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SPECIAL ARTICLES

INTRODUCTION

To commemorate the Golden Jubilee Year of the Indian Journal of Agricultural Economics in 1995, the decision was taken by the Editorial Board in November 1994 to bring out a Special Jubilee Number of the Journal carrying invited articles from senior agricultural economists in India. Contributions solicited from the invited scholars fell into two types: (1) researched papers on topics relating to the Indian rural economy or even rural economy in general on which the scholars are currently working or decide to work for the purpose and (2) articles based on critical reviews of the development of research in any of the subject fields covered by the Journal during the last two decades. To help the scholars know the contributions made in the Journal in the past a broad subject classification of the papers published in the Journal during the period 1969 to 1994 was made. A list of eighteen broad subject groups comprising 560 papers published in the Journal during this period was made available to the invited scholars.

It was planned to publish the October-December 1995 issue of the Journal as the Special Jubilee Number. Since the invited scholars could not send their articles on time for publication in the Jubilee Number, the publication of the invited articles was postponed to the January-June 1996 issue which combines the first two issues of the Journal as the Golden Jubilee Number.

This Special Number includes 16 invited articles. Of these, 14 belong to the first category of 'researched' papers and two papers are concerned with a critical review of papers on two subjects published in the Journal since 1969.

The set of papers prepared by distinguished scholars and presented in this Golden Jubilee Number could, for convenience of discussion, be grouped under five broad categories: Food Security, Resources: Use and Management, Rural Poverty, Employment and Wages, and Impact of Liberalisation. Professor Dantwala's paper falls into a category of its own: perhaps it is only appropriate that the doyen among agricultural economists has chosen to take a nostalgic tour of the main agricultural policy issues that dominated the economic scenario during the four decades of the planned era: the alleged neglect of agriculture in the Five Year Plans, impact of PL 480 imports on agricultural production, price policy and defence of the green revolution.

FOOD SECURITY

To begin with food security, the fact that foodgrains stocks with the public sector had reached an embarrassingly high level of 35 million tonnes in 1995 appears to have lulled us into a sense of complacency. For instance, V.M. Rao argues: "It seems unlikely that the Indian economy would slide back again to a situation of the mid-sixties when the policy makers remained almost totally preoccupied with the elemental task of increasing aggregate food production to a minimum level of adequacy.... While there is no unanimity about the prospective supply-demand balances for foodgrains, most observers, including the Planning Commission and the Ministry of Agriculture, Government of India, seem to assume a fairly comfortable position with some surplus to spare for exports." In contrast, M.S. Swaminathan provides a corrective to this rather optimistic forecast. The fatigue of Green Revolution has already perhaps set in and there are problems of land degradation. Swaminathan christens Green Revolution as "Greed Revolution" in the sense that it has led to exploitative use of land. Private profitability in the short or even medium term is not necessarily consistent with public good in the long run. He quotes with approval the predictions of Lester Brown

and Hal Kane that at the current rate of population growth and environmental degradation, coupled with an improvement in the consumption capacity of the poor, India will have to import annually over 40 million tonnes of foodgrains by the year 2030. This is four times the quantity imported in 1966, that is before the advent of Green Revolution.

The twin prime concerns of food security are: availability of food and the economic access to food. To tackle these concerns, Swaminathan proposes a number of policy measures including the creation of a revolving fund for rehabilitation of fragile eco-systems such as mountain regions, tribal habitations, etc., and for enabling the inhabiting population to overcome the problems of survival during the period of transformation into sustainable resource management systems: and evolving a new vision into agricultural research systems that would lead to a new paradigm of agricultural development based on job-led economic growth rooted into the principles of ecology, equity and energy conservation by developing technologies which are environmentally sound, socially equitable-both in gender and economic terms, and employment intensive. He underlines that development which is not equitable will not be sustainable in the long run. We may add, in this context, that this plea for equitable growth is in broad alignment with the recent experience of what has come to be known as "shared growth" witnessed by the High-performing Asian economies (HPAES), including the Asian tigers. On the whole, it appears that the concern with the availability of an adequate quantum of foodgrains may continue to remain valid in the coming years. What is more important however is that there has taken place a major shift in the researchers' perceptions of the nature of issues confronting future growth of the economy in general and agricultural economy in particular.

Taking a holistic view of food security, R. Radhakrishna adds further dimensions to the discussion. The most disturbing phenomenon, in an otherwise favourable macro-economic environment is the levelling-off of cereals and calorie intakes. This has happened in spite of the fact that there is a favourable trend in the two key factors determining food demand: the income of the poor has shown a moderate improvement and the relative price of cereals has also moved in their favour.

