ORISSA ECONOMIC JOURNAL

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ORISSA ECONOMICS ASSOCIATION
BHUBANESWAR

PREFACE

This is a combination of two issues of the Journal namely Vol. VI. No. 2 and Vol. VII. No. 1. It contains the papers discussed at the Seventh Annual Conference of Orissa Economics Association held at the Orissa University of Agriculture and Technology. Bhubaneswar, on 6th and 7th April, 1974 ; the inaugural address delivered by the Chief Minister of Orissa and the address of the President of the Conference. The following subjects were discussed in the Conference :

1. State Finances.
2. Regional Economic Development.

Besides the papers discussed in the Conference a few more papers have also been included in the issue. We thank all the persons who have contributed papers and Rapporteurs who have summarised the papers.

B. Misra
Editor

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WELCOME ADDRESS OF THE CHAIRMAN, RECEPTION COMMITTEE

SRI JAGANNATH DAS
Vice-Chancellor, Orissa University of Agriculture and Technology, Bhubaneswar

I have great pleasure in welcoming our Chief Minister; Dr. Ram Saran, Economic Adviser, Govt. of India, Directorate of Economics and Statistics, President of the Conference and delegates of the Association as it has kindly given the O. U. A. T an opportunity to host the Conference. I am fully confident that under the dynamic leadership of our versatile Chief Minister, Srimati Nandini Satapathy, and able guidance of Dr. Ram Saran, the Conference will throw some light on some of the fundamental economic problems that confront the country.

The Orissa Economics Association has chosen two important topics like State finances and regional imbalance for discussion in the Conference. On the eve of the 5th Plan, we are groping for answers to these two questions in order to accelerate the process of economic growth and remove disparity between different regions. In fact, both the problems are intimately interrelated. Lack of finances has stood in the way of exploiting our natural resources and of industrialisation and thus of economic growth and slow and tardy economic growth coupled with the regular visitation of natural calamities and their effects has continued to make Orissa a backward State. This is a vicious circle in which we are all passing through without having been able to find out an adequate answer to solve the problem.

It is estimated that the per capita income of Orissa at current prices was Rs. 467.00 in 1969-70 compared to the All-India average of Rs. 579.00. Among the major States of the Union only Bihar had a per capita income lower than that of Orissa. But what is distressing is that the gap between average per capita income of

India and that of Orissa has been widening. The disparity was Rs. 80.7 in 1962-63 on the basis of 1960-61 prices. This increased to Rs. 90 in 1969-70. It has been estimated that on account of differential growth rates, the gap between these two is likely to widen further and stand at Rs. 121 by the end of the 4th Plan since the per capita income as assessed will be Rs. 388 and Rs. 267 for India and Orissa respectively by the beginning of the Fifth Plan at 1960-61 prices.

One of the estimates shows that if somehow Orissa can be able to make an investment of about Rs. 4000 crores during the 5th Plan, the per capita income of Orissa may come to all India level and disparity will virtually disappear. But if there will be an investment of about Rs. 2000 crores (including central, private and state sectors), the present disparity will continue to exist and further widen by the end of the 5th Plan. It is now learnt that Orissa is making plans for making an investment of only Rs. 2000 crores implying thereby that regional imbalance for Orissa will continue to exist for a pretty long time creating dissatisfaction and frustration in the state. This goes to show that financial resources play an important role in removing regional imbalance in the country. As a matter of fact, the soaring prices and large scale unemployment have created a very grave dilemma for developing countries like India. As a result although the Fifth Plan has since started with commencement of the current financial year, the finalisation of the details of the Plan document is yet to be made ready and so it is advanced as an argument in the newspapers that in effect a virtual 'Plan holiday' is now on.

Economic development of the populous developing countries is a complex process involving different measures in different sectors of national economy. Pressure of population and scarcity of capital compel several compromises to be made with modern technology of production even in important fields commensurate with the realities of the situation particularly on those obtaining on the employment front. Such compromises are termed as adoption of intermediate technology. This need not be viewed as a static phenomenon but an effective tool of economic growth as amply proved in a country like China. The promotion of intermediate

technology calls for a radical change in our educational system at the village level. The younger generation of farmers and village craftsmen need job-oriented education, desirably one having relevance to their traditional profession. Improved farm techniques and know-how of better equipments and implements if properly taught to make them conversant for their effective use and utilisation, would be the surest way of improving the lot of the down-trodden. In my opinion such intermediate technology can very well suit the conditions prevalent in Orissa. I hope this august body of the Economists will give their due consideration to the economic malaise of Orissa.

Our talented Chief Minister who is present today to inaugurate the Conference is making determined effort to lift Orissa's economy by persuading the Central Government to make adequate investment in the State. We are confident of her success. The Economists of Orissa who are present today, will no doubt take the opportunity to discuss the problem and indicate the way in which additional resources can be mobilised in order to change the economic landscape of Orissa by development of its mineral, forest, water (both surface and ground water) and other natural resources. A fraction of available water resources has been developed and unless irrigation sources are rapidly developed, the two Fertilizer factories at Talcher and Paradip may not be of much help to farmers of Orissa for rapid and effective agricultural development. There is also plenty of scope of power development both hydro and thermal. Power is the key to industrialisation and development of small scale industries by way of rural electrification as well for exploitation of ground water resources, not yet tapped to any considerable degree.

I again take the opportunity to extend a hearty and cordial welcome to you all for your kind participation.

REPORT OF THE SECRETARY, ORISSA ECONOMICS ASSOCIATION

SRI P. K. DAS

Mr. President, Chief Minister, Mrs. Nandini Satpathy, Chief guest, Dr. Ram Saran, Chairman, Reception Committee, Vice-Chancellor, Mr. Jagannath Das, Dean, Dr. Baidyanath Misra, fellow delegates, Ladies and Gentlemen.

In my capacity as Secretary of the Orissa Economics Association, I have very great pleasure in welcoming you all to this seventh annual conference of the Association. We have a special word of welcome to Shrimati Nandini Satpathy, Chief Minister of Orissa. We are indeed very grateful to her for having accepted our invitation to inaugurate the conference. Shrimati Satpathy is widely known for her socialistic and progressive outlook. We are most fortunate that such an outstanding personality is here to inaugurate this conference which is assembled to discuss on crucial economic issues of the state. We feel confident that her presence in our midst will pave the way for establishing intimate relationship between social scientists and the government machineries. We are also grateful to Dr. Ram Saran, Economic & Statistical Adviser to Govt. of India, Ministry of Agriculture, for having accepted our invitation to attend this conference as the chief guest. Dr. Ram Saran holds a key position in the Govt. of India. He is the chief architect of several research projects in the field of agricultural economics and statistics. Through these research projects he is keenly associated with all the agricultural universities, agro-economic research centres, Bureaus of Statistics & Economics and several other organisations throughout the country. Dr. Ram Saran has several papers and reports to his credit.

We are extremely happy as he could be able to come over here to encourage us by giving a technical adress in this conference in spite of his numerous pressing engagements.

We are extremely grateful to the Vice-Chancellor of the Orissa University of Agriculture & Technology and Chairman of the Reception Committee, Shri Jagannath Das, who has kindly agreed to host the conference. On behalf of the members of the association and on my own behalf I express debt of gratitude to him.

I would now like to give a brief account of the objectives and activities of this association.

The Association organised its first conference at Ravenshaw College, Cuttack in January, 1968. Dr. Sadasiv Misra, an eminent economist and educationist, was the first president of this Association. The Association is fortunate to have many scholarly economists of the State as its past Presidents. They are Dr. Debendra Chandra Misra, Dr. Bidyadhar Misra, Dr. Baidyanath Misra, Dr. Chakradhar Mishra and Professor R. C. Patnaik. To-day we are lucky to have another reputed young economist, Dr. S. P. Gupta, Professor of Economics, Sambalpur University as the President.

The Orissa Economics Association has already covered several economic issues of the State and the most useful deliberations have been recorded in the Orissa Economic Journal. Some of the important topics which have been discussed in the past conferences are : (1) Land reforms, (2) Price and Production trends, (3) Employment and Manpower planning, (4) Working of Public Enterprises, (5) Food policy, (6) Working of Co-operatives, (7) Agricultural Credit, (8) Impact of Rural electrification in the rural economy, (9) Investment in education and (10) Strategy for Planned Development of Orissa. Our distinguished members have assembled here today to discuss two important issues (1) state finances, (2) regional disparities and balanced growth. Further it has been proposed to hold a symposium on inflation in India in this conference. Dr. Sadasiv Misra has been requested to initiate the discussion.

I would like to mention here that unlike other profossional associations, this Association has gone beyond the academic circle. Many of the distinguished administrators and economists of

the State have shown their keen interest in the activities of our Association. The Association is enriched by their association.

It is heartening to note that the association in collaboration with the Gokhle Institute of Economics and Politics is Planning to organise a seminar on Orissa's Economy at Delhi sometime in July under the auspices of the Government of Orissa.

The Association is extremely grateful to Dr. Baidyanath Misra, Dean, College of Agriculture, for his active co-operation and guidance in organising this conference. I am personally very much indebted to him for extending ungrudging support to me in each stage to make this conference a success.

I would like to thank the President, the members of the Executive body and the members of the association for their encouraging co-operation. I will be failing in my duty if I do not record my deep sense of gratitude to Dr. Bidyadhar Misra, Editor of the Orissa Economic Journal, for his valuable service to the Association.

I extend my sincere thanks to Shri B. Mohanty, Dean, Students Welfare, Shri P. C. Patnaik, Registrar, Shri S. K. Das, Comptroller and Shri N. K. Rath, Director of Physical Plants of the OUAT for their co-operation. I am also thankful to my colleagues in the Economics Department and post-graduate students in Agricultural Economics of this University for their kind help and co-operation.

I thank you ladies and gentlemen for your kind presence in this inaugural meeting of the conference.

ADDRESS OF
SHRIMATI NANDINI SATPATHY
Chief Minister of Orissa

AT THE ANNUAL CONFERENCE OF THE
ORISSA ECONOMICS ASSOCIATION

Mr. President, Members of the Economics Association, Ladies and Gentlemen :

It gives me great pleasure to be here this afternoon among you the professional economists concerned with the economic problems of the State in an unruffled academic atmosphere. This is a pleasant and stimulating experience for those who necessarily have to concern themselves with the economic problems of the State, but in an environment and under certain stress and strain, which is different from the rarefied intellectual atmosphere from which you are accustomed to view the mundane problems of this world. But I think this in itself gives you the advantage of a better perspective which comes out of detachment and non-involvement in the day-to-day problems of the State. I have no doubt that you are as much concerned about the maladies which plague our society as anyone else like the administrators, politicians, social workers and others. This is evident from the fact that you have selected two subjects which to my mind have a direct bearing on the most vital problems in the State at the moment. Balanced regional development and State finances are the two basic issues which we are grappling with. These are very sensitive issues to which answers have to be found, if we are to ensure social stability and hold out a better future to the young men and women on the threshhold of life.

2. Once upon a time it was fashionable among the economists to debate as to whether it detracts from the scientific character of economics, if a professional economist engages himself in the task of finding answers to the problems or seeks to prescribe remedies for the same. It was considered disparaging if a man of science which an economist ought to be should engage in the task of advising the Government or the society. It is his primary duty as a scientist to say what is and not what should be. Perhaps, it was felt that respectability lies in merely stating facts

without value judgements. Nobody refers to such a controversy today because it has been realised that the line which distinguishes what is from what should be is a very thin one. Very often mere statement of the fact is itself suggestive of what should be.

3. There is no doubt that the theoretical apparatus which the professional economists have acquired is very important and every effort must be made to sharpen it and make it a more effective instrument in its application to find solution to problems. But by itself it cannot be an end. Therefore the measure of its effectiveness or success lies in the extent to which we use this instrument to achieve certain object. I may put it more plainly. The society today is anxious for rapid transformation from the traditional agricultural economy to a more modernised society with all the technological innovations which the western world has witnessed since the industrial revolution. The only difference is that in the western world they had time to achieve a certain measure of economic prosperity through industrial and agricultural revolution after which they could aim at a minimum level of distributive justice. But, for a State which has achieved its independence in 1947 and started its planned efforts in economic development in the second half of the 20th century, the problem is somewhat different. We have to short-circuit the process which the western world have gone through during the 18th and 19th centuries. We have to achieve the miracle of increased production through industrial and agricultural revolution simultaneous with distributive justice. It is not possible for any one who feels the pulse of the people to say today that if you want socialism to be ushered in, you should wait for the production to increase in the first instance. People suffer from what is called a crisis of rising expectations. New ideas have come; the masses have become conscious and highly politicised. They are aware of their rights and the inequities inherent in the social system. No Government can today say that we will solve your employment problem or the problem of distributive justice and establish a socialistic pattern of society only after the cost of production is reduced and discipline in production is achieved. Many of your fellow economists who are in the Planning Commission have no doubt come to the conclusion that a plan document designed merely to increase production is not adequate. It should have positive schemes specially designed to create better employment

potential or a better system of distribution of income and wealth. Any economy geared to bring about increse in production would not automatically ensure that there is increased employment facility or that the educated youth in the country get employed or that the rural income is getting distributed more equitably. Studies in the high yielding varieties programme have indicated that unless it is carefully supplemented by special schemes for small farmers and marginal farmers, increase in agricultural production may accentuate inequality in the distribution of rural wealth and we will be failing in our duty to the landless peasantry and other weaker sections of the community.

4. I am mentioning all this only to suggest that any study of economic growth or the economy of a developing society should be based on certain amount of social awareness. Our Plan documents have frankly admitted that the plan objectives cannot be reduced to mere exercises in arithmetic and graphs, equations and statistical formulations, but have a broader human and social objective of which the economic indicators—the income, investment, consumption, etc. form only a certain component.

5. There is need today of a greater action-oriented research which have a direct impact on the formulation of policies and programmes. The gulf which has either developed or has been imagined between the academicians on the one hand and administrators and politicians on the other should gradually narrow down if the common man in the society is to derive the fruits of advancement of science and technology. The man in the village is interested in more water for his land, one more crop, enough income for the education of his children and living a decent life. By decent life, I mean a life above the poverty line. To them equations by economists, inaction or inadequate action of the administrators or assurances by the politicians have very little significance. I would, therefore, suggest that some concrete programme should be formulated whereby the teachers and students, particularly students at the post-graduate and honours stage who have specialised in this science get involved in the studies which have a direct bearing on policy formulation.

6. Macro economic figures are useful inasmuch as we need indices to formulate policies in the field of employment, income, investment etc. But such macro economic material would not be realistic unless they are based on statistics relating to problems in particular regions with necessary qualitative and quantitative difference. I would illustrate this point. One may speak of investment income ratio or capital output ratio. But unless we know what is the result of a particular dose of investment in a dry land in Kalahandi and the same dose of investment in an irrigated land in the delta area, it would be unrealistic to think of one average investment income ratio for the entire economy. Nor can we use this ratio to arrive at any tentative conclusions regarding the contribution of the agricultural sector to the State income. What I am suggesting is that you may conduct studies at the macro level to arrive at indicators which have relevance to the particular region or district or block under consideration so that the averages that one states for the economy as a whole are meaningful. This is a subject on which if you take up sample areas in a particular sector of development, you will be able to throw up suggestions on the basis of which the Government can formulate more realistic policies.

7. I am referring particularly to the investment income ratio because it is very often suggested in the economic parlance that unless a certain volume of investment is made in the economy during a span of 5 years, we cannot reach a particular level of *per capita* income. Some time back it was estimated that an investment of the order of about Rs. 4,000 crores would be necessary if the *per capita* income of the State is to be raised to the level of all India average *per capita*. These comparisons would be significant only if the basic data have been realistically compiled. Unless these data have been built up from the field level, sector-wise and region-wise, it would be difficult to make any assumption regarding the extent to which one unit of capital is going to generate so many units of income. It would be still more difficult to project as to how many units of private investment could be induced by the stimulus given through one unit of public investment. It is only through carefully designed field studies that one can arrive at aggregates of this nature which can be useful tools of planning. We have been talking of generalities far too often partly because the statistical material is always falling

far short of the sophisticated theoretical apparatus which we have been developing. The result is that this apparatus has either to function in vacuum leading to generalised statements or dealing with out-of-date or inaccurate data leading to wrong conclusions.

8. The fifth plan of the State has been fixed at Rs. 567 crores. But when we think of the total investment in the State during the five-year period, it should necessarily be of a much higher order. In the first place, the 567 crores which has been tentatively fixed is to be finalised only after the principles of Central assistance are determined by the National Development Council meeting to be held shortly. Besides, we are likely to get additional assistance for the sub-plan for tribal areas for accelerated development of the comparatively under-developed regions of the State. Thirdly, the Central sector investment during the 5th plan is expected to be almost of the same order as the State Plan outlay, although it will be difficult to quantify it at this stage. Several projects such as Paradeep Fertiliser Plant, Argon Recovery Plant and Heavy Water Plant at Talcher, C.R.G.O. Sheet Plant at Rourkela, Ferro Vanadium Plant, Rairangpur, Rare Earths Complex at Gopalpur, Gopalpur Port, Nickel Smelter, Formed Coke Plant at Talcher and Modern Bakeries have been proposed to be taken up. While some of them have been finalised others are being worked out. Fourthly, a substantial amount is expected from the institutional sources, the World Bank, the Agricultural Refinance Corporation, I.D.B.I., Life Insurance Corporation, Reserve Bank of India for the co-operative sector and the Commercial Banks. We would also expect a very substantial contribution from the private sector. In fact the major portion of the investment in the economy, that is Agriculture, is only in the private sector. It is unlikely that the total of all these investments during the 5th Plan would be less than Rs. 1,500 crores. Our effort should be to maximise it.

