessibility of the field staff has a crippling effect on the implementation as well as monitoring of developmental programmes.

The agricultural universities/colleges also have an important role to play in the successful implementation of extension programmes, as they are the training grounds of the future extension workers as well as centres of agriculture research. However, inadequate trained personnel and technical experts hinder the adoption and implementation of hi-tech projects. Another lacuna of the existing extension mechanism is its uniformity in design. There is absence of location/area-specific Agriculture Extension Design, as a result of which customised attention to the farming sector is unavailable. For example, the hilly tracts have the same extension programme as in the plains.

Lack of underdeveloped post-harvest facilities further add to the woes of the agriculturists, as they increase the proportion of output lost. Absence of large-scale storage and processing facilities result in loss of output, as also value addition and leads to lower realisation of output prices. There is also no established system of market intelligence and the existing under-developed marketing outlets for inputs and agri-produce are unable to assure good returns to the farmers. Further, the Agriculture Produce Marketing Committee (APMC) regulations in various states require agricultural sales to occur in regulated markets, limiting private investment in market activities, as well as integration of producers with the marketing chain. Lack of adequate forward and backward linkages has hindered the flow of technology from the laboratories to the farms and thereon to the markets: LAB > FARM > MARKET. At the end of the skewed chain, it is the farming community and the agricultural sector that suffers the most. The spate of farmers' suicides in some parts of the country can also be attributed to the inability of the extension agencies to check use of spurious inputs and provide guidance to the farmers in their proper usage.

VIII

THE PATH AHEAD

Despite the existing problems and shortcomings in the agriculture sector, everything is not bleak. Agriculture, both in terms of policy and practice, needs to reorient itself to the changing circumstances and improve its adjustment mechanism. This would require realising and addressing the constraints urgently and fully. It is true that there have been some improvements in infrastructure and standards of living, but there are other issues too that need urgent attention.

Land and labour continue to be the primary factors of production in agriculture. Therefore, it is essential that land reform measures, suited to the present situation be effectively implemented. There is also a need to check indiscriminate fragmentation of land holdings as well as facilitate conservation of soil and water resources. The latter is possible by stepping-up investments for strengthening land and water resources. Developments like reverse tenancy cultivation, contract farming, etc., need to be considered before framing of land-oriented policy. It is also essential that issues of soil and water conservation be also taken into account.

Simultaneously, the flight of labour from the rural to the urban regions needs to be arrested. This can be achieved only if employment opportunities in agriculture, the quality of employment and profitability of agriculture as an employment and investment option are improved. Possibly, a combination of sectoral and direct employment programmes may help attain this objective. However, employment can be increased only if, (i) economic growth in this sector is labour intensive, and (ii) direct employment programmes like wage and self-employment programmes are effectively implemented.

The above stated measures cannot be sustained, if the rate of capital formation in agriculture is not improved. This can be achieved by boosting public investments in agriculture. Though, it alone cannot be expected to fill in the investment gap, it would certainly encourage and stimulate private investment. This would require,

(i) Increased public investments in market infrastructure, supportive import and export policies and comprehensive 'behind the border' reforms of market regulations and institutions.

(ii) Reforms in agriculture price policy, taking into account domestic and world price conditions of agriculture outputs rather than only on the basis of a measure of production costs.

Increased investments would also raise the credit requirements. This would require strengthening the credit and extension institutions, so as to provide proper and timely support and guidance to the farmers, especially small and marginal farmers.

The delivery mechanism for supply of input to the farmers is one of the most important aspects of direct involvement by the state government. As most of the distribution network is concentrated in the public sector it becomes necessary that government undertake to educate the farmers regarding the availability of certified/

quality seeds, fertilisers and other inputs as well as the source of obtaining them. It is also imperative that their timely availability is also assured. Issue of licenses to traders for supply of agriculture inputs should be done after a thorough check and to only traders with a sound track record. It therefore, necessitates effective monitoring and co-ordination by and among the various government agencies. The scheme of Agri-clinic/veterinary clinic as implemented by NABARD will go some way in improving the extension and other input services in an orderly manner.

Another area that is equally important for proper realisation of income by the farmers is the existence of good extension support. Lack of post-harvest management facilities, adequate storage and processing units, inaccessibility to output market results in output loss and low price realisation of the agriculture outputs. Government needs to take suitable corrective measures to ensure smooth dissemination of information and technology. There is also a need to revise the state laws governing the APMCs so as to encourage private participation in agriculture processing and marketing.

Further there is need to institute risk mitigation measures for the farmers. One such measure under consideration in recent times is the contract farming arrangement. However, such arrangements can mitigate only market-induced risks and have yet not proved quite successful. What is needed is a strategy that provides a comprehensive risk cover to the farmers. Futures market or futures trading is another viable option.

IX

CONCLUDING COMMENT

The post-liberalisation period saw improvements in foreign exchange reserves, physical infrastructure (like telecommunications and roads), IT revolution, stock market boom, etc. But all such developments can be sustained in the long run, only if the growth in the agriculture sector too is accelerated. India continues to be predominantly an agrarian economy and without improvements and developments in this sector, the economy as a whole cannot expect to achieve and maintain a balanced and sustainable growth trend.

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