The levelling-off, *per se,* would not have been a problem, if the intake levels of the bottom segment of the population were nutritionally adequate. There is, however, considerable evidence to show that the section of the population that fails to enjoy an adequate diet is still sizeable. Nutrition surveys show that 50 per cent of the pre-school children are malnourished; a majority of them belongs to the low income groups. The public distribution system (PDS) is perhaps the most important safety net: 25 per cent of the population depend on it for rice and 12 per cent for wheat. Cereal purchases from PDS account for 13 per cent of total market purchases in rural areas and 15 per cent in urban areas. The total food subsidy accounts for about 0.6 per cent of GDP. To what extent has the PDS succeeded in transferring food to the poor? The PDS did improve the food security of the population in food deficit states like Kerala, Tamil Nadu, Gujarat and Maharashtra. Furthermore, the dependency of the poor on PDS supplies has remained significant both in rural and urban areas of Kerala, Andhra Pradesh, Jammu and Kashmir and Gujarat and in the urban areas of West Bengal. The crux of the issue is: how to improve the efficacy of the PDS in transferring food to the poor and achieve cost effectiveness at the same time?

Reverting to macro policy issues, Radhakrishna makes a plea for greater attention to rainfed crops in the lagging regions, where there is high concentration of poverty and food

insecurity. This involves not only emphasising different technologies but also spreading agricultural growth more widely. Public investment must flow more into the development of watersheds, conservation and productive use of common lands, and the provision of a wide range of infrastructure in the backward regions.

RESOURCES: USE AND MANAGEMENT

The issues relating to regional agricultural land use are discussed in their paper by V.K. Pandey and S.K. Tewari. The study focuses on land as a scarce and exhaustible resource whose sectoral allocation and utilisation or under-utilisation determine the aggregate land use and the nation's capability to feed the population. The authors analyse the land use statistics of fourteen agriculturally important states where the data are found to be consistent, covering the period triennium ending 1970-71 to 1990-91. They have worked out the compound growth rates for various land use classes for the selected states and the country as a whole. Providing an overview of the sectoral shares in land use, Pandey and Tewari, using an earlier classification scheme developed by them, group the total land endowment into three broad sectors: (a) ecological sector, comprising forests, permanent pastures and grazing lands, miscellaneous tree crops, and barren and uncultivated land; (b) non-agricultural sector and (c) agricultural sector comprising net sown area, current fallows, other fallows and culturable wastes. They point out that by the end of the sixties, India had already crossed the limit to extension of net cultivated area. It is argued that further tendency for extensive cultivation through land shifts from outside the agricultural sector need to be fully checked. While any generalised approach to achieve full utilisation of irrigated and fallow lands across the states is too simplistic, the authors underscore the need for concerted efforts to bring all the irrigated areas under intensive cultivation and all fallow lands under cultivation of region specific remunerative possibilities.

The authors make a plea for disaggregated regional studies into the characteristics and determinants of under-utilised lands, which may serve as the basis for formulation of region specific programmes for the purpose. Many of the reasons put forward for under-utilisation of lands can be effectively resolved within the framework of existing policies and programmes. For example, the policies of price support and input subsidies can, as suggested by Pandey and Tewari, effectively ensure remunerativeness of crop production even in dryland conditions. It is pointed out that some states have announced premium over Centrally announced support prices, which may be extended to cover unremunerative crops in a particular state/region. Another general policy approach relates to revisiting tenancy reforms. In view of the capital intensive nature of modern technology leading to concentration of limited farm resources on more fertile land to the neglect of other lands and the increasing costs in agriculture aggravating the situation further, it is argued that legalisation of tenancy will instil a sense of security of land ownership and promote full utilisation of agricultural lands. Further, legalised tenancy will help in augmentation of the resource base required for cultivation through pooling of the resources of both the lessors and lessees and will help in finding landless entrepreneurs to make full use of such lands.

The management of degraded land, as Kanchan Chopra emphasises, is perhaps the single most important natural resource management problem in the country today. The magnitude of total degraded land is estimated to be around 130 million hectares, of which nearly 36 million hectares is forest degraded land, the remaining being non-forest land. Critically

reviewing the issues of management of degraded lands, Chopra comes up with two important recommendations. First, the technology to be adapted to the management of degraded land needs to be area-specific: any standardisation or excessive emphasis on either engineering or vegetative technology must be avoided. The study of the Sahibi catchment in Rajasthan shows that appropriate technology can result in significant alterations in the behaviour of run-off, initiating a process that arrests land degradation. Second, in terms of sustainability of Governmental programmes aimed at arresting land degradation and improving the land, it seems better to begin with an ecological unit such as the watershed as the base. In the process, the property rights, both legal and traditional, would need to be protected. Again, empirical experience suggests that non-governmental organisations (NGOs) have been far more successful than Governmental agencies in addressing sustainability and property rights. A study of the cross-section of NGOs dealing with land and water related issues illustrates how environmental preservation and property rights preservation are closely associated. In tackling these issues therefore a decentralised approach with involvement of NGOs appears to yield optimum results.