9. But the ultimate success of planning lies in ensuring that all these investments from the Central sector, the State Plan and the institutional sources are deployed in such a manner that we get the maximum result from the private sector. I am referring to what in the economic jargon you would like to describe as the multiplier and the accelerator effect. If a certain dose of investment is made

in a particular region and it is judiciously invested after proper planning, it should induce a considerable amount of private sector investment. The increase in the *per capita* income or the State income depends on the total volume of investment during the 5-year period, other things remaining constant. These *ceteris paribus* assumptions no doubt are subject to change in the long run. I will not go into the socio-political factors which add new dimensions to the comparatively limited consideration of economic investment. Development economists today, I understand, fully acknowledge the importance of the socio-economic and administrative apparatus in shaping what may be called the purely economic determinants. But if, for the time being, we take these extra-economic considerations as constant and restrict ourselves to the mere economic variables, I would say that the investment in the State during a period of 5 years is the resultant of the investment in the State sector (including Centrally sponsored schemes), Central sector, institutional sources and private sector.

10. Ultimately, the leeway in the investment gap is to be made up by the investment in the institutional and private sector. This would largely depend on formulating appropriate policies for tapping the institutional resources through corporate bodies like the Lift Irrigation Corporation and also inducing greater private sector investment by a suitable industrial policy and an institutional framework like the Industrial Promotion and Investment Corporation. Commercial Banks could also play a very important role in the development finance in the years to come. It is encouraging to note that the Commercial institutions have been showing greater interest in the rural areas instead of confining their activities to the urban and industrial centres only. I hope during the next 5 years they would expand their activities and try to locate at least one branch of the bank in each Block. This depends on a shift in the emphasis from the purely banking consideration of safe investment according to credit-worthiness to a work of a promotional nature. The weakest point in our economy is the credit gap among the tribals who are perpetually indebted to the money lenders called the 'Sahukars'. In a predominantly tribal economy like ours, this exploitation has led to instability and law and order situations in the past particularly in South Orissa apart from keeping the tribals at a sub-human level of existence. Since the record of rights was not available in

some of the agency areas, the co-operative credit institutions had not in the past shown any interest in giving loans particularly medium and long-term loans. Things are gradually changing. The credit institutions have to develop a greater spirit of social awareness by extending their activity in the fields which can be called purely promotional with considerable amount of business risk.

11. As regards private sector investment, it is necessary to create an atmosphere which will induce entrepreneurs from different places to set up industrial units in the State. It should also have the objective of encouraging the small and medium scale enterprises by giving suitable incentive to entrepreneurs who, due to lack of finances, are not in a position to utilise their managerial talents. This can be done not only by an industrial policy devised to give incentives to the private entrepreneurs but also an administrative mechanism which ensures that the incentives are made available to the entrepreneurs without much of harrassment involved in the dilatory procedures. The major part of the private sector investment in a basically agrarian economy like ours is in the agricultural sector. The additional income that is generated in the rural areas on account of our planned efforts need to be ploughed back into the economy so that it creates additional productive potential. Thus generation of additional investment in the private sector in the rural areas is primarily a problem of organisation and extension work rather than of investment of capital. There is no doubt that for the purchase of fertilisers, seeds etc, there is need for credit either from the co-operative or other credit institutions. But the major input is labour which requires incentive to produce more from the land so that every family has a decent standard of life and the farmer is able to provide some education to his children and have the necessary minimum needs that are required to make the life tolerably comfortable.

12. As I have said earlier, the success of this programme for additional investment depends on our capacity to ensure that the region in which this dose of investment is injected is in a position not only to absorb it but also to multiply it so that the net effect of the public investment is generation of income which amounts to several times the original investment. This is a relevant point when

we talk of more Central projects. I have no doubt that it is necessary to have a large number of Central projects depending on the mineral wealth of the State and other locational advantages. But it will be wrong to assume or to make a political issue by suggesting that the poverty of the State is only on account of indifference of the Government of India in not giving more and more Central projects according to our demands. Some of the regions in Madhya Pradesh, Bihar and Orissa have had the good fortune of receiving the heaviest dose of Central sector investment in the past when compared to some other more prosperous States like Punjab, Haryana, etc. But as we know, this region continues to be one of the backward areas in the country. This is on account of what you would perhaps like to call the leakage of multiplier or wastage of multiplier in spiralling prices or what economists describe as the 'back-wash' effect. I would illustrate this point. We make an investment in Sunabeda in Koraput District in MIG factory. But this has not led to prosperity in the region or in the surrounding areas as one should have expected. Part of this investment or the income that was generated by this Project or the Dandakaranya Development Authority has been wasted in the increase of prices of food stuff and other meterials in the locality. This has not led to any significant increase in the rural income of the people of the region. A part of the multiplier effect of this increased consumption has also leaked out in the sense that traders in other areas like Berhampur, Vizianagram etc. have benefited in providing the services which with a little bit of advance planning would have directly benefited the tribals and others living in that area.

13. There is the 'back-wash' effect in the sense that a high dose of investment in an area, if not accompanied by adequate planning of the infra-structure facility or training in skills, has a deleterious effect on the surrounding economy. For example, the investment in Rourkela, according to the normal economic theory, should have led to increase in the agricultural production, dairying, poultry etc. in the surrounding villages to supply the requirements of vegetables etc. to the inhabitants of the new township. What however happened in reality was that the land of some of the tribals which was acquired for setting up the industry upset the rural economy. The compensation which they received was wasted on liquor or

extravagance. Some of them who were able-bodied and young got employment in the factory as unskilled workers. Those who were comparatively old were left back in the villages. Thus the first consequence of an investment in an industrial unit on a large scale is to sap the local agricultural economy of its best human resources and allow it to languish. It is an illusion to imagine and perhaps far worse if one seeks to make political capital by suggesting that Central sector investment is the panacea for all the economic ills of an under-developed economy. Unless this investment is supplemented and preceded by well thought out schemes for training and acquisition of skills, infra-structure and growth of ancillaries, a supporting agricultural economy from which the industrial township can draw its sustenance, it is like lighting a candle in a penumbra of darkness.

14. I would urge upon you, the professional economists, that whenever possible you may like to take up evaluation and studies of various schemes that are being implemented. These studies need not merely be of a post-mortem nature where a certain scheme has already been executed. We can no doubt learn lessons from our past failures but it would be far more useful if field studies are taken up as a concurrent evaluation of on-going plan schemes so that the results of your studies can be put to good use in rectifying any imbalance that might have developed in course of the implementation or at the stage of original plan formulation. For example, where a medium or a major irrigation project is being taken up, it would be interesting if a comprehensive study is undertaken to indicate the impact of the project beginning from the persons to be displaced from the reservoir area to their rehabilitation, creation of an irrigation potential, utilisation of the same and integrated agricultural development in the ayacut area. If a cost-bengfit study of this nature is completed right at the time when the project is still under execution, it will be useful for the planners to anticipate the development in the ayacut area even before the water has started flowing into the fields. In Talcher in the next 5 to 10 years an industrial complex is going to develop. It will be interesting to study in advance the type of programmes which should be taken up so as to equip this area to absorb the full benefits of the industrial development and so that the people in the locality acquire the requisite skills in order to get employment in the projects which are likely to come up. This again would depend on detailed project

formulation and a time schedule so that the whole programme can be synchronised. We had in the past undertaken expert studies by professional bodies like the National Council of Applied Economic Research. It would however be more fruitful if the expertise that is already available with the Universities is utilised as a continuous process not only to enrich the practical knowledge of those who are engaged in these studies but also to help the planners and administrators. I am making this suggestion at random but I am sure you can develop this point and work out high priority areas where your attention should be focused in the first instance and where the results of these studies will be of immediate use.

15. There is need for project formulation in greater detail as well as planning at the district level both in financial and physical terms so that an order of priorities and an integrated plan is worked out. This will provide a perspective and overall framework within which actual implementation would depend on the availability of resources and sectoral allocations as may be made by the Planning machinery.

I thank you once again for this opportunity to be with you this evening.

JAI HIND

PRESIDENTIAL ADDRESS

DR. S. P. GUPTA
Professor and Head of the Department of Economics,
Sambalpur University

I am very grateful to the members of the Orissa Economic Association, for electing me as their President for the current year and for giving me the opportunity to deliver the Presidential Address at this Annual Conference of the Orissa Economic Association. I am indeed thankful to you all.

I shall devote this occasion to draw your kind attention to some aspects of Quantitative Approach in Economics, the importance of which hardly needs any emphasising.

I should first of all point out what is meant by Quantitative Economics. The term Quantitative Economics is a general term. It encompasses a variety of subjects such as Quantitative and Statistical Methods in Economics, Mathematical Economics, Econometrics, Economic Statistics, which are, at present, taught in various Universities within and outside India. In general, mathematical and/or statistical treatment of economic problems is usually considered the area belonging to Quantitative Economics.

Judged by the outward and visible symbols of success, such as the number of periodicals in Quantitative Economics, the number of articles in Quantitative Economics even in the so called 'literary' or 'non-mathematical' economic journals, the volume of scholarly contributions, course offerings especially the summer courses, etc., Quantitative Economics is certainly a "growth industry". It is not a new industry. I shall be discussing this aspect later.

Even the basic modern text books, written during the last ten to fifteen years, and the first rate original articles appearing in the well known academic journals like the "Review of Economic studies", "Review of Economics and Statistics", "Economic Journal",

"American Economic Review", "International Economic Review" "Economica", "Sankhya", Indian Economic Review, to mention a few, contain now-a-days a lot of applications of mathematics and / or statistics. Therefore, to enable our students to understand such books and articles so as to understand the development in modern economics and the implications of quantitative research work done in economics, some training in mathematics and statistical tools and their applications in economic analysis is highly desirable.

The need for a quantitatives bias in economics syllabi of Universities is felt by almost all teachers of economics including those who may be said to belong to the traditional school. However, unfortunately literary economics (for want of a better term) still predominates in many Indian Universities, especially so in the Universities, and Colleges of Orissa. Post-graduate Department of Economics, Sambalpur University is an exception, where various papers in Quantitative Economics such as Quantitative Methods, Statistical Methods, Mathematical Economics, Econometrics, are being taught.

The difficulties in teaching various paper in Quantitative Economics are twofold : (a) the problem of getting proper students, (b) the difficulty in getting the services of competent and qualified teachers in the subjects. In these respects, perhaps I may mention some of my experience at the P. G. Department of Economics, Sambalpur University, where various courses in quantitative Economics have been introduced (as optional papers) only recently, since 1972.

As regards the first problem of getting proper students, I should point out that, even now, the importance of mathematics and statistics is not yet realized by our students studying at the undergraduate level. Thus, quite often students who have obtained B. A. degree with Economics have little background knowledge in mathematics and statistic. Furthermore, even the students who have studied mathematics up to B. A. (Pass) level lack the required knowledge in many of the mathematical tools used in economics. This is so because the syllabus of mathematics is not designed specifically to suit the needs of economics. Some topics, e.g.,

Difference Equations, which find application in economic dynamics are not covered even in M. A. mathematics syllabus. Besides, even the students who have acquired some amount of knowledge in some of the mathematical techniques (e.g., Calculus, Matrix Algebra), are completely ignorant of the relevance of such techniques in economic analysis. The problem is serious, but in my view, can be tackled by introducing at the M. A., first year level, a basic introductory course in Mathematics and Statistics designed specifically to meet the needs of students in Economics. The course should contain only those mathematical and statistical techniques, (e.g., Calculus, Difference and Differential Equation, Matrix Algebra, Elements of Statistical Methods such as Averages, Dispersion. Probability Distributions, Regression, Sampling Theory, etc.) which are invariably used in modern economics. The emphasis should not be to prove theorems and / or to derive formulae (which non-mathematicians always find very difficult), but rather to illustrate the applications of the mathematical and statistical concepts and methods in economic analysis. Such a paper (for want of better term, is named as Quantitative Methods at Sambalpur University) must be taught as a compulsory core paper, which would enable our students to study the modern text books and recently published learned academic articles, so as to be acquainted with the quantitative research work done in economics. Besides, teaching of such a paper would enable a student, if he chooses so, to offer advanced papers in Quantitative Economics, such as Mathematical economics and Econometrics during the final year of M. A.

With regard to the second problem of getting the services of competent and well qualified teachers, as the subjects such as Mathematical economics and Econometrics were not taught until recently in the Universities of Orissa, the qualified persons from outside the State have to be appointed, at least at the initial stage of teaching such subjects. The vicious circle of nonteaching the subject of great relevance—the teachers don't know the subject; therefore, they cannot teach it to the students, and when the student in future becomes a teacher, he also cannot teach the subject because he has also not studied it - has somewhere to be broken. There is just no alternative to it. As was mentioned by Professor A. K. Dasgupta, my teacher, a traditional economist himself, in his

inaugural address to the Twelfth Annual Conference of the Indian Econometric Society held at Kanpur, December, 1972, "Pigou once complained that economic scientists are in the position of mountaineers on a steep hill-side who, besides facing the natural difficulties of ascent, have to clear stones thrown on them by stray animals. Now, if the stone-throwers were only the innocent politicians, as in Pigou's illustration, the matter perhaps would be tolerable. But if they happen to be one's own professional colleagues, as in this case, the situation becomes truly disturbing, if not alarming". 1

Often a distinction is made between economics and mathematical economics. I should point out, at the outset, that there is no dichotomy between economics and mathematical economics. Basic concepts and ideas of economics are often the particular cases of problems that are tackled by mathematicians. For example, when an economist says, "quantity damanded of a commodity depends upon its price" or "consumption depends upon income", he is making statements which are particular applications of the fundamental mathematical notion of a functional relationship. Such statements can be put in mathematical language as "quantity demanded is a function of price, "Consumption is a function of income". Concept of margin is the most frequently used concept in economics, and all marginal concepts such as marginal cost, revenue, utility. propensity to consume are nothing but the first derivatives of the relevant functions. The word "equilibrium" is the magic word in economics and the effort of economist is often directed towards defining and deriving conditions of equilibrium, such as equilibrium level of price, output, national income, employment, etc. For a mathematician such an equilibrium represents the solution of a system of simultaneous equation. For example, the equilibrium price, meaning the price at which quantity demanded equals quantity supplied, refers to the solution of a system of two simultaneous equations in two unknowns, viz., price and quantity. In micro-economics e.g., utility or profit maximisation subject to a budget constraint, involves an application of the mathematical

1. A. K. Dasgupta, The Relevance of Economic Science, *Sankhya*, Series B, Volume 35, Part 2, June 1973, p. 166.

theory of constrained maximisation. The list of examples can easily be extended in order to emphasise that the distinction between economics and mathematical economics is not of kind but of degree only.

Although the development of Quantitative seems to be a very recent phenomenon, it may be surprising to note that mathematical formulation of some of the economic phenomena was attempted even earlier to the publication of Adam Smith's *Wealth of Nations*. It was published in 1776 which may be considered the year of birth of economics. Bibliographies, however, point out that mathematical formulation of monetary phenomena was attempted by Ceva, in Italy, in 1711 (i. e. over half a century earlier than the publication of *Wealth of Nations*) and by Lloyd, in England, in 1771. There are other precursors in the course of eighteenth century and quite a few in the early ninteenth century, e.g., in France, Canard (1801) and, in England, Whe-well (1829).

However, it is true that there was little depth in their economic analysis and mathematics used was only elementary algebra. More powerful tools of mathematics are obviously needed to progress significantly beyond what was accomplished through 'literary' (or non-mathematical) methods by such Classical economist such as Ricardo, Malthus, Say or Mill. The real break-through in this direction occurred with the publication of Cournot's *Researches into Mathematical Principles of the Theory of Wealth*, in 1838. Cournot not only pioneered many concepts, such as demand function and developed formulations of market phenomena (compatition, monopoly, duopoly, oligopoly) that still in use by economists, mathematical or literary, but also raised the mathematical level of economic analysis, especially by the introduction of calculus. However, in the words of Professor Leonid Hurwicz, "take-off" did not occur in mathematical economics until 1870's and 1880 when Jevons, Walras, and subsequently, others including Marshall, Pareto, and Irving Fisher provided enough impetus for a sustained flight that continues to this day'.

The Skepticism concerning the merits of Quantitative Economics and hostility towards it dates almost from the date of its origin. For examples, Cairnes in his *The Character and Logical Method of Political*

Economy, published in 1875, points out the reasons for his skepticism as follows :[2]

"So far as I can see, economic truths are not discoverable through the instrumentality of Mathematics. If this view be unsound, there is at hand an easy means of refutation—the production of an economic truth, not before known, which has been thus arrived at, but I am not aware that up to the present (1875) any such evident has been furnished".

"Unless it can be shown either that mental feelings admit of being expressed in precise quantitative forms, on the other hand, that economic phenomena do not depend on mental feelings, I am unable to see how this conclusion (that economic knowledge cannot be advanced through mathematics) can be avoided."

Cairness, the great opponent of Quantitative Economics, however, conceded : "It may be possible to employ geometrical diagram or mathematical formulae for the purpose of exhibiting economic doctrines *reached by other paths* (meaning thereby literary words), and it may be that there are minds for which the mode of presenting the subject has advantages."

The Quantitative Economists, however, don't accept the narrow scope and limits prescribed for Quantitative Economics by Cairness. Irving Fisher, one of the pioneers in mathematical economics, points out as follows :[3]

"The effort of the economist is to see, to picture the interplary of economic elements. The more clearly cut these elements appear in his vision, the more elements he can grasp and hold in mind at once, the better. The economic world is a misty region. The first explorers used unaided vision. Mathematics is a lantern by which what before was dimly visible now looms up in firm, bold outlines.

2. John E. Cairnes, *The Character and Logical Method of Political Economy* (New York, 1875), pp. VI-VII.
3. Irving Fisher, *Mathematical Investigations in the Theory of Value and Prices,* Transactions of the Connecticut Academy. Vol 9 (July 1892) p. 119.

The old phantasmagoria disappears. We see better. We also see further".