The paper of A. Vaidyanathan focuses on some issues relating to depletion of groundwater. During the past four decades, there has been rapid growth in the use of groundwater. Between 1950-51 and 1987-88 while the irrigated area rose from about 21 million hectares to 43 million hectares, the area reported to be served by groundwater rose more than three fold from 6 million hectares to 22 million hectares and groundwater accounted for more than a half of the total irrigated area in the country. A note of warning is sounded by Vaidyanathan that the intensity of groundwater exploitation has reached or exceeded sustainable levels all over the country, which should be taken seriously and investigated in detail. The decline in water table which is associated with a progressive increase in the density and depth of the works has important economic and social consequences. In order to judge whether or not there is over-exploitation, it is necessary to monitor the number and proportion of dry wells and wells which have gone out of use, the average yield per well, the area irrigated per well as well as the conservation measures adopted by the farmers. With the depletion of the groundwater, the yield per well declines and the fixed and operating costs for lifting per unit of water increase both for individual owners and for all groundwater users as a whole. Importantly, typically small farmers who cannot afford the extra investments may be forced to give up well irrigation and may lose out to the better endowed farmers. While cost-saving institutional arrangements such as joint ownership and operation, community management or a system of trading water, have not developed on a widespread scale it is argued that the economic incentive would be strong both for the individuals and for the society to explore arrangements to contain the tendency for competitive deepening of wells. Competitive deepening makes the distribution of access to groundwater increasingly skewed in favour of large, resource-rich farmers, leaving the small farmers at a disadvantage in sharing the benefits from well irrigation.

Vaidyanathan suggests that the rights of individual exploitation of groundwater in an aquifer needs to be restricted both for economic reasons and for preventing inequitable distribution; the rights on groundwater should be that of use and not of ownership. He prefers some form of collective rights with the responsibility for irrigation to be devolved on local communities. While the government has several levers to regulate groundwater

exploitation, it has failed to use these instruments effectively due to lack of reliable information from the ground level and the difficulty of centralised monitoring of the accuracy of reporting and enforcement rules by the lower level of bureaucracy. Subsidies on power, diesel oil and credit have increased the private profitability of well irrigation, leading to depletion of groundwater. Vaidyanathan argues that neither market mediated private exploitation nor centralised regulation of groundwater wholly by government agencies is a workable or desirable alternative. He points out that the removal of subsidies on power, diesel oil and credit, though it would create strong disincentives against over-exploitation, needs to be supplemented by several other measures. He therefore suggests that the state needs to enforce regulations on the construction of new wells and deepening of the existing wells in groundwater-scarce areas, encourage community based institutions for regulating the use of groundwater, improve the basis of assessing the current rates of exploitation, and monitor more closely signs of over-exploitation and educate public opinion about the need for regulations. He further suggests that the various modalities of implementing these mechanisms and ensuring that equity considerations are safeguarded should be the central focus of research in this area it is also necessary to generate more and better information and to build up data base on groundwater use in different areas with active involvement of the public and independent experts.

In the post-Independence phase, land reform was regarded as an essential pre-requisite for increasing agricultural production and for establishing an egalitarian rural society. The land reform programme was built around mainly three major planks: abolition of intermediaries, regulation of the size of holding, and of tenancy. The central thesis underlying the abolition of intermediaries was that ownership of land be clearly identified with management and operation of land. S.K. Ray, while presenting a critical assessment of the implementation of land reforms, quotes P.S. Appu's study completed in 1995. The main finding of this study is that the implementation of the laws for the abolition of intermediary interests was far more satisfactory than the implementation of the laws enacted in later years for the reform of the tenancy and the imposition of ceilings on agricultural holdings. The most important beneficial result of the reform was that it put an end to the system of parasitic intermediaries and brought some 25 million erstwhile tenants into direct relationship with the State. Secondly, tenancy reforms have not put an end to absentee ownership of land; nor has it led to disappearance of tenancies. It has only resulted in tenancies being pushed underground. Thirdly, the most disappointing result was in respect of implementation of ceilings on agricultural holdings: only about 2 million hectares of surplus land could be distributed to some 4.76 million beneficiaries. Thus the efforts spread over a period of some 35 years led to the redistribution of less than 2 per cent of the operated area. This segment of land reforms did not make any impact on the agrarian structure.

The Green Revolution as well as the technologically dynamic agriculture has decontextualised land reforms, which in fact have practically disappeared from the agenda of most political parties. Ray quotes Dandekar's policy prescriptions in the changed circumstances: "Hence the first item on the agenda of future agricultural policy should be the existing ceilings on land holdings and tenancy laws: they should be removed altogether or should be relaxed in stages." In the post-1991 liberalisation phase, again, a plea is being made to relax the ceiling laws in order to encourage corporate sector to enter agriculture for commercial production of high-value and processed agricultural products, and earn thereby

valuable foreign exchange for the country.

Although land reforms have perhaps lost their teeth in the present context, Ray sounds a note of caution against unbridled promotion of "capitalist farming" in view of its social and political costs at a time when the incidence of unemployment and poverty continues to be high in the rural sector.

While on the subject of resources use and management, it is necessary to refer at this stage to the programme for agro-climatic regional planning (ACRP), discussed by V.M. Rao. Three basic features underlying the ACRP are highlighted. First, while the 'Green Revolution strategy' achieved a breakthrough in the production of a few crops by concentrating on the fertile irrigated areas and on the relatively better-off groups of farmers, ACRP focuses on the far more difficult task of sustained rise in growth by helping all areas - including the backward and stagnant areas - to activate the growth process by utilising area-specific resources and opportunities. Second, Rao describes this approach as 'Liberalised-cum-Decentralised' system: the state would transfer the decision-making process not only to markets and private enterprises but also to Panchayati Raj institutions (PRIs) and voluntary organisations. Third, the ACRP approach stresses the principles of comparative advantage, cost-effectiveness and economic viability. Since these principles would work when markets are competitive, it is necessary to ensure that the necessary preconditions for competitive markets are created. Overall, the ACRP is designed to build an effective link between the national plan and the plans prepared at the district and the sub-district levels during the Ninth Plan.

Moving over to the broader area of rural resources, another issue which has been receiving increasing attention is the Common Property Resources (CPRs), which can be broadly defined as those resources in which a group of people have joint rights of their use. These resources include community forests, pasture and waste lands, watershed drainage, village ponds/tanks, *choe* (perennial stream) banks and *choe* beds. The CPRs are an important source of income to the people, particularly to the poorer sections, contributing around 25 per cent of their total income. Karam Singh, Nirmal Singh and R.P. Singh, in their paper, highlight the main factors that have led to over-exploitation of these resources, culminating in a state of degraded condition of these resources. The two problems of CPRs are low productivity and inequitable sharing of benefits. The productivity of CPRs is about one-third or one-sixth of the comparable privately owned resources. Again, encroachment of the CPRs by the influential sections of the population is not uncommon: the better-off sections derive more benefits from them. The authors make some recommendations to improve the productivity and also to ensure a less inequitable distribution of benefits.

CAPITAL FORMATION IN AGRICULTURE

S.N. Mishra presents a critical review of the trends in capital formation in agriculture for the period 1950-51 to 1992-93. In terms of simple growth rates, total capital formation in Indian agriculture grew at accelerated rates from the 1950s to the 1980s: at 3 per cent per year during the 1950s, and over 6 per cent a year during the following two decades. This acceleration was largely attributable to spurt in public sector capital formation which grew at 5 per cent a year during the 1960s and the first half of the 1970s, at 12 per cent a year during the second half of the 1970s and the early years of the 1980s. Through much of the 1980s, however, it declined to between 4 and 5 per cent a year. Private capital formation,

in contrast, grew at a substantially higher rate of over 7 per cent a year during the 1960s and the first half of the 1970s. Its growth decelerated to less than 4 per cent a year during the second half of the 1970s and the early 1980s, and further down to only 1.5 per cent during the three years 1984-85 to 1987-88. Mishra stresses the point that despite deceleration, private capital formation grew at a positive rate all along, and towards the end of the 1980s, more than compensated for the fall in the public sector capital formation. In fact the trend of fall in the total capital formation registered during the three years 1984-85 to 1987-88 was reversed subsequently. The trend growth rates confirm this pattern of change.