It should be stressed that development in Quantitative Economics until very recently did not come through the efforts of the professional mathematicians. Up to the last thirty years or so, they mostly scoffed at the triviality of the mathematical applications (mainly differential and integral calculus) in economies, triviality compared to what went on, for example, in physics. The greatest professional mathematician worked and are working hand in glove with physicists and astronomists and vice versa, but this did not happen until more recent time in economics. No mathematician of rank of Laplace, Lagrange, Gauss, Riemann or the like has concerned himself in any major way with economics. A. A. Cournot, though very important for raising the level of mathematical analysis in economics and for his significant contributions in economics, could hardly be compared to these giants as a mathematician. Similarly, though significant contributions to quantitative economics were made by men like Edgeworth, Fisher, Slutsky, Evens and others, they were not giants in professional mathematics. In general, until recently, professional mathematician have shied away from economics. In that, the mathematicians are partly at fault. Instead of taking stand-off position, they should have become interested in the subject matter and have found its close relationship with mathematics. This did not happen until more recent time. Economists are also partly (I would say, to a greater extent) at fault, because mathematicians were not brought into contact early enough or closely enough with the economic problems mathematicians might find challenging so as to provide the whole field the stimulus it deserved.

It should be emphasised, as was pointed out by Professor Oskar Morgenstern, economics cannot be advanced decisively without inventing and discovering new mathematical tools for its own purposes. In many cases proper mathematics to suit the needs of economics has to be invented. It is gratifying to note that recently efforts are being made in this direction. For examples, for economic situations in which individuals and firms simply do not face fixed conditions—they act upon each other—and the role of strategy

becomes paramount, there was no ready-made tool to analyse such an economics situation. It had to be forged by inventing a new mathematical technique; and the theory of games or strategy and the famous minimax theorem were developed, in 1944, by Von Neumann and Morgenstern concomitant with the recognition of the problem which was not understood properly before. As more and more mathematicians become interested in economic problems and more and more economists get interested in developing mathematical techniques, eventually new mathematics may be invented or discovered as specifically suited to socio-economic problems as the differential calculus was to classical mechanics.

There are various users of mathematical economics. Economic theory is only one of the users. Econometrics which is concerned with statistical analysis of economic data, relies on mathematically formulated models of economic phenomena. Unless the model of economic phenomena is formulated mathematically, it is not possible to estimate statistically the required parameters. Furthermore, Operations Research which is concerned with finding solutions to the decision-making problems faced by various organisations, such as private firms, various public bodies, etc., uses mathematical tools of economics such as linear programming, inventory theory, etc.

It has often been argued that there are no major prospects for the use of mathematics in economics because mathematics deals with quantitative relationships, whereas economics deals basically with qualitative ones. For example, economics deals with psychological factors in value theory. Since utility cannot be measured, mathematics can never be used to analyze such factors in value theory. Such a statement is based on a misunderstanding of the character, and hence, the power of mathematics. In fact, mathematical techniques have also been used for investigation of the "qualitative" phenomena. This is strikingly apparent in the theory of consumer behaviour. Of course, ninteenth century economist used a crude numerical indicator of preferences. This has, however, been discarded; and mathematical techniques, using the concept of ordering relations, have been used to develop a new theory of consumer behaviour without resorting to the cardinal measurement of utility. Furthermore, it was shown by Von Neumann

and Morgenstern and later by Merschak (who developed further Von Neumann-Morgenstern approach) that by realising that individual preferences have to be stated in face of uncertainty rather than, as formerly, sure prospects, a number (up to a linear transformation) could be defined for "utility". This numerical property was derived from a set of simple axioms. Thus methods have been developed for meaningful numerical characterization of psychological phenomena, provided the consumer's behaviour satisfies certain axioms.

Despite lack of quantitative aspects, a problem of tremendous philosophical and social interest that has been treated by mathematical method is that of social welfare function by K. Arrow, a Nobel prize winner of last year. (Incidentally, it may be mentioned that all the Nobel prize winners in economics up to now happen to be mathematical economists and / or econometricians, emphasizing the importance of Quantitative Economics in the modern world). In his *Social Choice and Individual values* (1951), Arrow analyzed by rigorous mathematical methods the question of relating social welfare judgements to individual preferences, and was able to show that there are severe limitations on the extent to which a social choice criterion can be responsive fully to individual preferences.

The preceding examples illustrate how mathematical techniques could be highly suitable for investigation of the qualitative aspects of the economy. However, it should be stressed that economic theory has progressed significantly in various areas through the use of mathematical techniques. Contrary to view held by Cairnes mathematical economics is no longer concerned with mere translation of results obtained by nonmathematical methods. The era of first picking up a mathematical technique and then searching for an economic problem on which it can be applied is largely gone. There are ample examples in economic theory how "new truths" have been discovered through the instrumentality of mathematics. For example, the work of Abraham Wald in the 1930's followed by that of Arrow, Debreu, Mckenzie, and others, has provided very valuable information regarding conditions under which competitive equilibrium is or is not attainable. Significant contributions to the study of economic dynamics were made through the use of

mathematical techniques by Frisch, Tinbergen, Kalecki, Samuelson and others, in the 1930's. Samuelson and Hicks, and others, laid foundation for the study of stability of multiple commodity markets. Even nature of the question relating to stability was vague prior to the mathematical formulation of the problem. Higher degree of precision in problem formulation became possible because of the structure of the language of mathematics.

It has already been pointed out that for a behaviouristic analysis of the economic situation in which individuals and firms act upon each other and the role of strategy becomes paramount, a significant break-through was achieved by Von Neumann and Morgenstern in their *Theory of Games and Economic Behaviour* (1944) by inventing completely a new mathematical technique. Significant advances have been made through the use of mathematical techniques in many other areas of economics. There is a vast amount of excellent mathematical work in the area of input-output analysis, linear programming, economic growth and planning models. Further a whole separate area of theoretical and applied econometrics exists, which I shall be discussing later.

As far the use of mathematics in economics is concerned it may be said that there is an abundance of formulas, some of which are not needed or are useless and are introduced in order to show off. At present, there is a tendency to consider that only a contribution to Quantitative Economics is a contribution of value, Statements are proved by means of complicated mathematics though they can be proved by elementary means.

Instead of using far outlying mathematics, the economic problems should be treated at their simplest levels. This is of course a difficult task, involving great intellectual effort. Often after decades only, the successful proof may get simplified and one finally arrives at proofs that are simple and elementary. When such a development occurs, that certainly represents true and highly significant progress in Quantitative Economics.

An economist using mathematics must avoid all those abstractions and generalizations which violates the essence of reality. He

must describe reality by models which are neither too simple (because then they become unrealistic) nor too complicated (because then they transcend our analytical power). Professor Kenneth Boulding points out that the use ot mathematics with its attendant arts of inference and manipulation may lead to a loss of interest in the real world, and this can be a powerful obstacle to the advancement of knowledge. He relates a story that once a physicist, a chemist, and an economist were stranded on a desert island with no implements and cans of food. They forgot to pack a can opener with their bags and baggages for expedition. The physicist and the chemist each tried to devise an ingenious mechanism for getting the can open, and the economist merely said, "Assume we have a can opener".[4] Obviously one would reach nowhere, if the basic problem is simply assumed away.

It is true that various economic model have been developed, which violates the very essence of reality e.g., the growth models have been developed which completely ignore government sector, or introduce it as an exogeneous variable. Obviously, a growth model to be of any use for policy purposes, should incorporate some *explanation of the behaviour* of public sector which comprises in many countries more than onethird of the national output. The interest of economist, until recently, was confined almost exclusively to development of *normative* theories of public sector seeking to provide criteria which *should* determine the revenue and expenditure policies of a government rather than explain how such policies are *in fact* determined. Only recently, several investigations concerning the behaviour of public sector specifically with relation to the level of economic development and the time-pattern of growth have been attempted, and certain hypotheses have been deduced from empirical observations. It may, however, be said that if mathematics is used in developing an economic model that does not correspond to reality, these are not necessarily the limits of mathematics. There are rather the limitation of the model which mathematics is supposed to help in developing.

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4. See, Kenneth E. Boulding, *Economics as a Science*, TMH edition, 1970., p. 101.

Mathematics has played a significant role in advancement of human knowledge and especially in the growth of scientific knowledge because of various reasons.

In economic science, one deals with a complicated system of inter-relationship between various variables. Often logical relations between them is too complex to be perceived by unaided human imagination or intuition. In such a situation verbal reasoning is far from adequate. Mathematical approach is useful because with its help human imagination can perceive, invent and solve the problems which cannot be solved by unaided human imagination.

Mathematics is a very powerful tool of making logical deductions from a set of assumptions about behaviour; and, therefore, one requires to make a fewer simplifications of reality than we would require if one has to depend upon verbal reasoning. If a theory is simple, one can depend upon verbal reasoning and/or geometry which is confined to two dimensional or at best to three demensional logic. But if the theory is complex, through verbal reasoning and/or geometry one cannot be sure whether a particular prediction is or is not logically implied by the theory. In such a situation, the role of mathematics lies in revealing inconsistencies.

As was pointed out by Professor Boulding, the other virtue of mathematics is that it has developed a universal language of abstract symbols which is completely free from ambiguity. For example, X^2 means something multiplied by itself in any language. It means nothing else. But words are used in different contexts and retain something of the meaning of all contexts in which they are used. It is these overtones of meaning which give language and especially peotry its richness and its power to provide pleasure. A great poem will have different impact on different minds, that is why it is, indeed, great But this very richness in meaning is an obstacle when an undistorted transfer of image from one mind to another is required. This is what is needed for undistorted transmission of scientific knowledge, and this can only be achieved by mathematical language.

Often, for policy purposes, one wants answers in quantitative terms. For example, before taking a decision to spend Rs. 100 crores, a government would like to know the effects of such spending, in quantitative terms, on prices, employment, income, etc. Mathematics help to formulate the economic problem in a form which could then be statistically or econometrically studied. In fact, econometrics grew out of the realisation that economic relationships could not only be expressed in terms of "greater or less", but could also be given numerical values, and it is the latter which is of more relevance for policy purposes.

Econometrics can be defined as the science of finding numbers which correspond to the parameters of economic models. The econometrician is not satisfied, for instance, with simply postulating demand and supply functions. He tries to estimate them in the form of explicit equations by applying statistical techniques to the collected data. Professor Tinbergen rightly points out, "Research is complete only when the quantitative aspect of the subject dealt with also is included... ...The essential and indispensable further ingredient for developing a science, however, is the measurement, one way or the other, of the pheonmena dealt with, in order to test the intuitive first theory expressing the relationships assumed to exist between the phenomena involved. Comparison with observation only can tell us whether a theory fits the facts. And if it does not fit them, the theory has to be amended. Thus, a new theory is built which again must be tested. This is the core of scientific development"[5]

Without quantification of relevant variables, qualitative theories are nothing but "empty boxes". As Professor Tinbergen points out the same qualitative theory may lead to various different results, when figures are introduced into it. For example, the qualitative theory that supply lags behind price, while demand reacts simultaneously to a price change, leads

5. Jan Tinbergen, "The Necessity of Quantitative Social Research", *Sankhya* Series B. Volume 35, Part 2, June, 1973, p. 141.

to a stable equilibrium (known as the Cobweb theorem) if the slope of the supply curve is, in absolute terms, smaller than the the slope of the demand curve. If, however, the supply curve is steeper than the demand curve, an unstable equilibrium results. Thus without quantification, the qualitative theory is empty indeed.

Let me choose another example from the theory of Public Finance. It is often stated that a deficit budget is inflationary, whereas a surplus budget is deflationary. Again without figures we cannot say whether the proposition is correct or nonsense. The recent theoretical discussions of the balanced budget theorem by different economists (Turvey, Baumol and Peston, Hansen, Peacock, William, Salant, Bowen, Musgrave and others) in criticism of the 1 : 1 version of the balanced budget theorem of Haavelmo and others, make it perfectly clear that the multiplier may be anything positive, zero or even negative, depending upon individual situation. Without empirical investigation concerning the various factors which affect the multiplier, *a priori* figure of unity or any other figure as the approximate value of the multiplier, does not have any significances. It is rather dangerous, as a guide to public policy, to even assume that the net effect of a higher balanced budget will necessarily be expansionary. Empirical investigation regarding the quantitative effects of various relevant variables is needed. Theoretical discussions, however, by pointing out the different factors which have to be taken into consideration for investigating the net effect of any budget expansion or contraction, will help such empirical investigations, if carried out.

It may be emphasised that in the last generation, a good deal of effort has been put into econometric studies. Testing of economic theory and hypothesis has been furthered by the use of electronic computers.

As was pointed out by Archibald and Lipsey in their *An Introduction to a Mathematical Treatment of Economics* (1967), the alternative to the use of an econometric model is to rely on the intuition of the chosen "wise" men. This is all right when the wise

man is right. But, what happens when he is wrong ? All we learn is that he is not wise enough and we should make an attempt to find some other wise fellow. Even when he is right, his uses are very much limited : "to listen to him we must have faith, and there is more than one prophet." However, if the prediction based on an econometric model goes wrong, outside the ascertained margin of error, the error in our analysis of the economy could possibly be remedied.

In conclusion, I would repeat that Quantitative Economics is a "growth industry. The future of economic science, I believe, will be co-terminous with the future of mathematical economics and econometrics. If economic science is to be raised to the status of the natural sciences, it must necessarily involve progressive use of mathematical techniques and quantification of the relevant variables. To-day the non-mathematical economist is helpless in understanding the modern development in the subject and cannot be of great help in providing guidance for policy purposes. For example, if there is to be a consistent, feasible economic plan serving also as a safeguard against political pressure, plans cannot be formulated on the basis of the intuitions of the chosen "wise" men. The techniques required are sophisticated, and their understanding requires training in economics, mathematics and statistics. There is no alternative to using mathematical and econometric models. An economist, to be useful for policy purposes and in order to understand what is being talked about in the subject in 1970's, has to acquire the necessary skill in Quantitative Economics.

PRICE POLICY FOR AGRICULTURAL COMMODITIES*

RAM SARAN

For the last two years, the economic situation in the country has been dominated by shortages and rising prices. The price position of foodgrains has been causing serious concern. The rise in foodgrain prices has been particularly marked in the deficit states, and spatial disparity has been accentuated. Prices of several other agricultural commodities as also of agriculturally based manufactured products, such as edible oils and cloth have also witnessed increases. Consequently, large sections of the population have had to suffer hardships. In a situation like this, the major concern of agricultural price policy has to be the protection of interests of consumers, particularly the vulnerable sections.

While the lasting solution of the problem lies in increasing production, the emphasis in the present situation has to be on ensuring equitable distribution of available supplies. The price policy to be followed will depend upon the approach that is adopted to achieve this objective. Among the various approaches that can be adopted in this regard, at one extreme is the alternative of complete elimination of private trade and assumption by the government of total responsibility of distribution among all non-producers in urban as well as rural areas. This would involve compulsory procurement of the entire marketable surplus of all producers. Further, in order that demand matches the supply thus procured, curbs on consumption of both producers and non-producers would be necessary in a situation of shortage. Moreover, subject to the subsidy in consumer prices which the general exchequer is able to provide, the price offered to the producer in a situation of shortage may have to be below the level at which the produce might otherwise sell in the free market.

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* views expressed in this paper are those of the author.

At the other extreme, the alternative is a complete reliance on the market mechanism. However, when supplies are short and prices are rising, the situation gets aggravated as the profit-motivated traders take full advantage of shortage and push up prices further by indulging in anti-social activities including hoarding and speculation. Some degree of governmental intervention and control with a view to regulating consumption and supplies, therefore, becomes unavoidable. Regulation of consumption would involve curbing the consumption in areas with high purchasing power as well as meeting the minimal needs of the people at reasonable prices. Regulation of supplies would necessitate that the supplies available in the country are not acquired and moved entirely through the operation of a free market but are channelled to the extent necessary and feasible into desired directions so as to meet the objective of equitable distribution.

In our country, in the case of foodgrains, both consumption and supplies have been sought to be regulated through a system of public distribution which has been a major element in the Government's food management policy. The system functions through a net work of ration shops and fair price shops. Statutory rationing of foodgrains is resorted to cordon off areas of high purchasing power like the big cities so that they do not exercise their greater pull for drawing supplies from the surplus areas. Through the fair price shops, the minimum requirements of the vulnerable sections can be met at reasonable rates, while the preferences of the more well-to-do classes are satisfied through the operation of the free market. The system of fair price shops operates in the case of food grains and sugar.

For the maintenance of the public distribution system, it is necessary to acquire supplies. One way of acquiring supplies is to arrange imports, but continued support of sizeable quantities of foodgrains is neither desirable nor feasible because of foreign exchange difficulties. Domestic procurement of foodgrains, therefore, becomes crucial. Various methods of acquiring the requisite supplies out of internal production have been employed in the different states. Broadly, these have been (i) price support operations, (ii) pre-emptive/ open market purchases by Government, (iii) levy on millers and traders, (iv) graded levy on producers, and (v) monopoly procure-

ment. It has not been possible to evolve one single method of procurement that could be uniformly employed in the States. Differences in procurement systems in the different states owe their existence to a number of factors. Firstly, the Government in different states are inclined to follow those systems with which they happen to be familiar, or which they consider convenient to operate. Secondly, the marketing and processing practices in different States also account for difference in procurement systems. Price support operations or purchases by exercise of the right of pre-emption have been successfully employed in the case of wheat in Punjab and Haryana because of the regulation of markets in these states, under which bidding takes place in open auction in the markets. Moreover, these States being surplus, prices in the open market remain generally at reasonable levels even in years of low production. Such a system has little chance of success in deficit states. In the case of cotton, purchases have been made by the Cotton Corporation of India at the ruling prices. In the case of rice, the convenient point of procurement is rice mills where paddy has to be milled. A system of levy on mills is also in operation in the case of sugar. In the case of rice, wheat and coarse grains, a levy on traders has also been imposed in some States. The system of graded levy on producers is also employed in some States. Under any system of levy, whether on millers, traders or producers, there is a dual market—while a part of the produce has to be surrendered to the Government at fixed prices, the balance is permitted to be sold in the open market. The price in the open market finds a level which makes up the loss, if any, on the sale of levy quantity at the given procurement price. This system has the advantage that while it is possible for Government to meet the requirements of the vulnerable sections at reasonable prices, the higher income groups can meet their requirements at higher market prices.