In terms of the behaviour of capital formation, it is rather easy to explain trends in public capital formation since it is determined exogenously by Government policies. Explanation of the behaviour of private capital formation poses several problems. The real question is: does public investment stimulate or discourage private investment? Whereas stimulation has been described as 'crowding in' effect of public investment, the phenomenon of hindering private investment has been described as 'crowding out' effect. In fact 'crowding in' is really described as 'complementarity' between public and private investments. Mishra questions the complementarity thesis supported by many Indian economists. According to him, the more important factors influencing farmers' behaviour towards capital formation in agriculture are: income from agriculture, own savings and availability of credit. In contrast, B.D. Dhawan who devotes his paper to examination of this question in depth, comes to the conclusion that the complementarity hypothesis is supported by empirical evidences both at the macro and micro levels. The significant decline in public fixed capital formation in agriculture since 1980-81 must be deemed as a major explanatory factor behind the marked slowdown in the rate of growth of private fixed capital formation in Indian agriculture during the 1980s, as compared to the 1970s and the 1960s.

To round off the discussion on a positive note let us look at the prospects of capital formation in agriculture in the coming years. Mishra argues that it would not be difficult to achieve a 3.5 to 4 per cent annual growth rate of agricultural GDP in future if the agriculture's own rate of investment of 9 per cent achieved during the 1980s is raised to 10 per cent and the efficiency of capital use is further improved.

RURAL POVERTY, EMPLOYMENT AND WAGES

Nilakantha Rath in his paper revisits the poverty syndrome in India since the beginning of the seventies when the first few studies on the measurement of poverty, including the well-known study by him and late Professor V. M. Dandekar, were published. The paper is essentially a critical review of the methods of measurement of poverty in India adopted by scholars as well as the Planning Commission of India till now. It points out the strengths and weaknesses of the various methods of estimating the poverty line and the incidence of poverty, and estimates these, on the basis of alternative calorie requirement norms, for the years 1977-78, 1983 and 1987-88 for individual states and India as a whole. It suggests at the end that the growing and high incidence of poverty in many states, estimated on the basis of the specified calorie intake norms, indicates modification of these norms, partly due to less strenuous living and working conditions in rural areas and partly due to lesser intake as a result of lesser work opportunities. The latter has disturbing implications for the state of living in rural India. The paper ends with a few suggestions for generation of greater employment in rural areas, necessary for eradication of poverty.

The paper begins with a brief review of the different measurements of the poverty line in the beginning of the seventies. While most of these had mentioned a certain monthly per capita income, following a Planning Commission Committee, the basis for this was not stated. Dandekar-Rath's approach, on the other hand, defined this poverty line expenditure as that level of per capita expenditure at which an average Indian - average for age, sex and activity status - was able to get adequate food, measured in terms of the calorie intake required for such an average individual. The paper summarises the criticisms levelled by V. K. R. V. Rao and P.V. Sukhatme against this approach to the delimitation of the poverty line, and the replies to the criticisms by Dandekar. Two points become clear from this debate: firstly, poverty and under-nutrition are different things, though they are related, and secondly, the poverty line is that level of per capita expenditure which appears, in fact, to enable the average household (average of all households at that level of per capita total expenditure) to obtain the required calorie intake.

The paper examines the alternative approaches to updating the poverty line of an earlier year to later years, like using the quantum of intake of foodgrains, or the percentage of the total expenditure on food at the earlier poverty line, and finds these unsatisfactory. It examines the various price indices used to adjust the poverty line expenditure of an earlier year, and finds that while some are better than the others, the best of them estimates a poverty line for a later year (or years) where the calorie intake is significantly lower than the required norm. This raises the whole question of the changing basket of consumer goods to which considerable attention is paid.

The paper contends that the changing baskets over time are at least partly because of unavoidable circumstances and cannot, therefore, be ignored as consumer preferences due to changes in income or tastes.

It reviews the revised calorie intake norms recommended by the Task Force of the Planning Commission, and while appreciating separate norms for rural and urban areas, warns of the risk of arbitrariness in assigning different categories of occupation as per Census to different calorie norms for different activity status laid down by the nutritionists.

The author takes serious exception to the recommendation of the Expert Group of the Planning Commission to use a single all-rural food and non-food basket to estimate the poverty line at individual state levels. It points out that the argument of non-comparability of the different state baskets for the purpose, advanced by the Group is untenable since all these are finally expressed in terms of their calorie content. It further points out that this recommended procedure has resulted in a weighting diagram for computing price index at the state level where there are only two prices, food and non-food.

In the light of all these the author comes to the conclusion that the proper way to estimate poverty is to use a recommended calorie norm, every year, for individual states, to estimate the poverty lines and the percentages of the rural people below these lines. The all-India estimate should be an aggregation of the state estimates. Yearly estimates of poverty are not important for policy purposes; five-yearly is good enough.

The paper presents estimations of poverty line and percentage of population below this, for all major states of India, for 1961-62, 1977-78, 1983 and 1987-88 on the basis of 2,250 and 2,400 calorie norms. The rising and high incidence of poverty in many states raise doubts in the author's mind about the appropriateness of the calorie norms used.

He mentions two possible sources of reduction in average calorie requirement of the

rural population. One source is the less strenuous living and working conditions in rural areas, thanks to increased sources of water supply, bus transport, biogas, pump-sets, tractors, threshers, etc. The spread of these is sure to require less effort on the part of village men and women and hence less calorie intake.

The other is the faster growth of rural labour force than rural employment opportunities leading to spread of work amongst people, lesser working hours and less strenuous effort by individuals resulting in lesser calorie needs. The author suggests that while the former development would require a downward adjustment of the average calorie norm in the states, the latter is only a way of disguising growing underemployment and, therefore, has very unhappy implications.

The paper concludes by saying that expansion in rural employment for eradication of poverty is best done through rapid expansion of irrigation and more economical use of irrigation water, faster development of rural infrastructures like village roads, drinking water sources, primary schools and primary hospitals, and in tribal areas, by handing over forest lands with little forest cover to tribals for sylviculture. The author sees little move in this direction during the last five years, and fears that the situation of rural poverty will continue to worsen till then.

On assessing the trends in rural poverty, Suresh Tendulkar and L.R. Jain maintain that in a continental economy like that of India with large agro-climatic diversities, a regionally disaggregated treatment is more meaningful. They address this issue in their paper taking 17 major states accounting for 98 per cent of the total rural population, and using three indicators of poverty measurement, namely, headcount ratio (HCR) for prevalence, poverty gap index (PGI) for depth, and Foster, Green and Thorbecke (FGT) measure for severity.

In an earlier paper the authors had found that there was an improvement in the rural poverty situation from an agriculturally peak year of 1983 to a severe drought year of 1987-88. This finding at the all-India level is in sharp contrast to the earlier finding by other researchers that the poverty situation worsens during years when there is a dip in agricultural output. Furthermore, a simple decomposition of the decline in rural poverty between 1983 and 1987-88 showed that the component of the decline attributable to favourable changes in relative inequalities, i.e., distributional change effect, dominated over the favourable effect attributable to a rise in real per capita expenditure, i.e., growth effect; this held true for depth and severity measures but *not* for prevalence measure.

In the present paper, by grouping states into four categories on the basis of the magnitude and direction of growth effect and distributional change effect, it is shown that major changes in the composition of states across poverty indicators generated the all-India result referred to above. Large states like Uttar Pradesh, Bihar and Orissa, with a high share in the aggregate poverty, shift from having an adverse distributional change effect for headcount ratio to favourable distributional effect for depth and severity. Since simple decomposition schemes do not constitute an explanation, the paper examines supplementary evidence in support of the decomposition results. The decomposition results appear consistent with supplementary evidence in all cases, except for Bihar, Orissa, Andhra Pradesh and Maharashtra. The case of the latter four states requires further detailed examination. Overall, the paper succeeds in providing a comprehensive perspective for understanding the role of growth and distributional processes in influencing changes over time, in rural poverty.

In addition to analytical nuances, the paper is also notable for the insight it seeks to

provide into the impact of various anti-poverty programmes. These programmes must have contributed partly to the dominant distributional change effect at the all-India level for the depth and severity measures. The Centrally Sponsored programmes like the Jawahar Rozgar Yojana are too thinly spread to have a significant impact on any particular state. In contrast, the state-level programmes of the kinds in Kerala, Tamil Nadu and Andhra Pradesh are more concentrated and better tailored to the local needs and hence produce a more visible impact on the incidence of poverty. The drought relief works funded by the Centre but implemented by the states in the severely drought affected states of Gujarat and Rajasthan appeared to be most effective in reaching the poor.

The authors raise three wider issues for further research: firstly, the dominant and favourable distributional change effect at the all-India level could not have been brought about without the broad-based distributional impact of agricultural growth. Secondly, the relationship between the character, pattern, and magnitude of agricultural growth and their impact on the increase in real per capita expenditure as also on the changes in the Lorenz Curves at the lower end of the size distribution this complex relationship needs to be further studied. Thirdly, disaggregation at the state level is useful upto a point: some large states are so diverse agro-climatically that state-level results may conceal certain intra-state sub-regional differences.