The monopoly procurement has taken different forms in different states. For example, in Maharashtra all private trade in paddy/rice, jower and negli is banned and any cultivator desirous of selling the produce is required to sell it, except for certain free sale concessions, to cooperatives who are appointed as Government's agents. In Orissa, the monoply procurement scheme is operated through rice millers, licensed dealers and cooperatives who are appointed as sub-agents of the FCI or State Government.

Besides there is also a free market in rice on restricted quantities. The take-over of wholesale trade in wheat during 1973-74 was the most comprehensive scheme of monopoly purchase which operated on the market surplus. Under this scheme, the private wholesalers in wheat were abolished all over the country and the retailers too were permitted to operate under appropriate conditions specifying maximum quantity they could deal in, stock, and retail, and also maximum prices at which they could sell to consumers. A number of steps. e. g. zonal restrictions and anti-hoarding measures were taken to effectively implement the scheme and particularly to maximise procurement of wheat. In view of the continuing psychology of shortage, the policy of take-over has been modified for the current year. Under the new scheme, while the procurement of wheat by the public agencies will continue, the wholesalers, both private and cooperative societies, will operate under a system of licensing and control. By imposing a 50 per cent levy on the wholesalers in the surplus States of Punjab, Haryana, Uttar Pradesh, Madhya Pradesh and Rajasthan and permitting them to sell the levy free wheat in the ma ket and continuing the policy of procurement at a price of Rs. 105 per quintal which is considerably higher than last year's procurement price of Rs. 76 per quintal, the policy aims at giving the growers a good market price, improving the availability of wheat, particularly in the deficit States, at the same time discouraging hoarding at all levels and reducing wide variations in prices in various parts of the country.

The success of any scheme of regulating consumption and supplies would depend on the fixation of appropriate levels of minimum support/procurement and issue prices. It has also to be emphasised that the prices to be fixed would also have important implications for future production. The ultimate aim of agricultural price policy being to achieve a sustained fate of growth in agricultural output and to increase the efficiency of cultivation, the price policy has to ensure what may be called a climate for growth wherein the cultivators feel enthused to undertake larger investments for modernisation of agriculture so as to increase agricultural production.

Two main approaches can be followed in the formulation of an agricultural price policy aiming at ensuring remunerative prices

to agricultural producers. One of these could be to raise simultaneously the prices of all agricultural products and the other to change price relationships between competing agricultural products. The first alternative (i. e. of improving the terms of trade in favour of agriculture) is not likely to bring about a significant increase in aggregate farm production. The aggregate supply response to enhanced prices is generally low over the short run, particularly in traditional agriculture. The main factors responsible for low response are : supply inelasticity of cultivable land, investment capital and other agricultural inputs particularly purchased inputs, lack of irrigation facilities in many regions where sowing and growth of crops depend largely on vagaries of weather and inadequacy of technical know-how. No doubt higher agricultural prices and an improvement in the terms of trade in favour of agriculture help to raise agricultural incomes and credit worthiness of the farmers, but they are also likely to induce sooner or later, an increase in wages, cost and prices in the non-agricultural sector thereby off-setting the advantage of higher agricultural prices.

It is thus obvious that an agricultural price policy by itself cannot foster simultaneous increases in the output of all agricultural products at least in the short period, unless technical improvements can be introduced over the entire agricultural sector. There is, however, considerable scope for shifting land and other resources from one crop to another by effecting changes in price relationships between these products. A well-designed agricultural price policy can be used to induce the farmers to plan the production of different crops in line with the estimated requirements in the country. As between products competing in demand, the aim should be to encourage particularly the production of those crops which offer higher production potential in relation to others. From the point of view of pricing, the policy should be to encourage as far as possible an increase in the production of such products as have relatively high supply elasticity. In the case of such commodities, it should be possible to achieve larger production by raising the price even by a small percentage. If an attempt is made to use the mechanism of price policy for encouraging the production of commodities having low supply elasticity, the price will have to be raised by a considerable margin having repercussions for the entire pricing structure

particularly for consumer prices as also for export market in case of surplus commodities.

It is therefore clear that overall agricultural production can be stepped up substantially even if we provide incentive prices for only those crops which have high supply responses. Thus, the policy of incentive prices needs to be adoped only for a few selected crops rather than for the whole range of agricultural products.

On the basis of available data and *a priori* reasoning, it can be said that crops like high yielding varieties of wheat, hybrid bajra, high yielding varieties of rice (particularly for summer rice) and high yielding varieties of cotton have high supply elasticity for both acreage and productivity. Jute and sugarcane can be classified in the category of those commodities which have a high supply elasticity for acreage only. On the other hand, commodities like jowar, pulses and most oilseeds seem to respond relatively less to price changes. Our experience is that even though prices of some of these crops have risen to high levels in recent years, they have had little effect on their production.

It is possible that the high supply response in the case of commodities like wheat, high yielding varieties of rice, and hybrid bajra is partly due to the availability of appropriate technology. It can be argued that since improved technology reduces cost per unit of output, the support price of such a commodity should not be increased; rather there is a case for reducing it as improved technology is introduced. I would illustrate the point with a comment on the price policy adopted for wheat in recent years. It was argued by some people during the period 1967-68 to 1971-72, when wheat production showed a continuous rise that the procurement price of Rs. 76 per quintal fixed for this crop was on the high side and needed a scaling down. In support of this, it was stated by them that wheat revolution had resulted in a few adverse side effects. Firstly, the guarantee of such a price coupled with the promise of much higher yields encouraged the diversion of large areas from less profitable crops, notably, gram and barley to wheat. Secondly, accumulation of wheat stocks as happened in 1971, was also seen as a consequence of the policy of providing support at incentive prices to this crop. Thirdly, release of the procured wheat, at

Rs. 78 per quintal through the public distribution system involved a huge subsidy. Fourthly, it was argued that a high level of procurement price implied a transfer payment from the consumers to the producers; also it benefited more the bigger producers who had more to sell than the smaller ones, and hurted those who, on balance, were net buyers of these commodities. While one could not afford to overlook the adverse effects of providing a high incentive price for a crop like wheat, these had to be weighed against the beneficial effects of such a policy. The new varieties of wheat being high yielders, total foodgrain output rose in those years much faster as a result of diversion of area from other crops to wheat than would have been otherwise possible. The credit for reducing imports and achieving a measure of self-sufficiency in foodgrains in some years was due mainly to the high growth rates achieved in the production of wheat. Even though wheat stocks did increase in years of good harvest, the advantage of building up such stocks became obvious in the later drought years when large quantities have had to be released to supplement the available supplies for meeting the urgent needs of the people. The subsidy on wheat distribution, no doubt heavy, helped reduce, to a certain extent, the cost of living, wages and prices of non-agricultural products, benefiting the general economy as also the agricultural sector which was increasingly depending for its growth on purchased inputs as well as on savings and investments from within itself. While, therefore, the overwhelming advantages of a positive price policy for wheat were apparent, one could still question the appropriateness of continuing the procurement price of Rs. 76 per quintal during those years. However, in the absence of precise information on supply response to changes in prices, it would perhaps have been hazardous to bring down the price. In fact, this level of procurement price turned out to be unattractive to the producers during the 1973-74 marketing season when prices in general as well as market prices of foodgrains marked a sharp rise. It was in this year that the scheme of take-over of wholesale trade in wheat was also introduced, which required the producer to sell his grain mainly to the Government agencies at the procurement price of Rs. 76; this was in contrast to the position in previous years when the producer was able to sell part of his produce at prices higher than the procurement price. Consequently, the procurement of wheat

fell short of the target in 1973-74. The purchase price of Rs. 105 per quintal of wheat fixed for the 1974-75 marketing season which obviously takes into account the prospects of the crop and anticipated levels of prices of wheat and other foodgrains is expected to encourage the growers not only to expand production but also to improve market arrivals enabling higher procurement.

An increase in the output of the commodities having high supply elasticity for acreage (such as sugarcane, jute) can also be brought about by providing assured incentive prices for these products. But in determining these prices, a number of other factors, such as the desirability of diverting areas from other crops and the level of international prices in case of export products, have also to be taken into account.

So far as the commodities with low supply response are concerned, while not much is gained by raising unduly their prices, there is a case for fixing minimum support prices so that market prices do not fall sharply in the event of excessive supplies resulting from good weather of other favourable factors, and producers incomes, and consequently, their savings and investment do not go below, a critical level. These support prices ought to take into account cost of production and normal profit.

In the case of certain agricultural commodities, production as also prices fluctuate widely from season to season. Also, prices of some of these commodities witness large intra-seasonal variations, showing a sharp fall in the peak marketing period and an undue rise in the lean season. In some cases, variations over space are also much higher than warranted by transport and marketing costs. Commericial crops like oilseeds and jute are particularly subject to undue fictuations over time and space. For example, in the case of groundnut, the price at Bombay which ruled at Rs. 119 per quintal in February 1968 rose to the level of Rs. 178 per quintal by October 1968. During the following season, the price rose further to reach the level of Rs. 231 per quintal in September. Thus, over two consecutive seasons (1967-68 and 1968-69), the price rise was about 100 per cent. Further, between Bombay and Hyderabad, price differential was in the range of

Rs. 10.50 per quintal in different months. Such large price variations over time and space are harmful to the interests of both producers and consumers. While a policy of minimum support prices can prevent market prices from falling to uneconomic levels, a more positive policy of public purchases and sales can help to reduce the magnitude of fluctuations to reasonable limits. These purchase and sale operations might be undertaken either at market prices or at predetermined purchase and sale prices. Such a policy is already being followed in the case of cotton.

The agricultural price policy must also aim at maintaining stability in prices of all important crops over seasons and particularly to prevent undue rise in price in years of crop failure. In our country it has been observed that there is a serious set-back to production in the case of foodgrains as well as several other agricultural commodities after every few years on account of severe droughts and other natural factors. Apart from the fact that this causes widespread and acute distress to the people in the affected areas, it jacks up the overall price level to a new high and introduces considerable distortions in the general economy. Stability in prices is, therefore, of utmost importance for achieving sustained progress. For the maintenance of such stability it is necessary to build up sizeable buffer stocks. In the case of foodgrains, the Fourth Five Year Plan envisaged the building up of a buffer stock of 7 million tonnes. Considerable progress had been achieved in this direction by 1972 when the total stock reached a level of 8.8 m. tonnes in view of the depletion of stocks during the last two drought years, there is need to replenish them as soon as the supply position improves. Similar buffer stocks for other important agricultural commodities would help to stabilise their supplies and prices over different reasons.

This paper has discussed an outline of an agricultural price policy for safeguarding the interests of consumers and ensuring incentive prices to producers as well as imparting stability to prices. Apart from the fixation of suitable prices, the desired objectives can also be achieved through such indirect measures, as adjustments in export/import policies, regulation of forward trading, etc. All these measures need to be adopted in conjunction with one another.

In the end, it must be mentioned that pricing policy, howsoever well designed has certain limitations. The modernisation of agriculture cannot be brought about by a policy of incentive prices alone. A price policy can merely act as a complementary measure to programmes promoting the use of improved inputs and management practices. The effectiveness of a price policy will also depend on the availability of improved technology and the requisite inputs including credit. The provision of adequate credit is particularly important in the case of small scale producers to enable them to participate increasingly in the production effort and benefit by the policy of incentive prices.

RAPPORTEUR'S REPORT

STATE FINANCE

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Mobilisation of resources is the crux of the problem of planning and development. In the past such resources have been mainly mobilised by the Centre. But a stage has now been reached when it is apparent, that the States will have to increasingly rely on their own resources to meet the pressing demands of their subsequent development plans. But can they do that ? Are the sources available to them adequate to meet their requirements ? Are there possibilities of raising these to a level adequate for financing the increasingly larger-sized plans ? These are some of the pertinent questions which need a thorough probe. The need is all the greater in view of the fact that the States have been constantly complaining about the inadequacy of financial resources at their command.

It was against this background and with a view to provide satisfactory answers to these vexed problems. The Orissa Economics Association chose the Topic "State Finance" as one of the subjects for discussion at the Annual Conference on the eve of the commencement of the Fifth Five Year Plan.

Three technical papers were submitted for discussion at the Conference.

Sri Prabhakar Pradhan in his paper "Disparity in the Revenue of Different States" emphasised the chronic gap between the revenues of different States of India. Large and persistence

disparites in the revenues of different states have widened the difference between the levels of development between the 'rich' and 'poor' States. The weaker states have fallen behind the rich States in mobilising additional resources for their development plans. He has pointed out in his paper that though Orissa doubled its per-capita revenue by the year 1961-62, yet the revenue gap has not been removed. For a State like Orissa to come to the level of advanced States like Maharashtra, it needs Rs. 127 crores of additional revenue in 1973-74 to neutralise its per capita gap. He has stressed that the awards of the Finance Commission should be so designed as to assist adequately the States with comparatively less capacity to raise revenue.

Mr. Govinda Rao's paper "Some Aspects of Orissa Tax Revenue : A time series approach" is a positive study attempting to predict States' own tax revenue for the short term policy formulation. According to him, plans formulated on the basis of short-term predictions of resource availability are likely to be more realistic. Sri Benudhar Bhuyan in his paper "Analysis of Municipal Finance, 1971-74" has discussed the sources of revenue of municipalities and their pattern of expenditure. He has pointed out that the poor state of finance of municipalities is primarily due to defects in the machinery of assessment and collection.

Though the papers submitted were only three, the discussion was elaborate. Dr. Sadasiv Misra pointed out that Orissa has a large debt burden. The size of the Fifth Plan has been determined at Rs. 567 crores while the State's debt repayment amounts to Rs. 467 crores. This hardly leaves any resources for "real" development. Unless this debt is taken away, the finances of the state will not be on "an even Keel". There is much logic in writing off the loans as the Central loans have not created any revenue yielding assets in the State.

Dr. Bidyadhar Misra pointed out in his speech that the revision of pay scales by Central Govt. from time to time adds to the burden of the State. Major items of expenditure in the State are on administration and debt servicing. This hardly leaves any real resources for economic development.

Dr. B. N. Misra pointed out that in Orissa there is no scope for increased taxation. The scope of direct taxation is limited unless there is courage to tax agricultural income. Increase in indirect taxes is not possible as it will add to the existing inflationary potential. He further pointed out that there is enough scope of raising revenue from the public enterprises.

Prof. R. C. Patnaik advocated abolition of the distinction between Plan and Non-Plan expenditure and emphasised the need for co-ordination. He further argued for re-imposition of land revenue, implementation of Raj Committee recommendations and a cess on Irrigation and Electricity.

Dr. S. C. Patnaik pointed out that in Orissa expenditure has increased at a much faster rate than the growth in revenue. On the expenditure side the non-development expenditure is rising faster than the development expenditure. On the side of revenue he pointed out that the responsiveness of tax rise is very low. Improvement of the revenue position does not depend upon the efforts of the States alone. The present pattern of Centre-State relation should not continue for long as it has perpetuated backwardness of some States. What is done by the Finance Commission is undone by the Planning Commission as the basis on which Central plan-assistance to States is determined is faulty.

Mr. D. P. Bagchi in his speech emphasised the need for tough administration to mobilise resources. The psychosis of default should not be allowed to continue. We must give a hard look to our policies.

The discussions provided an opportunity for finding out the following broad guidelines of fiscal policy for the mobilisation of financial resources by the State during the fifth Plan.

1. There should be a fundamental change in the approach to the transfer of financial resources from the Centre to the States. With the changes, our democracy has been undergoing over the past two decades, or so, tensions on various fronts between the Centre and the States have been mounting specially in the area of

inter-Governmental fiscal relations. There is a need to build up comprehensive integrated index of Development to provide an effective criteria for distribution of resources.

2. Agricultural taxation which has not played an significant role in the mobilisation of development finance for the Plans should play an important role in the Fifth plan.

3. Public Enterprises in the State should provide substantial surpluses through an improvement in operational efficiency and reduction of costs as well as suitable adjustment in their prices.

4. Improvement of local finances will augment the resources of the state. The resource potentials of the local bodies should be exploited to the maximum extent.

5. Maximum economy in public expenditure particularly of non-Plan expenditure should be exercised and means for it should be continuously explored.

DISPARITY IN THE REVENUE OF DIFFERENT STATES

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There exists a chronic gap between the revenues of different States of the Indian Union. Large and persistent disparities in the revenues of different states have created the difference between the rich and poor. This has resulted in giving more resources to few States which has helped them to improve their economy. The weaker States which have fallen behind those rich States are in great difficulty to find resources. The position of Orissa is not a happy one as it has always remained below the average per-capita revenue of all States.

This needs close study of finances of all states with particular emphasis on the revenues of all States. Growth of State tax revenue, non-tax revenue and resources transferred to States under recommendations of successive Finance and Planning Commissions have been examined to study the magnitude of gap that exists in the revenues of different States.

State tax Revenue

The percapita State tax revenue in 1951-52 was the lowest in Orissa and Mysore State among all states of the Indian Union. It was only Rs. 3.63 in Orissa and Mysore was having 42 paise less than that of Orissa. The percapita State tax revenue was the highest in Tamilnadu (Madras) and Maharastra (Bombay State) closely followed it. All other States were much better of. The next five years which correspond to the period of the First Five Year Plan in the country did not bring any major change in the percapita State tax collection. Orissa increased its per capita tax from Rs. 3.63 to Rs. 3.70 in 1956-57. This rise of 7 paise in per capita during 6 years presented a tale of woe for the State. For the second

time during the decade, Orissa occupied the lowest position among States. Maharastra marched ahead of Tamilnadu. The Second Plan period increased the percapita tax revenue of Orissa to Rs. 5.81. This increase of Rs. 2.11 percapita was much better than the progress achieved in this field during the First Plan Period. Punjab went ahead of all states and its percapita tax revenue stood at Rs. 26.53 in 1961-62. Mysore State which was lagging behind Orissa in 1951-52 did marvellously well and came to Rs. 11.31 as against Rs. 5.81 achieved by Orissa. The table presented below highlights the position of Orissa among all States of the Indian Union.

TABLE 1

PERCAPITA STATE TAX REVENUE OF DIFFERENT STATES
(FIGURES IN RUPEES)

Name of the State	1951-52	1956-57	1961-62	1969-70	1973-74 (B.E.)
1	2	3	4	5	6
Andhrapradesh	..	3.71	11.57	25.41	33.64
Assam	6.25	8.79	12.41	28.48	21.85
Bihar	4.03	4.97	7.38	18.61	19.43
Gujurat	..	..	12.90	35.61	54.07
Haryana	..	..	..	38.23	65.09
Himachal Pradesh	..	..	..	..	27.46
Jammu & Kashmir	..	..	5.22	16.75	26.24
Kerala	6.26	..	13.47	29.09	41.14
Madhya Pradesh	4.43	4.67	8.91	19.93	27.08
Maharashtra	10.24	11.93	16.65	44.01	68.35
Manipur	..	..	..	..	11.00
Meghalaya	..	..	..	..	9.40
Mysore	3.21	..	11.31	30.66	45.38
Nagaland	..	..	..	5.50	23.80
Orissa	3.63	3.70	5.81	13.34	17.88
Punjab	4.88	5.90	26.53	52.30	79.71
Rajasthan	6.77	..	10.33	20.85	31.98
Tamilnadu	11.72	9.77	12.83	33.93	54.30
Tripura	..	..	..	..	4.44
Uttarpradesh	4.25	6.11	7.88	15.82	20.40
West Bengal	8.56	9.09	14.85	28.33	40.12
Total	6.19	6.80	11.30	25 66	37.17

Source : Reserve Bank Bulletins.

1969-70, the beginning year of the Fourth Five Year Plan, presented a comparatively better picture for Orissa than its earlier years. Its percapita tax revenue came to Rs. 13.34 as against Rs. 25.66, the average for all States. Punjab almost doubled its percapita tax revenue and reached Rs. 52.30. Maharastra, Gujurat, Haryana, Kerala, West Bengal, Tamilnadu and Mysore did well and keenly competed with each other. In the competition Orissa remained behind other States and occupied once again the lowest position. Data for the latest year (1973-74) show the same gloomy picture. The percapita tax revenue of Orissa rose from Rs. 13.34 to Rs. 17.88 as against the rise of average of all states from Rs. 25.66 to Rs. 37.17. Punjab again retained the highest position among all States and moved forward its percapita to Rs. 79.71. Its achievement from Rs. 4.88 in 1951-52 to Rs. 79.71 in 1973-74 looks highly impressive. The rise of more than 15 times in percapita tax revenue of Punjab during a period of 23 years presented a picture of hard work, courage and determination. On the other hand, Orissa had the privilege of always oocupying the lowest position among States and the year 1973-74 was no exception. A close look at the table would reveal the plight of State slike Orissa and spectacular achievements of states like Punjab, Tamilnadu, Maharastra, Haryana, Gujarat, West Bengal, Mysore and Kerala.

Non-Tax Revenue

With regard to position of States under non-tax revenue, it is equally distressing for the states like Orissa, Assam, Bihar, Madhya Pradesh, Rajsthan and few other states of the country. Table 2 presents the growth of percapita non-tax revenue of states.

The percapita non-tax revenue was Rs. 2.23 for Orissa in 1951-52 and had reached Rs. 9.45 in 1973-74, an increase of Rs. 7.22 paise during a peried of 22 years which comes to 33 paise annually. The position of Maharastra, Tamilnadu and few other advanced states was better than Orissa in 1951-52 and they maintained their position all throughout. These states (except West Bengal) who have achieved remarkable progress in the field of State taxes have also equally fared well here and collected more resources from their non-tax sources than other weaker states. Their dominance over

TABLE 2

PERCAPITA NON-TAX REVENUE OF DIFFERENT STATES
(Figures In Rupees)

Name of the State	1951-52	1956-57	1961-62	1969-70	1973-74 (B.E.)
1	2	3	4	5	6
Andhra Pradesh	..	1.45	3.68	4.95	7.43
Assam	2.02	3.08	5.17	6.50	8.94
Bihar	2.36	2.03	2.30	3.65	6.02
Gujarat	..	..	4.71	13.38	15.33
Haryana	..	..	..	16.20	17.84
Himachalpradesh	..	..	..	..	15.63
Jammu & Kashmir	..	..	14.69	23.13	29.02
Kerala	3.53	..	5.93	11.15	14.24
Madhyapradesh	2.68	2.68	5.17	12.88	14.71
Maharastra	4.53	5.27	5.76	13.99	16.55
Manipur	..	..	..	..	2.82
Meghalaya	..	..	..	..	3.50
Mysore	1.80	..	6.41	21.41	16.40
Nagaland	..	..	..	4.00	9.40
Orissa	2.23	2.09	9.53	9.66	9.45
Punjab	3.59	6.66	17.58	17.68	14.74
Rajasthan	2.40	..	3.46	8.22	9·26
Tamilnadu	3.98	5.73	6.54	13.27	15.04
Tripura	..	..	..	..	1.13
Uttarpradesh	2.14	2.63	3.41	8.01	10.14
West Bengal	1.76	2.33	3.74	7.25	6.43
Total	2.74	3.23	5.05	10.23	11.56

Source : Reserve Bank Bulletins.

both tax and non-tax sources gave them respectful position among states.

Total Revenue

This includes State tax revenue, non-tax revenue and the resources transferred from the union. The imbalance created in States like Orissa due to less resources available in comparison with other prosperous States was corrected by the Central assistance to

some extent through awards of Finance Commission and Planning Commission. The devolution of tax receipts, grant-in-aid, debt relief and Plan grants have helped less resourceful States. Table 3 includes such assistance by the Central Government which has been incorporated in the total revenue. Therefore the discussion on total revenue would reveal the extent of the gap that has been bridged by the resources transferred from the Centre to the States.

TABLE 3

PER CAPITA TOTAL REVENUE OF DIFFERENT STATES
(Figures In Rupees)

Name of the State	1951-52	1956-57	1961-62	1969-70	1973-74 (B. E.)
1	2	3	4	5	6
Andhrapradesh	..	..	23.12	51.13	73.60
Assam	11.75	19.40	32.58	69.90	90.60
Bihar	8.53	9.87	16.66	35.46	59.50
Gujarat	..	..	29.52	69.65	112.75
Haryana	..	..	..	72.21	117.15
Himachalapradesh	..	..	..	..	156.49
Jammu & Kashmir	..	..	51.70	145.75	197.74
Kerala	12.40	..	27.46	63.35	96.20
Madhyapradesh	8 39	9.75	22.70	51.95	78.03
Maharashtra	18.76	20.92	29.12	76 63	129.61
Manipur	..	..	..	..	180.91
Meghalaya	..	..	..	..	203.30
Mysore	7.02	..	27.58	63.52	79.34
Nagaland	..	..	..	651.00	683.60
Orissa	7.80	11.40	24.03	54.06	71.76
Punjab	10.29	15.46	62.10	87.80	135.75
Rajsthan	9.28	16.27	22.08	57.04	91.86
Tamilnadu	19.04	18.43	26.88	66.03	105.69
Tripura	..	..	..	..	148.94
Uttarpradesh	7.99	11.21	18.29	41.40	68.81
West Bengal	13.98	15 38	28.29	57.12	80.58
Total	21.26	13.35	25.09	57.96	89.52

Source: Reserve Bank Bulletins.

The total percapita revenue of Orissa was Rs. 7.80 in 1951-52 which includes all resources that came from state taxes, non-tax sources and resources transferred from the Centre. Maharastra and Tamilnadu were roughly one and halftimes ahead of Orissa. Assam, Bihar, Kerala, Madhyapradesh, Punjab, Rajsthan, Uttarpradesh and West Bengal were much ahead of Orissa at the starting point of planned economic development in the country. Mysore was the only state which was lagging behind Orissa in 1951-52. The position changed to a great extent in the year 1956-57 when the percapita revenue of Orissa moved from Rs. 7.80 to Rs. 11.40. Prosperous states like Maharastra, Tamilnadu, Punjab etc. improved their position more than Orissa but the gap which existed in 1951-52 narrowed down due to comparatively more resources transferred from Centre to Orissa. The gap declined from 161 percent in 1951-52 to 83 percent in 1956-57 in case of Maharastra, 144 percent to 61 percent during this period in case of Tamilnadu. Likewise the gap narrowed between Orissa and few other advanced states. Bihar, Madhya-pradesh and Uttar Pradesh though were leading over Orissa in 1951-52 also came behind Orissa in 1956-57.

Orissa doubled its percapita revenue by the year 1961-62 and it came to Rs. 24.03. The difference in the percapita revenue between Orissa and other advanced states narrowed further. For Maharastra it came down from 83 percent to 21 percent, Tamilnadu from 61 percent to 11 percent. The only exception was Punjab which did well and its gap widened from 36 percent over Orissa in 1956-57 to 158 percent in 1961-62. The period from 1961-62 to 1973-74 presents a different trend in the percapita revenue gap of different states. Orissa improved its position to Rs. 54.06 in 1969-70 and Rs. 71.76 in 1973-74. Maharastra widened its gap from 21 percent over Orissa in 1951-62 to 42 percent in 1969-70 and then to 81 percent in 1973-74. The same trend was repeated for Tamilnadu, Kerala, Gujarat, Haryana, Punjab etc. The gap that once was closing in now has been windened. One speciality was marked here that Orissa always remained below the average percapita revenue of all states.

The percapita revenue gap can be converted into total requirement of finance for a state like Orissa to come to the level of those advanced states in percapita revenue. The calculation shows

that Orissa needs Rs. 127 crores in 1973-74 to neutralise its percapita gap in revenue with Maharastra state. So also it needs 90 crores in 1973-74 to equalise with Gujarat, 99 crores with Haryana, 54 crores with Kerala, 104 crores with Punjab, 74 crores with Tamilnadu, 19 crores with West Bengal, 44 crores with Rajsthan, 41 crores with Assam and 17 crores with Mysore. It also needs 39 crores to come to the level of average percapita of all states. The cumulative gap from 1951, to 1974 in terms of figure would run to many hundred crores for Orissa to come to the level of any one of those advanced states or even to attain the average percapita revenue of all states.

The constitution, therefore, provides for a regulatory machinery to deal with the devolution of taxes and grants from the union to the states. The president has to constitute a Finance Commission to carry out this task at the expiration of every fifth year or at such earlier time as he considers necessary. This purposive scheme of federal finance needs two aspects to solve, namely (*a*) augment the states own limited resources so as to help them to meet their need for expenditure as far as that can be done from surpluses of the union, and (*b*) it is desirable to see that the transfer of funds so designed as to assist adequately the states with comparatively less capacity to raise resources. This has to be made after taking into consideration the resources of the individual states so as to avoid large disparities. In the past substantial amounts have been distributed on population basis which have reduced disparities to some extent. But the need for equalisation demands a more positive redistributive policy. Grant-in-aid given under article 275 of the constitution has helped weaker states and there is no doubt that this article 275 has been designed to help the states which are less developed and have less capacity to raise resources of their own.

Awards of Sixth Finance Commission

Orissa has been given Rs. 272.59 crores as share from Taxes and Duties and Rs. 304.73 crores as grant-in-aid under Article 275 of the Constitution. A total of Rs. 577.12 crores came to Orissa during this five year period and annually it comes to Rs. 115.5 crores. Over and above it, Rs. 157.32 crores have been given to Orissa as relief

from repayment of loans. Likewise other prosperous states have also been given similar debt relief. Therefore the debt relief granted to Orissa would not affect the increase of the percapita revenue of the state. The benefit given to Orissa under the awards of the Sixth Finance Commission would bring a net benefit of around 50 crores annually. This addition of Rs. 50 crores annually to the revenue of the State would bring Orissa nearer to some advanced states but still there would be a big gap left to be covered. Maharastra is already ahead of Orissa by Rs. 127 crores annually without taking into consideration the share it obtained from taxes and duties under the awards of the Sixth Finance Commission. Gujarat, Haryana, Keral, Punjab and Tamilnadu are already ahead of Orissa and awards of the Sixth Finance Commission have also favoured them. Orissa could have come to the percapita revenue level of West Bengal, Rajsthan, Assam, Mysore etc. after the awards of Sixth Finance Commission but this has not been possible as these states also have been recommended sizeable resources both from share of taxes and grants which gave them the superiority over weaker states. If the benefit obtained by Orissa is adjusted with the lead a few states have already been given, the benefit they derive from the recommendations of the Sixth Finance Commission would be treated as surplus for those states. This shows that the gap already existed would continue even after the recommendations of the Sixth Finance Commission.

Views of Swamlnathan

Although the Fifth Finance Commission have stated that distribution of union transfers among the states has to be made after taking into accounts the resources of Individual states so as to avoid large disparities, Shri G. Swaminathan, a member of the Fifth Finance Commission submitted a note of dissent which deserves serious consideration. In his minute he has expressed "...scheme of devolutions recommended by us will substantially add to the surpluses of the advanced states with relatively high percapita income. This would have the effect of widening the disparity between them and the other states. The question arises whether there is no remedy for this state of affairs." Further the award of Fourth Finance Commission had expected to result in surpluses in the order

of Rs. 373.73 crores for the states of Bihar, Gujarat, Maharastra, Punjab, Uttarpradesh and West Bengal. Here again Mr. Swaminathan had observed : "We have followed more or less the line of approach adopted by the Fourth Finance Commission but with modifications in certain directions which have the effect of securing larger devolution to states with lower percapita income. The strikingly increased surpluses now expected to arise (Rs. 1273 crores to 8 states) indicate that modification in the devolution scheme made by us do not go far in the direction of reducing disparities." Therefore, he pleaded for reduction of percentage of states' share of divisible taxes which would not have resulted in any reduction of total amount payable to States. On the other hand, it would have reduced the surplus amounts which would otherwise accrue to certain states beyond what they require to cover their non-plan gap. The amount thus reduced could have been made available as additional resources for plans of all states.

Reasons for gap in per capita revenue

The discussion shows that the recommendations of successive Finance Commissions have not brought all states to a position of equality. It is an established fact that there are also many other factors which help the prosperous states to make more rapid progress. Some of these reasons are mentioned below.[1] The taxes of more industrialised states like Maharastra, West Bengal, Gujarat etc. are more elastic. For example, the manufacturing centres like Bombay, Calcutta, Ahmedabad etc. can realise more sales tax by levying a tax on semi-manufactured and manufactured products distributed all over India. These industrialised states are levying general sales tax at the first stage of their manufactured goods which are ultimately consumed in other states in India.[2] The factor of assessment in income tax distribution between states from the divisible pool also had given some advantage to states like Maharastra, West Bengal etc.[3] Percapita plan outlay was also greater for these industrialised states owing to the large resources available to them.[4] Location of Central Government Projects in these states helped them to some extent as a result of Central Governments decision in the matter of industrial licensing.[5] These advanced states also enjoyed several advantages

in the matter of further industrial development, utilisation of credit resources flowing through money markets.

On the other hand, States like Orissa have also suffered much as most of its exports and imports are made through important cities like Calcutta, Bombay, Madras, etc. These cities have become centres of country's trade and head offices of most of the industrial undertakings situated in other states located in these cities on considerations of convenience. This has given additional advantage to respective states in raising more taxes. This has created more scope for opening ample opportunities for various trade and commerce in those states. States like Orissa mainly exported agricultural produce, forest produce and raw materials and imported finished and semi-finished products from industrialised states which helped their industries to flourish. This put backward states including Orissa in a considerable difficulty. Over and above it the backward classes of Orissa constituting 39 percent of the total population, contribute nominally to state taxes as they normally do not take part in the econmic activity of the state. The state is having 64.7 percent of its population living under poverty line as against 33.5 percent of Maharastra and Gujarat and 20.8 percent of Punjab. Similar is the condition of other weaker states. People of these states are comparatively poor and their low percapita income stands in the way of mobilising more resources. Reasons discussed above have created the difference between the states and it has given rise to an impression that states like Orissa would never come up to the level of other advanced states of the Union in near future.

Epilogue

The progress of a nation depends, in a real sense, on the development of weaker states and there is a danger that large and persistent disparities in the revenue between different states would weaken unity and strength of the country. These are matters to be decided not merely on fiscal considerations; but with due regard also to the promotion of a sense of national unity.

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SOME ASPECTS OF ORISSA'S TAX REVENUE: A TIME SERIES APPROACH*

M. GOVINDA RAO

A realistic assessment of the real resources that the state is likely to mobilise should provide the starting point in laying down priorities and the formulation of the state plans. The plans thus formulated on the basis of short-term predictions of resource availability are likely to be more realistic. Moreover, such predictions are likely to be very useful for the authorities recommending the transfer of resources from the Centre to the States, be it the Planning Commission or the Finance Commission.

Predicting State's revenue, involves understanding of the complex interrelationships between the economic, demographic, political and social factors on the one hand and the revenue sources on the other. Tax revenue being the major component of the State's revenue, in this paper, an attempt is made to advance a model to provide short-term predictions of tax revenue of Orissa by relating it with some of the relevant economic variables.

Methodology

The various methods which could be employed to provide predictions of the tax revenue are :

(*a*) The Growth-rate approach.
(*b*) The Tax-base approach.
(*c*) The Regression approach.

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(*a*) The simplest way of predicting the revenue of the State is by extrapolating the past trend. Applying the past growth rates, the short-term estimates of tax revenue can be obtained. In such a method, time is the only variable that is related with taxes. The advantage of the approach is its appealing simplicity but may be at the cost of very high prediction errors. It does not help in understanding the relationship between the tax receipts and other economic and political variables.