G. Parthasarathy addresses the issues relating to the poorest of the poor in rural India, namely, agricultural labourers. Assetlessness, unemployment, low wages, undernutrition, illiteracy and social backwardness constituted the poverty profile of this most disadvantaged section of the population. Marshalling a wide range of statistical evidence, Parthasarathy discusses a number of inter-related aspects of the economic status of agricultural labour: employment, wages, organisation of labour, gender issues in wages and basic needs. He finds no evidence to support the general impression of the rising trend in real wages. In about half of the observations, the rate of growth of real wages decelerated during the period 1985-86 to 1993-94, as compared with the corresponding rates during the period 1975 to 1985. The real wages have risen significantly only in the irrigated areas. In terms of basic needs, Parthasarathy finds that in very few centres the wage of the male agricultural labourer is adequate to meet the basic needs. The rate of unemployment of agricultural labour is the highest among all classes of the rural population. The functional analysis of money wage rates suggests that labour productivity, percentage of agricultural labour households in total rural households, diversification as measured by percentage of non-agricultural households to total rural households and landlessness influence variations in wage rates.

In terms of policy prescriptions, Parthasarathy advocates that equitable agricultural growth resulting in higher productivity and higher demand for labour, needs to be ensured. In terms of the safety net, a more sharply targeted PDS, and the pension scheme on the lines of the Kerala model could be considered.

SURVEY ARTICLES

Two of the papers included in this Special Number fall in the category of survey articles: Demand and Supply of Agricultural Commodities by R.S. Deshpande and Dairying and Livestock Economy of India by P.S. George.

Deshpande has brought together some 50 studies on the demand for and supply of agricultural commodities published in the *IJAE* from 1969 till todate. He has also

supplemented this literature with similar studies published elsewhere. The focus of discussion is on the methodologies involved in the estimation of the demand for and supply of commodities. The demand analyses studies are grouped under three broad groups: (i) analysis of growth of output to arrive at the most feasible scenario; (ii) estimation of income and price elasticities of demand; and (iii) estimation of a complete demand system. Deshpande finds that the *IJAE* papers have concentrated on the first two groups. These studies have considered five important issues: firstly, a majority of studies attempted to project future consumption levels, on the basis of the actual trends or assumed rates of growth of population and per capita income. Secondly, attempts were also made to arrive at elasticities of demand with respect to income, price or cross elasticities. Thirdly, some attempts were made towards improvisation in the methodology and estimation procedures. Fourthly, one point which emerges from the studies is that the estimate of demand should consider the heterogeneity of consumer groups. The income, price, and cross elasticities differ across different groups and over time. Fifthly, the estimate of demand for individual commodities gives better results than that for aggregated commodity groups.

The studies published in the *IJAE* have not attempted estimation of complete demand systems.

A large number of studies is available on supply behaviour of agricultural commodities. The debate began with the testing of the simple hypothesis relating to cultivators' response to various economic stimuli. Initial studies established that farmers respond to price incentives. Many more studies followed up such studies by incorporating the Nerlovian framework of price expectations and adjustment lag models. A couple of studies sought to demonstrate the competence of the traditional supply models as against the Nerlovian models. A wide variety of specifications were used: relative prices rather than absolute price, yield risk, weather and price risk emerged as significant determinants.

Supply response of perennial crops has remained a neglected area. Again, there are not many studies which combine the analysis of both the supply and demand side of agricultural commodities.

George surveys the literature on the livestock economy during the last 25 years: in particular the 29 papers on the subject which appeared in the *IJAE* from 1969 onwards, have been critically examined. George feels that agricultural economists have not given adequate attention to this sector. Most of the papers are somewhat location specific and the conclusions derived may not have the characteristics of general applicability. In the context of the new economic policy which perhaps throws open opportunities for further development of this sector, studies at the *macro* level would be necessary.

In terms of growth of the livestock sector, three aspects seem to emerge from these studies. First, the trend is towards keeping specific animals for work and for milk production in contrast to the earlier emphasis on maintaining dual purpose animals. Second, considerable progress has been made in evolving new technologies for breeding and in building up infrastructural facilities for marketing milk. Third, co-operative institutions have emerged as a major force in milk marketing and in providing necessary support facilities to livestock farmers.

IMPACT OF LIBERALISATION

Some papers have made references to the implications of the liberalisation of the Indian economy since mid-1991 and also of the integration of the Indian economy with the global

economy. Rao believes that liberalisation will unleash powerful forces of transformation of the rural society: entry of multi-nationals with the state-of-art technologies, emergence of new activities like horticulture and rapid integration of agriculture and other rural activities with national and world markets are highlighted in this context. The whole range of these changes opens up new areas for research. The costs and benefit of reforms would need a careful assessment. Implications of the likely changes in crop pattern for food security, and whether the benefits flowing from these reforms would bypass the marginal farmer, implications of changes in land legislation like the amendment of the Land Reforms Act in Karnataka for the small and marginal farmers, empowerment of the poor by strengthening the Panchayati Raj institutions - these are some of the new areas for policy-oriented research.