(*b*) The tax base approach involves estimating of the changes in the base of each tax and applying the existing tax rate of state for which the tax revenue has to be predicted. Instead of using the existing tax rates of the State, if representative tax rates are applied, an estimate of taxable capacity can be arrived at, and this divided by to the actual tax revenue of the State would provide a 'tax effort' index which can be used as a criterion in federal transfers. Such an approach was followed by the Advisory Commission on Intergovernmental Relations study.[1] The problem with this method of estimation is primarily due to data limitations. It is practically impossible to uncover the data required to estimate the tax base and its changes over time at the level of disaggregation required. The severe data limitations have lead to the employing of subjectively defined tax base proxies, thus bringing an element of arbitrariness in the estimates. Moreover, to be comprehensive, the method should be broadened enough to encompass the estimation of the base of the taxes that are exported to other States, and erosion of the base consequent upon the exporting of taxes of other states to the state under study.

(*c*) The most suitable method of estimating the resources of the States seems to be the multivariate regression approach. The method could be applied to both to the cross-section of State and to the time-series of a state, the relative merit of application depending

1. See U. S. Advisory Commission on Intergovernmental Relations, *Measures of State and Local Fiscal Capacity and Tax Effort* (Washington, 1962). See also Poney W. Bahl. A representative Tax System Approach to Measuring Tax Effort in Developing Countries. *International Monetary Fund Staff Papers* Vol. XIX No. 1 March 1972

on the purpose of analysis.[2] If the purpose is to 'understand' and 'explain' the ratio variations of the tax receipts with a view to 'predict', then the time-series study would be the most suited. Of course, the cross-section tax ratio analysis[3] could be employed to predict the tax revenue. But, the model would provide only the long run effects. Further, the structural coefficients may turn out to obscure significant differences between the states rather than illustrate them. For short-term predictions of the type we are attempting, time-series multivariate regression approach seems to be the most suited for the tax changes for a particular government unit can virtually always be predicted more accurately from its own history than from a collection of current relationships holding in government units with differing political and economic characteristics.

Cross-sectional multivariate analysis however, can serve a useful normative purpose, particularly in assessing the relative tax performance of the States.[4] It facilitates the calculation of an 'equitable norm' which are far more sensitive than unweighted numerical averages.

We, to provide, short term tax revenue prediction model for Orissa State, have employed time-series multivariate regression

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2. See Eliot R. Morss, Some thoughts on the determinants of state and local expenditures. *National Tax Journal* March 1966. Also see Bird, Richard M. *Growth of Public Spending in Canada*, Appendix—B. Canadian Tax Foundation. Toronto, 1970

3. See Bahl Roy W. A. Regression Approach to Tax Effort and Tax Ratio Analysis, *International Monetary Fund Staff Papers*, Vol. XVIII. No. 3 November 1971.

4. Lotz and Morss rank the Countries according to their relative tax efforts on the basis of Cross-section regression approach. See Jorgen R. Lotz. and Elliot R. Morss. Measuring "Tax Effort" in Developing Countries. *International Monetary Fund Staff Papers Vol XIV. No. 3 November 67.* See also, Ray W. Bahl. *op-cit.*, At the States' level Dr. S. P. Gupta has undertaken a study, combining four cross section points in a variance-covariance model. See his "Determinants of Fiscal Capacities and Needs of the states and their Policy Implications for Federal Transfers'— paper submitted to the seminar on quantitative economics. September 13-6, 1971, Sardar Patel Institute of Economic and Social Research, Ahmedabad.

analysis. The time-period chosen is 1951-52 through 1970-71. We have employed Per Capita tax revenue in real terms and Tax revenue as a percentage of State Income as our dependent variables. Of course, for more accurate predictions, a higher level of disaggregation of taxes is required. Explaining the variation in each of the major taxes, doubtless, is superior. However, in this paper, some preliminary results using Tax totals as dependent variables only are presented.

Explaining the variation in the total taxes for predictive purpose requires the employment of all plausible independent variables. As a first step, in this paper, only two independent variables viz., per capita income at constant prices, and percentage of non-agricultural income (except small scale manufacturers) in total Net Domestic Product of the State are used specifically, the following functions are fitted in our analysis :

$$T/y = \alpha + \beta_1 y_c + \beta_2 \frac{\eta Agy}{y} + \epsilon$$

$$T/p = \alpha + \beta_1 y_c + \beta_2 \frac{\eta Agy}{y} + \epsilon$$

Where T=Total Tax revenue of the State in real terms.
Y=Net Domestic Product of the State in real terms.
Yc=Per Capita income in real terms.

$\frac{NAGY}{Y}$=Percentage of non-Agricultural incomes in total Net Domestic Product of the State.

α,β=Parameters to be estimated and ϵ=the error term.

Per Capita Income usually represents the taxable capacity of the region and on normative grounds, it can be argued that increase in per capita income should yield a higher proportion of taxes on income. But in actuality there is no reason why relationship between T/Y ratio and per capita income should exist at all. The acutal outcome depends on the structure of tax at the states' level as well. At the States' level, the taxes are related to incomes, only indirectly. Non-Agricultural incomes are not taxable by the States. Agricultural incomes not being subjected to taxation are

perhaps explainable through Downs' vote maximisation model.[5] The consumption taxes levied by the state are not likely to be so progressive as to yield higher T/Y ratios with increase in incomes. However, use of this variable, basides providing the extent of explanation possible, helps in understanding the tax structure of the region.

The second variable, viz. percentage of non-Agricultural income in total income represents a combination of industrialization, urbanisation and monetisation, each of which is likely to affect the tax receipt of the State. Higher percentage of this factor implies increased non-traditional items of consumption which are traded against money, higher mobility of goods and persons, larger transactions resulting in increased tax revenue collections from sales tax, entertainment tax, goods and passengers tax, motor vehicles tax, etc.

The analysis pursued here is positive, that of providing a model to predict short-term tax receipts of the state. We do not pretend to be measuring the 'taxable capacity' of the region. To imply that, our model estimates taxable capacity additional assumptions have to be made that the base that are taxed, the rates that are levied and administrative efficiency have all been ideal.

Conceptual issues

The problems connected with the definition of States' own tax revenue, usage of a measure of income in the denominator of T/Y ratio, employing of per capita income as a measure of economic growth and getting a 'proper' price deflator to express the variables in real terms are discussed below.

The State's own taxes can be defined as those tax on which the states have absolute manoeuvrability or decision making power. This includes only those taxes which the states are entitled to levy under the constitution and even among them excludes such of those for which some sort of an agreement with the centre has been made.

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5. See Anthony Downs, *An Economic Theory of Democracy*. Harper & Row publishers, 1957.

This definition would lead to the inclusion of (*a*) the taxes levied, collected and appropriated by the states.

(*b*) The taxes levied and appropriated by the states but collected by the centre. However the catagory (*c*) the Taxes levied by the centre and collected either by Centre or by the States and appropriated by the States, has to be excluded.[6] Clearly, the taxes such as additional excise duties in lieu of sales tax on sugar, textiles and tobacco, estate duty on non-agricultural property, central sales tax have to be excluded from the States' own tax revenue.

A serious conceptual problem arises when a number of items included under some taxes are anything but taxes. For instance under 'Land Revenue' inclusion of items like receipts from sale of wasteland, sale of government estates and royalties from mines poses problems. Not only that they are not taxes but some of them are in the nature of capital receipts also. This makes the classification of the tax revenues, after screening each of the items under different state taxes, a necessity.

Analogous to the above, problem exists as some of the centrally levied taxes are inextricably mixed with those of the state taxes. Duties on medicinal and toilet preparations shown under states' 'Excise duties' are outside the jurisdiction of the states. (See Article 268 of the Constitution of India). Motor Vehicles Tax includes receipts due to Indian Motor Vehicles Act, 1939. Stamp duties include centrally levied stamp duties such as those on bills of exchange, cheques, promissory notes, bills of lading, letters of credit, policies of insurance, transfers of shares, debentures, proxies and receipts.

For the study, we have excluded, the non-tax revenues and revenues from centrally levied duties from the States' own tax revenue except in the case of stamp duties, where even in the budgets, the

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6. For an exhaustive discussion on the conceptual issues in defining States' own revenue, See Shibshankar P. Gupta, Atual Sarma, 'Classification of States' Revenue—Conceptual Issues and a suggested approach, Anvesak Vol. 1 No. 2, December 1971.

separation of revenue from centrally levied duties is not possible. Thus the total tax receipts according to the definition adopted here differs with the tax revenue presented in the budget documents of the state and this discrepancy is due to the exclusion of items which really do not form states' tax revenue.

Considering the various problems connected with various measures of income, using of Gross Domestic Product at market prices seems to be the most appropriate. Gross Domestic Product at factor cost, if used as a denominator, involves assumption regarding the shiftability of taxes whereas Net Domestic Product requires the acceptance of arbitrary depreciation rates employed. Even when gross domestic product at market prices is used, problem arises when some taxes are exported outside the state. As the base used in the denominator should not cover the exported taxes, the calculated T/Y gets exaggerated. Whatever be the conceptual desirability, in fact, only the estimates of Net Domestic Product at market prices is available and no freedom is left to the researcher in choosing the proper denominator.

The literature on the problem of comparing per capita income over time is vast.[7] Essentially, the issue is not different from the problems of comparison of incomes over space. The main problems arise in the choosing of prices of the outputs in arriving at value in different years. The relative prices of goods and services do not remain the same, and the particular price structure chosen as weights becomes very important. Moreover, the quality differences of the goods in different years, entry of new goods, differences in taste and technology over time pose additional problems. The resultant income figure cannot be completely unambiguous. These matters heavily discount the utility of employing per capita income as index of economic growth. However, the problem is general and the measure is being continuously used to represent economic growth. We too, for want of a better index, have used per capita income to denote economic growth.

7. See H. C. Edey, A. T. Peacock, R. N. Cooper. *National Income and Social Accounting*. Hutchinson & Co. Ltd.. London 1967 Dorothy S. Brady and Abner Harwitz, Measuring comparative purchasing power, '*Studies in Income and Wealth, Vol.* XX Hagen E. E. Some facts about Income Levels and Economic Growth, *Review of Economic & Statistics* February 1960.

Finally problems arise in choosing 'suitable' price deflators to show tax receipts in real terms. Ideally, depending in the purchase of goods and services from the tax receipts by the Government, several price indices have to be used. This is however an impracticable proposition. In the absence of such an 'ideal' 'index', any other proxy has to be used. But there does not exist even a wholesale price index for Orissa state as a whole. The working class cost of living indices are for specific centres and not for the whole state. Fortunately, we could compute an implicit index from the state income figures expressed in current and constant (1961) prices seperately, which has been used in deflating the tax revenues of the State.

Results

We have obtained the following regression equations by relating tax ratios and the percapita taxes with percapita income and percentage of income from nonagricultural sector.

$$(1)\quad T/Y = 1.6396 - \underset{(0.00035)}{0.000011}\ Yc + \underset{(0.00939)}{0.0219}\ {}^{**}nAgy/Y$$

$$R^2 = 0.235 \qquad D.W.\ Stat = 1.61$$

$$(2)\quad T/P = -0.2127 + \underset{(0.00762)}{0.02096}\ {}^{*}Yc + \underset{(0.0342)}{0.05075}\ {}^{***}nAgY/Y$$

$$R^2 = 0.371 \qquad D.W.\ Stat\ 1.85$$

Figures in the brackets represent standard errors of the regression coefficients.

* significant at 1 per cent level.
** significant at 5 per cent level.
*** significant at 10 per cent level.

In a time-series regression analysis, often, the problem of autocorrelation is encountered. To test whether the autocorrelation is significant we have computed the D. W. Statistic for each of the equations. While in the case of the first equation, autocorrelation was not found to be significant, our second equation exhibited

significant autocorrelation. To meet this problem, the dependent and the independent variables were adjusted as follows.

Yt—r Yt—1 and Xt—r Xt—1 for t=1,2.....n

Where 'r' is the estimated autocorrelation and 'n' is the number of observations. [8]

The values of the D. W. Statistic were found to be 1.61 and 1.85 respectively for the first and the second equations after adjusting for the autocorrelation in the second equation indicating that the null hypothesis of zero autocorrelation.

Two important facts stand out from the results obtained. First, the tax structure of Orissa does not exhibit any progressiveness. Secondly, the percent of nonagricultural income in total incomes has significant impact in explaining variations in both the tax ratios as well as in the per capita tax revenues. This can be seen from the fact that :

While the effect of per capita income on T/Y is not significantly different from zero, this has significant positive effect on the per capita tax revenue of the state. The regression coefficient of Yc is 0.021. This means that every Rs. 10 increase in per capita income would be associated with an enhanced tax revenue to the extent of Rs. 0.21. Considering the two regression equations together in particular, the nonexistence of relation of per capita income with the Tax ratio (T/Y) together with a simultaneous existence of a positive association between the per capita income and per capita

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8. Before adjusting for the serial correlation the equation obtained was :
$T/P = 3.1128 + 0.00075\ Yc + 0.05816\ \frac{nAgy}{Y}$

(0.0016) (0.02372)

$R^2 = 0.271$ D, W, Stat=0.606

Comparison of this equation with our second equation gives an idea of the extent of difference, the presence of Autocorrelation makes. The percentage variation explained improved by low percentage points. Besides per capita income which had no significant effect on the per capita taxes turned out to be really an important variable. For a detailed discussion on Autocorrelation and the method of adjustment to correct this.
See J. Johnston, *Econometric Methods*, Mc Graw Hill Publishing Company, 1972.

tax receipts is indicative of a proportional tax structure. If the tax system is progressive, per capita income has to be positively associated with the tax-ratio (T/Y) as well as per capita taxes (T/P). On the other hand, in a regressive set up the relationship between the ratio (T/Y) and per capita income has to be inverse. If per capita income has significant positive relationship with per capita taxes (T/P), and if the relationship is not significantly different from zero with tax ratio (T/Y), this would indicate a proportional tax structure which seems to be the tax structure prevailing in Orissa, as the results indicate.

The positive significant relationship between nonagricultural income share (nAgY/Y) and tax ratio (T/Y), and also between non-agricultural income share and per capita Taxes (T/P) is in conformity with our a priori reasoning. Degree of industrialization, urbanization and monetisation boosts the tax revenues of the state through its effort on a number of taxes levied by the state. The regression coefficient of the variable, percentage share of Non-Agricultural income to total income is standing around 5.1 per cent and is statistically significantly different from zero. From this, we may suggest, that, for every 10 per cent increase in the share of Non-Agricultural Sector, the State tax receipts go up by about 0.51 Rupee. The tax ratio (T/Y) increases to the extent of 2.2 per cent of the increase in Non-agricultural income share (nAgy / Y).

By substituting the estimated values of the independent variables, the model can be used to provide predictions of the Tax revenue of the state for the future. Efficiency of these predictions, however depends on the extent the variations explained. Our equations explain the variation in T/Y and T/P to the tune of 23 per cent and 37 per cent respectively which is quite low, but statistically significant. This calls for the explanation of unexplained variations by incorporating other relevant independent variables both political and economic. Further, the predictions based on the analysis of major individual taxes seperately are likely to be more efficient than the analysis of mere aggregates. Specific factor affecting particular taxes could be incorporated in such a disaggregated analysis.

STUDY OF MUNICIPAL FINANCE IN ORISSA
(1971-73)

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There are now 24 Municipalities in Orissa. All Municipalities of the state are now governed by the Orissa Municipal Act, 1950. Some of the important Municipalities like Cuttack, Kendrapara, Balasore, Puri, Berhampur, etc. have nearly a century of experience behind them. The total population coverage of all Municipalities works out at 8.4 per cent of the entire population of the state. The Municipalities are required to undertake some obligatory functions as well as voluntary functions for which they require heavy finance. Main sources of finance left to them are taxation and Government grants and loans. It is generally observed that Municipalities are always in financial trouble to undertake the obligatory functions. This study has been undertaken to study the Municipal finance in Orissa for a period of three years, 1971-72, 1972-73 and 1973-74. The objectives of the study are to analyse the sources of revenue available to the Municipalities, to analyse the pattern of expenditure of Municipalities and to find out the reasons for financial difficulties of the Municipalities. The necessary data for the purpose have been obtained from the health Department of the Government of Orissa.

The principal sources of revenue of the Municipalities are taxes, licence and fees, receipts from own property, and Government grants. The total revenue has increased from 342.8 lakh rupees in 1971-72 to 666.3 lakh rupees in 1972-73 and to 691.9 lakh rupees in 1973-74, recording an increase of 202 per cent over the period. Tax source consisting of tax on holdings, tax on carriages, water tax, lighting tax, etc. has contributed 135.3 lakh rupees in 1971-72, 170 lakhs rupees in 1972-73 and 168 lakh rupees in 1973-74. In the total revenue tax constitutes 39.47 per cent in 1971-72, 25.52 per cent in 1972-73 and 24.28 percent in 1973-74. The main reason for such decline in per-

TABLE 1

SOURCES OF REVENUE OF THE MUNICIPALITIES IN ORISSA FROM 1971 to 1973
(In Rupees Lakh)

Sources of Revenue	1971-72		1972-73		1973-74	
	Amount	Percent to total	Amount	Percent to total	Amount	Percent to total
Rates and Taxes	135.3	39.47	170.0	25.52	168.0	24.28
Licence and other fees.	8.7	2.54	13.2	1.98	14.7	2.13
Receipts under special Acts	1.5	0.44	1.7	0.26	2.0	0.28
Revenue derived from Municipal property and powers apart from taxation.	50.2	14.65	61.7	9.26	72.0	10.41
Grants and contribution.	100 0	29.17	205.6	30.85	207.0	29.92
Miscellaneous.	15.9	4.63	16.0	2.40	23.0	3.33
Extraordinary and debt.	31.2	9.10	198.1	29.73	305.2	29.65
Total Receipts.	342.8	100	666.3	100	691.9	100.00

Source : Health (L. S. C.) Department, Government of Orissa.

centage is that the Municipalities are unwilling to excercise the powers of taxation given to them by law, apparently with a view to gain cheap popularity. Wherever they have taken recourse to taxes which are required to be levied on percentage basis on the annual value of the holding, the percentage of tax imposed has been found to be invariably low as compared to the maximum prescribed under the Act. For example, in Bargarh and Deogarh Municipalities holding tax has been fixed at 2 per cent of the annual value, as against the maximum of 10 per cent allowed. Due to absence of proper valuation of holdings, a fair assessment of holding tax has not been done. Octroi duty has been confined to only Berhmapur and Parlakhimendi Municipalities. Grants and contribution by the State Government constitute the second major source of revenue. From this source

the Municipalities have got 100 lakhs rupees in 1971-72, 205.6 lakhs-rupees in 1972-73 and 207 lakhs rupees in 1973-74. In each year, the grants and contribution constitute about 30 per cent of the total revenue. Also like Government grants and contribution, loans and advances from different agencies constitute equal important sources of revenue. By way of loans and advances, Municipalities have received 31.2 lakh rupees in 1971-72, 198.1 lakh rupees in 1972-73 and 205.5 lakh rupees in 1972-73. Thus they are depending more and more on loans and advances to meet annual expenditure. Revenue from own property is not so significant as is generally expected. It is observed that own property such as rent of lands, buildings, sarais, Dak Bunglows, Dharmashalas, fees from educational and medical institutions have contributed annually 10 to 15 per cent in the total revenue. Licence and fees constitute the minor source of revenue which ranges between 1.98 per cent to 2.54 percent in the annual total revenue.

TABLE 2

PATTERN OF EXPENDITURE IN THE MUNICIPALITIES IN ORISSA FROM 1971 TO 1973

(In Rupees Lakh)

Pattern of expenditure	1971-72		1972-73		1973-74	
	Amount spent	Percent to total	Amount spent	Percent to total	Amount spent	percent to total
General Administration & collection charges	34.4	7.58	33.2	4.73	42.0	5. 50
Public safety	14.3	3.20	29.3	4.17	2.7	0.004
Public Health	227.4.	50.01	287.5	41.96	398.3	52. 23
Medical	3.7	0.84	7.3	0.10	6.3	0.008
Public convenience	71.2	15.67	169.1	24.10	189.4	24. 83
Public Instruction	32.2	7.10	'98.2	13.99	54.6	7. 16
Miscellaneous	33.4	7.35	37.7	5.37	34.5	4. 52
Repayment of Debt	37.5	8.25	39.2	5.58	34.7	4. 55
Total Expenditure	454.1	100	701.5	100	762.5	100

Source : Health (L.S.C) Deptt. of Government of Orissa.

The table shows the pattern of expenditure of the Municipalities in Orissa, for the years from 1971 to 1973. Generally the Municipalities are required to discharge both obligatory and voluntary functions for which they incur heavy expenditure. The annual expenditure has increased from 454.1 lakh rupees in 1971-72 to 701.5 lakh rupees in 1972-73 and to 762.5 lakh rupees in 1973-74, recording an increase of 167 per cent over the period. The reason for such sharp increase in expenditure is that on account of increase in urbanisation and rise in price level, the Municipalities are spending more and more each year to provide and maintain sufficient water supply, public roads and bridges, wells, tanks and reservoirs, public slaughter houses, burial grounds and Primary and Basic education. It is observed that only on account of public health, expenditure comes to about 50 per cent in a year. Expenditure on public health has increased from 227.4 lakh rupees in 1971-72 to 287.5 lakh rupees in 1972-73 and to 398.3 lakh rupees in 1973-74. Public health includes training of vaccinators, epidemic charges, vaccination charges, drainage and sewerage charges, etc. Next to public health comes the public convenience which takes away maximum expenditure of the Municipalities. Expenditure on Dakbungalows and sarais, planting and preservation of trees on roads and public places, burning and burial grounds etc. come under the expenditure on public convenience. For the above reasons annual expenditure has increased from 71 lakh rupees in 1971-72 to 169.1 lakh rupees in 1972-73 and to 189.4 lakh rupees in 1973-74. It is observed that expenditure on Medical i.e. training of nurses, dhais, maintenance of maternity and child welfare centres etc. are only 3.7 lakh rupees In 1971-72, 7.3 lakh rupees in 1972-73, and 6.3 lakh rupees in 1973-74. Such low expenditure on medical services is due to the fact that the state hospitals are covering more and more people in urban area. The rest of the expenditure *i.e.* 25 to 30 percent are incurred on administration, public safety, public instruction and repayment of loan.

TABLE 3

ANNUAL REVENUE AND EXPENDITURE OF MUNICIPALITIES IN ORISSA FROM 1971 TO 1973 (in Rupes Lakh)

Years	Total Revenue	Total Expenditure	Balance	Remarks
1971-72	342.8	454.1	-111.3	Deficit
1972-73	666.3	701.5	-35.2	Deficit
1973-74	691.9	762.5	-70.6	Deficit

It is observed that annual expenditure is more than the annual revenue during the period of 1971 to 1973. Expenditure has exceeded the revenue by 111.3 lakh rupees in 1971-72, 35.2 lakh rupees in 1972-73 and 70.6 lakh rupees in 1973-74. Due to increase in urbanisation problems of overcrowding, slums, sanitation and provision of basic amenities have caused heavy expenditure to Municipalities. Moreover the Muncipalities are required to finance expenditure on schemes of water supply, and drainage, etc. for which expenditure exceeds that of revenue. The census of 1971 reveals that the urban population of 11,09,650 in 1961 has gone up to 18,453,95 recording an increase of 66.30 per cent and an overall increase of 1.67 per cent of the total population in Orissa. The increasing trend of urbanisation has posed difficult financial problems for the Municipalities. Due to heavy expenditure in discharging the obligatory functions, the Municipalities are to raise required amount of resources from taxation, as it is not desirable to depend more on Government grants and contribution. They can take up some definite measures to raise sufficient resources to meet the committed expenditure. Water supply should be treated as a service scheme and the cost charged to the user or consumer should be an economic charge for the service rendered. All Government tanks, markets, ferries, hats and ponds existing in the areas of Municipalities should be transferred to them for augmenting their income. Practice of avoiding collection of Holding tax to gain cheap popularity for political reasons should be stopped. Also the holdings are to be properly valued. Efforts may be made to augment income by undertaking productive enterprises, such as pisciculture, running of slaughter houses, helpful to the economic development. Manufacture of compost solves the problem of health and helps agriculture by improving its productive capacity. A certain percentage of sales tax realised in the areas of Municipalities be made available to them. To increase the collection of Municipal dues, technical supervision is to be exercised over the collecting agency. To check misutilisation of Government grants and loans, accounts of the Municipalities are to be properly audited annually.

Summary

Since the last two decades there is increasing trend in urbanisation, for which both the obligatory and voluntary functions

of the Municipalities have posed a serious financial problem. An attempt has been made here to study the financial aspect of the Municipalities with the objectives of analysing their sources of revenue and pattern of expenditure and to probe into the reasons for financial difficulties. It is observed that the main sources of revenue are taxation and the Government grants, both of which together constitute 60 per cent in the total revenue. It is a chronic affair with the Municipalities to depend more on loans and advances i.e. to the extent of 30 per cent of the annual revenue. From own property the Municipalities get about 10 to 15 per cent of the total revenue. On the expenditure side it is found that on Public Health, the Municipalities are spending about 50 per cent of the total expenditure. Expenditure on Public Convenience constitutes about 25 per cent and the minimum amount of expendiutre are on Medical and Public Safety, the reason being that in areas of Municipalities hospital facilities have improved and are covering a larger number of people. On the whole, the aunual expenditure exceeds the annual revenue for which the Municipalities are suffering from the deficit budgets. To cope up with the increasing expenditure, the Municipalities are required to raise more revenue. For this they ought to undertake certain definite measures. They should stop the usual practice of avoiding collection of the Holding taxes and other taxes, for the sake of cheap popularity. All the holdings need to be properly valued. Income can be augmented by undertaking productive enterprises such as pisciculture, running of slaughter houses, etc. The State Government should part with certain percentage of sales tax to the Municipalities. Collection drive on tax front can be made more effective with efficient technical supervision and the misutilisation of Government grants and contribution can be checked by proper auditing and accounting methods.

RAPPORTEUR'S REPORT

REGIONAL ECONOMIC DEVELOPMENT

Rapporteur :
DR. S. C. PATNAIK

One of the important problems of economic development in India is the fast growing economic disparity among various regions. Some areas are fast growing, while others are lagging behind. An increase in the national income and wealth does not automatically involve a reduction in the regional economic disparity. During all these years of planning, investments have largely been concentrated on the "efficiency criteria" with the avowed objective of achieving higher rate of economic growth. Consequently some areas have outgrown their capacities, while poorer states like Orissa, Bihar, M. P. etc. have considerably lagged behind. The growth centres like Calcutta, Bombay, Madras, Delhi, Ahemedabad, etc. are acting like 'suction-pump' pulling more dynamic elements from the static regions.

In India investments have largely been allocated over time among sectors and sub-sectors treating the whole nation as a point devoid of spatial dimension. Although the Indian Planners have not been lacking in sympathy for the lagging regions, their remedial measures have been largely palliative in nature. The poverty and economic backwardness have never been viewed as organically linked with the anatomy of space either conceptually or in a operational framework. This missing link of a spatial dimension in the Indian Planning has largely been responsible for the present growing area of economic disparity in the country.

Regions can be variously defined, depending on purpose for which it is adopted. Generally regional development in India is used in its inter-state and intra-state sense, from operational standpoints. However, whatever may be the sense on which it is used, a suitable institutional framework is lacking in India for a balanced growth.

Four papers were presented on the subject by Shri P. N. Das, Shri B.C. Parida, Shri Hrushikesh Sahu and Dr. Basudev Sahoo.

Shri P. N. Das in his paper on "Investment on Irrigation and Regional Disparity in Agricultural Income in Orissa" has analysed the impact of investments on irrigation projects in different districts of the state on the incremental growth of agricultural income by way of bringing additional areas in the districts under H. Y. V. He has pleaded for an approach to bring at least 20% of the cropped area in each district under effective irrigation by the end of the 5th plan in the interest of mitigating the present disparity on the growth of agricultural income in the different districts of the state.

Shri B. C. Parida in his paper on "Leading Issues of the Balanced Regional Development of Orissa" has pointed out that due to the neglect of locational plans, inter-state and intra-state economic disparity in the country is on the increase. He has favoured modern locational theory of "concentrated industrialisation" in view of its beneficial spread effects in inducing growth centres in different regions and he says that emperical studies are in favour of such an approach. However he has not given empirical evidence in support of his arguments. Shri Parida has suggested a few measures like development of growth centres, special projects in backward regions, development of an entrepreneurial class and reconsideration of licensing policies, etc. for the speedy economic development of the state.

Shri Hrushikesh Sahu in his paper "Regional Disparity and Economic Development of Orissa" has pointed out the inter-state and intra-state economic disparity in India and has pleaded for a 'growth centres' approach for the development of the backward regions of the state. Dr. Basudev Sahoo has discussed the problems of backwardness of Orissa.

In the discussion that followed, some important points were made out by the participants.

Dr. Basudev Sahu dealt on the common theme of the inter-state and intra-state economic disparity and also pleaded for growth centre approach for the backward regions.

Shri Sachidananda Rath drew special attention to the problems of the tribal regions in Orissa and gave a brief account of the special measures adopted by the Govt. of Orissa for their development.

Prof. J. K. Misra discouraged welfare oriented expenditure in the different Blocks of the state. He pleaded for production oriented approach to development expenditure.

Prof. R. C. Patnaik said that the concept of a region is not clear and balanced regional development is neither possible nor desirable in the context of Indian economic development.

Shri Jyoti Patnaik pointed out that a part of the state income is siphoned off out of the state by the trade relationship that exist between Orissa and the outside world and this causes economic backwardness of the state.

Shri D. P. Bagchi advocated an inter-disciplinary approach to the problems of regional planning. He pleaded for the identification of homogeneous regions on definite basis and assessment of their resource potentiality for development.

Dr. S. C. Patnaik pleaded for an institutional framework for regional development of Orissa and spelt out their policy implications.

INVESTMENT IN IRRIGATION AND REGIONAL DISPARITY IN AGRICULTURAL INCOME IN ORISSA

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Introduction

There is now growing concern over the widening gap in regional economic development over the plan periods in India. Measurements of regional imbalance whether by means of such important indicators as percapita income or consumption expenditure, or by building up a composite index of different socio-economic indicators, have revealed that Orissa is sliding back steadily. In terms of per capita income, the gap between all India and Orissa averages has widened from Rs. 89/- in 1960-61 to Rs. 134/- in 1971-72. Similarly, in terms of per capita consumption, the annual gap has widened from Rs. 36/- in 1963-64 to Rs. 100/- in 1968-69. This means that while income disparity has increased by 51 %. the inequality levels of living has widened by 178 %. In terms of a composite index, regional imbalance ratio between Orissa and India in an aggregative macro concept works out to 69 %.

2. While these exercises in regional imbalances have helped in evolving new policies and principles aimed at correcting or arresting the accentuation of the process of disparity built in the earlier growth model, it is recognised that such efforts could not make any appreciable impact because of 'the inability to put through the critical minimum effort required'. This has led to a search for identification of some of the basic causes accounting for widening regional imbalances. Of the various causes suggested in this regard, perhaps the one which holds the key lies in the provision of infra-structure. One may note that because of the intrinsic linkages between the infra-structural facilities, growth and diversification of economic activities, it would not be possible to bring about reduction in regional disparities, unless adequate provision is made for large scale expansion of the infra-structure.

3. In this context, the objective of the present paper is to discuss the impact of investment on irrigation projects, an important component of basic infra-structures on infra-regional economic imbalance in Orissa. For this purpose, major and medium Irrigation Projects have been taken into consideration and period of study covers 1956-57 to 1970-71.

4. The choice of major and medium Irrigation projects emanates from the fact that they constitute the hard core and basic strength of agricultural economy, playing the same role which heavy industries do in the industrial economy. Further, empirical studies have revealed that just as location of manufacturing industries contributes to higher growth rate for the region in which they are located and consequently leads to widening of the gap with other region, so also in the field of agriculture, location of major irrigation projects results in tilting the relative balance of agricultural growth rate as well as the inter-regional and infra-regional prosperity.

5. In India, there are large tracts—about onethird of the country—which are subject to drought and dry farming practices. Scarcity of surface and ground water resources for providing irrigation facility is a real constraint for these areas. This phenomenon also accounts for widening the gap between irrigated and dry areas. Thus from the point of regional balancing, investment in irrigation has to take into account this double problem, namely how to reduce the growing disparity between irrigated areas where water resources are available, and secondly, how to reduce the growing disparity between irrigated and dry farming areas, the latter being deprived of necessary water resources. Though in India in certain areas like Gujarat and Rajasthan full scale utilisation of installed capacity is hampered by non-availability of sufficient surface or ground water resources, this is not the problem in case of Orissa. The surface water potential estimated on the basis of the Khosla formula for Orissa rivers is of the order of 106·52 million acre feet.* This is more than adequate for a total net cropped area of about 15 million acres in the State.

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* *Source* : Report of the Irrigation Commission, 1972, Vol-I, Table-3.4, p. 46.

However, a very small part of this water resource is utilised by way of irrigation. The distribution of irrigation facility in different districts of Orissa is very uneven. In 1971-72, out of the thirteen districts of Orissa there are four districts, namely, Kalahandi, Keonjhar, Koraput and Sundergarh which are without any major or medium irrigation projects. Even out of the other nine districts, the concentration of irrigation facility is as high as 70 % in only three districts, namely Cuttack (34.53 %), Sambalpur (21.14 %) and Puri (14.79 %). This evidently allows only 30 % of irrigation of waters from the major and medium projects to be shared by the other six irrigated districts.

6. Supply of water input is a function of investment in irrigation. Before independence of the country, only few coastal districts had some form of irrigation facilities in a limited scale. However, after independence, till the beginning of the Second Plan, the investment in major and medium irrigation projects in Orissa was of the order of Rs. 55.08 crores, which was mainly confined in building the Hirakud Project. Apportioning the total investment between the districts in the same proportion as area irrigated, it is estimated that Sambalpur district received 70.71 % while Bolangir has 27.75 % of investment in irrigation. During this period other districts had negligible share. The total investment in major and medium irrigation projects in Orissa up to the year 1970-71 was as follows.

(i) Since independence up to 1956-57—Rs. 55 08 crs.
(ii) 1956-57 to 1970-71 --Rs. 73.84 crs.

Rs. 128.92 crs.

Applying the principle of apportioning the investment in irrigation projects on the basis of its spread effects measured by extent of area under irrigation by that project, we obtain an estimate of inter-district disparity in investment in irrigation infra-structure. In Table 1 below inter-district distribution of investment in Irrigation is indicated.

An analysis of the figures would show that out of this investment, Sambalpur with Rs. 46.98 crores, Cuttack with Rs. 22.49 crores, Bolangir with Rs. 18.43 crores, Puri with Rs. 16.53 crores

TABLE 1

IRRIGATION INVESTMENT AND PERCENTAGE OF IRRIGATED AREA TO NET AREA SOWN IN ORISSA

District	Investment up to 1970-71 on (Major and Medium projects (Rs. lakhs)	% of Investment	Percentage of area irrigated (under major and medium projects) to net area sown (1970-71)
1	2	3	4
1. Balasore	1398.37	10.8	13.0
2. Balangir	1843.36	14.3	14.1
3. Cuttack	2249.21	17.4	32.1
4. Dhenkanal	374.65	2.9	1:3
5. Ganjam	474.02	3.7	15.2
6. Kalahandi	4.41	— (0.03)	—
7. Keonjhar	—	—	—
8. Koraput	—	—	—
9. Mayurbhanj	—	—	0.9
10. Phulbani	154.95	1.2	1.2
11. Puri	1653.32	12.8	26.1
12. Sambalpur	4698.56	36.5	24.1
13. Sundergarh	41.36	0.4	—
ORISSA	12892.21	100.0	12.1

Source : 1. Chief Engineer, Irrigation, Govt. of Orissa.
2. Director of Agriculture and Food Production, Govt. of Orissa.

and Balasore with Rs. 13.98 crores of investment in major and medium irrigation projects were the principal beneficiaries of post-independence irrigation planning. These five districts account for 91.8 % of total investment. Three districts are totally have-nots, whereas 4 others were nearly so. This presents a big investment inequality in inter-district dispersal of overhead capital in agriculture in Orissa. The impact of such skewness in the allocation of investment is reflected in terms of irrigated area in the district. Percentage of area irrigated to net sown over in the above five districts ranges from 32 to 13, whereas all others except Ganjam vary from 0 to 1%. Existence of irrigation project, prior to independence of the country, explains the exception in case of Ganjam and to some extent for Cuttack also.