Ray makes out a case against the relaxation of ceilings legislation. Instead, he recommends the adoption of the command area approach followed by the sugar industry and the area-based contract farming approach adopted by Pepsi. While the corporate sector would be welcome as partners in the task for social and economic uplift of rural India, its direct involvement in agricultural production should be firmly resisted in view of the social and political implications of displacing a large number of small and marginal farmers. Pandey and Tewari also point out that the forces of liberalisation have already generated a market climate for legalisation of tenancy.

Radhakrishna draws attention to an analysis of the impact of integration of the domestic markets with the global market. Domestic prices are generally lower than the international prices for cereals but higher for other food items. If the domestic cereal prices are allowed to rise, the poor would be hurt since cereals are by far the major and cheapest source of calories. Raising the real income of the poor to enable them to buy more food would be a slow process. Hence the combined need for better targeted public distribution system, and nutrition support programmes.

Liberalisation has also meant that we are lured by the market mythology. Private profit, rather than public good, could become, under the euphoria of the markets, the prime motivating factor for decisions relating to investment of scientific and financial resources. Swaminathan has therefore rightly warned that research and development (R&D) efforts relating to sustainable food and nutrition security should not be made to take a back seat. Ecological agriculture needs sizeable investment of resources. Investment on research is excluded from the calculation of subsidies under the World Trade Agreement and hence India will do well to step up R&D investment for public good.

CONCLUDING OBSERVATIONS

Overall, an important point which emerges from this brief review of the main themes of these papers is that there has taken place a major shift in the researchers' perspective of the nature of agricultural growth we should seek to bring about in the coming years. As Professor Dantwala emphasises: "While the aims and objectives of economic development remain firm, strategies for achieving them have to be adjusted to the ever changing domestic and international situation". In sharp contrast to the green revolution strategy which achieved a breakthrough in the production of a couple of crops by concentrating on the fertile irrigated areas and on the relatively better-off farmers, the new strategy should usher in growth which would have to be pervasive, involving use of degraded land, dryland farming, optimal use of water and common property resources. The new strategy should also ensure that the two basic food security challenges, namely, that of sustaining an adequate availability of foodgrains *and* of expanding the economic access to food, are met. In fact a holistic view

of food security needs to be taken. Furthermore, the principle of 'shared growth' has to be built into the new strategy. Also, the growth process would have to be participatory in the sense of involvement of the private corporate sector, voluntary agencies (NGOs) and the Panchayati Raj Institutions. The Government's interventionist and supportive roles may perhaps have to be redefined at the same time as the role of market signals enhanced. All of these considerations warrant a different if not a new paradigm of growth, which would be pro-poor, environment-friendly, and which would also take care of the gender issues.

Despite the wide canvass, it has to be admitted that there are some gaps in the coverage of the broader issues relating to rural development or alleviation of rural poverty. Perhaps the most conspicuous is the one relating the new hi-tech segments in the rural sector which have recently emerged as growth centres. Illustratively, floriculture, aquaculture and tissue culture have already recorded some progress in parts of the country. Again, proven technology to convert biomass into building materials, material for road construction and energy is available. Biotechnology can play an important role in wasteland development programmes. The Haryana Government is attempting to popularise green house technology with remarkable success. Finally, the exploitation of renewable sources of energy has opened up a new vista of rural development. There appears to be a cost advantage to the generation of electricity from renewable sources like wind energy; biogas-based co-generation, biomass and ocean energy vis-a-vis conventional power. In fact in the case of wind energy exploitation considerable success has already been achieved in Tamil Nadu. Yet another area which has not been covered is rural credit. At present almost all institutions constituting the formal segment of the rural credit system - rural branches of commercial banks, co-operative financial institutions and regional rural banks - suffer from serious infirmities. However, in the process of implementing the financial sector reforms as part of the process of liberalisation, issues relating to rural credit appear to have been put on the back burner. How should the rural credit delivery system be reshaped so as to facilitate the attainment of the new paradigm of agricultural growth envisaged here? Similarly, the precise implications of the new international trade regime under the World Trade Organisation for future agricultural growth would need to be fully spelt out. Coverage of these areas, however, must await another occasion!

It may not be out of place to refer here to a by-product, as it were, of the issues raised in this Special Jubilee Number. To what extent are the new concerns expressed in these papers on the future growth of the economy reflected in syllabi, at the post-graduate level, of the Universities and also in the research agenda of the various research institutions? For those of us involved in teaching and research, it may be worthwhile to give some thought to this question.

Finally, we must express our grateful thanks to the distinguished scholars who responded readily to our request and made possible the publication of this Golden Jubilee Special Number of the Indian Journal of Agricultural Economics.

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