7. Impact on cropping pattern

7.1. One of the methods by which disparity in investment in irrigation leads to consequential disparity in distribution of agricultural income and wealth is by way of induced changes in the cropping pattern. It is a recognised fact that area under high yielding variety in different districts has a close bearing in the availability of irrigation waters. Out of 4.85 lakh acres under High Yielding Variety of paddy in Orissa in the year 1970-71, the following five districts with better irrigation facilities command very high proportion of area under High Yielding Variety, Balasore district being an exception.

TABLE 2

AREA UNDER HIGH YIELDING VARIETY PADDY (1970-71)

District	Area under H.Y.V. paddy (in acres)	Percentage of area under H.Y.V.	Percentage of area irrigated under Major, Medium irrigation projects to total.
1	2	3	4
Sambalpur	152095	31.38	23.77
Cuttack	106116	21.88	29.98
Puri	50946	10.51	15.78
Bolangir	46085	9.51	9.33
Ganjam	43047	8.88	8.91
Other 8 districts.	86490	17.84	12.23
ORISSA	484779	100.00	100.00

Source : Bureau of Statistics & Economics, Orissa.

7.2. The combined effect of concentration of irrigation waters and H. Y. V. crop in certain regions, as a result of the disparity in investment in irrigation, there is consequential unevenness in the distribution of agricultural income between the districts, as discussed below.

8. Value of agricultural output

8.1 During this period, the value of agricultural output in Orissa has increased from Rs. 165 crores in 1956-57 to Rs. 595 crores

In 1970-71 at producers prices. In this increased agricultural prosperity of Rs. 430 crores (current prices) the following is the order of inter-district shares.

TABLE 3

VALUE OF AGRICULTURAL OUTPUT

(Rs. in Lakhs)

District	1956-57	1970-71	Variation	Percentage variation
1	2	3	4	5
1. Balasore	972	4772	3800	8.84
2. Bolangir	997	3818	2821	6 56
3. Cuttack	2826	9384	6558	15.25
4. Dhenkanal	1297	4625	3328	7.74
5. Ganjam	1428	6265	4837	11.25
6. Kalahandi	628	3613	2985	6.94
7. Keonjhar	856	2507	1651	3.84
8. Koraput	1180	5449	4269	9.93
9. Mayurbhanj	811	3260	2449	5.70
10. Phulbani	501	1423	922	2.14
11. Puri	2183	5016	2833	6.59
12. Sambalpur	2249	7621	5372	12.49
13. Sundergarh	657	1830	1173	2.73
ORISSA	16585	59583	42998	100.00

Source : 1. N. C. A. E. R.—Inter-District and Inter-State Income Differentials (1956-57)
2. Bureau of Statistics & Economics, Orissa.

8.2 Measurement of profitability of agriculture flowing from irrigation can better be done by analysing the above data in terms of increase in per acre income (rather than percapita agricultural income) as weightage to cropping intensity is more relevant for this purpose, than weightage to density of population. Table 4 below shows the income differential in different districts measured in terms of per acre income calculated from the above income estimates and official estimates of acreage.

8.3. Comparing the data available in respect of investment in irrigation, value of agricultural output per acre indicated above, it is clear that Sambalpur and Cuttack districts which received the

TABLE 4

PER ACRE INCOME ON AGRICULTURE

(Rs.)

District	1956-57	1970-71
1	2	3
1. Balasore	95	425
2. Bolangir	83	321
3. Cuttack	184	552
4. Dhenkanal	122	459
5. Ganjam	172	590
6. Kalahandi	69	387
7. Keonjhar	136	344
8. Koraput	49	252
9. Mayurbhanj	93	303
10. Phulbani	85	282
11. Puri	206	456
12. Sambalpur	152	424
13. Sundergarh	104	249
ORISSA	117	394

maximum share of investment in irrigation contributed the lion's share in the additional agricultural product-mix. Similarly, Ganjam district which had the benefit of old Rusikulya irrigation system together with the medium irrigation projects of Ghodahad, Dhanei, Bahuda stage I, Hiradharbati and Baghua as well as of large number of minor irrigation projects, commands the highest percentage area irrigated to net cropped area. As a result of this, Ganjam is the 3rd district in terms of additional agricultural output in the State during this period. Looking at the other side of the picture, it is also evident that low investment in irrigation has resulted in slow increase in agricultural output.

Thus while it is easily discernible that inter-district relative prosperity or relative disparity have a direct relationship with the provision of irrigation projects, we may attempt to determine the precise correlation between the two factors by calculating the correlation coefficient between x and y, where x is the differential increase in irrigation intensity per acre and y is the differential increase in agricultural income per acre during the period 1956-57 and 1970-71. For determining the correlation coeffi-

cient between x and y in respect of the two groups of districts, namely six irrigated districts and 7 unirrigated districts, the following formula was applied, where r_{xy} is the correlation coefficient between x and y and n is the number of districts.

$$r_{xy} = \frac{\Sigma xy - \frac{1}{n}(\Sigma x)(\Sigma y)}{\sqrt{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}\sqrt{\Sigma y^2 - \frac{(\Sigma y)^2}{n}}}$$

We obtain the value of correlation coefficient in respect of the 6 irrigated districts equal to 0.648 and that in respect of the other 7 unirrigated districts equal to 0.405.

9. Conclusion

The above analysis leads to the following four broad conclusions :

(i) There is wide disparity in the distribution of investment funds between the districts for irrigation purposes.

(ii) Incremental growth in agricultural income followed closely the pattern of investment in irrigation.

(iii) The gap between the 6 prosperous and 7 underdeveloped districts measured in terms of average per acre income has increased from Rs. 55 in 1956-57 to Rs. 136 in 1970-71.

(iv) Correlation coefficient between irrigation facility and agricultural income is quite high in case of irrigated districts and not too low in case of other districts. That it is not insignificant, this is perhaps because full benefit of irrigation has not been realised yet by the irrigated districts, while in case of second group of districts it is due to the bounty of rainfall. But the inter-district disparity in Orissa will increase or decrease largely depending on irrigation intensity of cropped area.

9.2. In such an emerging situation, the remedy perhaps lies in bringing about a synthesis between economic growth and spatial planning based on distributive justice. From the point of economic growth, high priority given to irrigation in the allocation of plan outlay should continue, but the concept of distributive justice, enjoins that regional allocation of investment in irrigation projects should be so distributed that every district should have a minimum percentage of irrigated area about 20 % by the end of the Fifth Plan. Diversion of resources to less developed districts for this purpose would be a socially desirable economically feasible approach in our planning technique. The exercises on preparation of district plans during the Fifth Plan period should centre round this basic approach in regional planning.

LEADING ISSUES OF THE BALANCED REGIONAL DEVELOPMENT OF ORISSA

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Introduction

Disparties in the levels of living of the different areas in a region has been the cause of many a socio-political tension recently. The main complaint is that the consequence of planning in India has become a lopsided development. The rate of development of developed states have become comparatively more than the rate of development of the backward states. In the context of India each state which represents a homogeneous lingual unit has been accepted for the purpose of a region. A similar lopsided pattern of development has also been found within a particular state among the different regions and subregions. The agro-industrial development of the coastal districts as compared with the highland districts also exhibit a similar trend in Orissa. Regional scientists have termed it as a colonial pattern of development where the developed areas exploit the labour, commodity and capital of the underdeveloped areas or in the language of international trade, when the developed areas specialised in secondary and tertiary sector, the under developed areas are in the grip of primary sector. This is a serious lacuna in our planning and as such the State Plans should take into consideration the locational and spatial plans. The pockets of poverty must be integrated with the pockets of prosperity. The people of backward and depressed areas will be brought into close co-operation with the rest of the community so that planning will become meaningful and regional inequality will be reduced. That is why it is said that "Planning for development becomes fragmentary or unintegrated if it lacks spatial dimension. A National Plan has to be formulated through a hierarchy of integrated regional or, sub-regional or, districts or State Plans. In their preparation due

consideration should be given to regional and local problems of areas varying widely in land form and use and their potentials, population problems, resources, infrastructures and processing needs. If this is accomplished the plans of different areas can then be integrated into mutually consistent state plans but in practice very little is being done in this regard".[1]

The meaning of regional development

The term 'region' has been defined variously. Many people define it as either a state or a district or a taluk. A U. N. Seminar suggested three types of regions each with its particular problems. (*a*) The Metropolitan region having the problem of urbanisation and industrialisation. (*b*) "Resource Development region with its problems of hydro-electricity and watersheds, and (*c*) Rural regions with their problems such as village management. Some others have defined a region as Industrial and Agricultural region. That is why Prof. M. H. Gopal defines a region as a concept "operationally the most convenient and economically the most gainful, spatial, sectoral, and temporal unit of resource allocation taking planning as merely a process, growth as the economic result and welfare as the ultimate goal".[2] So far as balanced development is considered, this balance may mean area balance, sectoral balance and objective balance. Broadly it is the balance of returns over all investments. Development means here not to develop all the regions equally but to develop each unit to its optimum.

The policy of the Government of India for regional balance

Balanced regional development has been accepted as one of the objectives of National Planning. The Government of India appointed two Committees, one under the Chairmanship of Shri B. D. Pandey to identify the States, Union territories which are relatively backward in Industrial development, and another under the Chairmanship of Sri N. N. Wanchoo to suggest fiscal and Financial Incentives for encouraging industrial development in the backward states. The National Development Council considered these two reports and classified the districts accordingly :

(1) Districts which are both economically and industrially developed.

(2) Districts which are economically developed but industrially backward.

(3) Districts which are economically and industrially backward,

(*a*) Possess the minimum infrastructure facilities essential for industrial development.

(*b*) Do not possess the minimum infrastructure facilities essential for industrial development.

The Category 3 (a) has been given the highest priority for exploiting the advantages. The N. D. C. gave following guide lines for selecting an economically and industrially backward district with minimum infrastructure facilities such as :

(*a*) Per capita foodgrains or commercial crops depending on the predominance of the crops of the area.

(*b*) Ratio of agricultural workers to population.

(*c*) Per capita industrial output

(*d*) Number of factors or alternatively number of persons engaged in secondary and tertiary activities per lakh of population.

(*e*) Length of surfaced roads or railway mileages in relation to population. Applying the above criteria the Government of India has selected 248 districts by 1973 as industrially backward. In Orissa we have 9 such districts (see Table 1). We have to consider the problems of regional balance in Orissa from the standpoint of area balance, objective balance and sectoral balance.

Modern location theory

The modern locational theory believes that for regional balance we have to follow a policy of "Concentrated Industrialisation". This simply means to develop the potential growth centres in selected areas because of external economies of scale. Regional scientists argue that in the process of development there will be flow of labour from stagnant to developed regions. This will reduce disguised unemployment in the underdeveloped regions. Developed regions are provided with cheap labour which prevents labour cost from rising. As savings increase and more and new investment outlets are needed more and more resources can be channelised to the stagnant areas. This will help in the creation of new growing points in the underdeveloped areas and provide the way for regional balance. Against this theory, it has been argued that concentration of investment in the dynamic region will lead to diminishing return because the cost of urbanisation will increase after a size of the population and underdeveloped areas being unexploited hold the promise of better return. Empirical studies have contradicted these two points and as such the concentrated decentralisation, theory of location applies to the developing countries.[3]

In this connection a reference may be made to the spatial general theory of Equilibrium of August Losch and his central place theory where the urban centres are arranged in a functional hierarchy ranging from agro-urban towns through intermediate steps to the metropolis. "The Principal cities which tend to become the cluster of activities and specialisation in effect organise the space economy of a developing area. Whereas the rural areas continue to be predominantly agricultural and mono-occupational. A number of close links of interdependance between the regional integrants develop as a result of different kind of interflows between them."[4]

When we apply this central place theory or as they say "concentrated decentralisation" we must locate out those growth potential centres and try to make the optimum use of the potentialities there. The Industrial Potential Survey of Orissa sponsored by I. D. B. of India also makes reference to the full exploitation of the

external economies created in these growth centres like Rourkela, Chowdwar, Talcher, Paradip, Rayagada, Sunabeda and Hirakud complexes. There is a general feeling that the growth potentialities created in these growth centres are not fully utilised nor are these growth centres interlinked with their surrounding areas for the full realisation of the effects of concentrated decentralisation. We have not calculated the linkage effects of these growth centres and their effects on the regional balance and overall employment and income of the State.

Criteria for project selection

The second factor which merits attention in the consideration of regional balance in case of Orissa is the criteria of project selection in backward areas. Here arises a conflict between economic and social criteria. The Individual criterion in cost minimisation and profit maximisation has to be given up from the broader view of balanced economic development, but this may result in a sub-optimal behaviour and hence a conflict. But the criterion for judging a project from the national point of view should be adopted. This may take into consideration the internal rate of return, foreign exchange cost and the expected benefits to the nation in other directions. Economic viability requires only the cost benefit ratio. But this ratio will be modified in view of a project which can generate more employment to the local people, more income accruing to the local economy and the linkage effects likely to be generated from these projects. The cost benefit criterion must give allowance to the cost of learning by experience.

When we consider the case of Orissa, we find the necessity of starting some special projects in the most backward districts of the State. The I. D. B. survey indicates that tribal population in Orissa is 35 %. With the exception of Nagaland it is the highest in the country. In the districts like Koraput, Mayurbhanj and Sundargarh their percentage in the composition of total population is more or less 60% as shown in Table 2. They live mainly on forest produce and shifting cultivation. A long term plan for development which necessitates large investments in social infrastructure is needed, and the co-operatives for marketing also should be strengthened.

Here no cost profit criterion can be applied. The resources for this purpose should flow from the Centre in the interest of regional balance because the State Government with its meagre resources cannot tackle these problems.

Constraints

The third essential condition necessary for regional balance is the creation of a class of entreprenuers to undertake the task of development of industry and agriculture successfully in the backward areas. The Government has rightly undertaken a policy of giving necessary facilities to the private entrepreneurs for establishing new industries. The establishment of I. P. I. C. is a step in the right direction. But still then to attract the competent managers it is essential that the State Government should carry out comprehensive feasibility study of various projects to be started by strengthening the design cell of the IDCOL. Secondly, the entrepreneurs should be given training in different aspects of management and as trainees they must be asked to select a project backed by project report and the state and financial agencies.

The role of the financial institutions in the promotional activities is of crucial importance. At present various financial institutions have come forward to develop the industries in a state. The IDBI, the S. F. C., L. I. C., I. F. C. I, nationalised banks and lead banks should provide ample financial facilities to supplement the activities of the State Government. The establishment of interinstitutional group by I. D. B. I. which will comprise the representatives of all the financial institutions to supplement and co-ordinate the Government efforts is a move in the right direction. Secondly the Institution of the lead bank could perhaps be taken to a greater height if the task of initiating economic development of the district level is assumed by them in the backward districts. They can help in identifying the potential areas of development in industry and agriculture prepare the feasibility report, induce the local entrepreneurs, identify the major bottolenecks and help in coordinating the activities of various extension agencies. Thirdly when the commercial banks open their branches in unbanked places in a backward district they should be more concerned with development banking than with the ordinary deposit loan ratio. It is painful to note that some of the nationalised

banks have not opened their branches in Orissa as they have done in other states, and it is still more painful to note that the deposits mobilised in Orissa are not fully utilised in the state because of lack of demand for it.

Negative measures

The theory of negative instrument of industrial location can be used to bring about the balanced regional development. Wanchoo Committee recommended that there should be a ban on further establishment of industries in the metropolitan cities. Secondly the instrument of industrial licensing can be utilised so as to make an even distribution of industries and this will help the backward districts to be more industrialised. Thirdly every big industry of the country should be asked to work as a catalytic agent of industrial development in backward districts by preparing feasibility reports and exposing its potentiality of development. Fourthly the income generated in the backward districts should also be partly invested for the development of the district. Laws can be made to force either the Government or the private entrepreneur who make income in the backward districts from the exploitation of minerals or forests to spend a part of it on the development of the area where the income is generated.

Objective balance

The regional balance also means objective balance. Not only the investment but also the employment objectives should be balanced. In this connection one can note that the big projects do not generate more of employment. It is often argued that Bihar having a large number of big industrial projects has been economically more backward than Punjab and Haryana region which have only small and medium industries. So we must develop small scale industries which have got higher employment potential. The main defects of the units are shortages of essential raw materials and lack of technical and financial assistance in all these stages. It is painful to note that "Where specific requirement of Rourkela steel plant could be met by the establishment of small scale and medium units in and around Rourkela", it has not become so because of shortages of various types of steel. An alloy steel project would go

a long way for it. The marketing facilities for the small scale industries should be improved to eliminate the element of exploitation which is being faced by them. The large scale industries can be induced to provide technology and finance to small units. This will make the objective balance easy and smooth.

Sectoral balance

Above all regional balance also means sectoral balance. Not only industry but agriculture and minerals should develop. In case of agriculture we must also adopt area approach and small farmers development agency. Minor irrigation would go a long way to develop agriculture in Orissa. "The development of the mineral based industries in the state would call for not only large investments but also technical expertise and managerial talents. The growth of industries therefore provide a heavy task on the state authorities. This would call for realistic assessment of the mineral based projects and adequate assistance from all India financial institutions and the Central Government." The establishment of a Mineral Development Agency for mineral based industries should be taken up immediately.

The last constraint is the infrastructure. The inadequate transport facilities hamper the maintenance of regional balance. Connecting the various growth centres through transport links have not yet been established. There should be a well planned programme of road development. "The rail transport facilities should also be closely aligned to the needs of prospective industrialisation in the State in order to facilitate the speedier and cheaper movement of the ores particularly for export."[6] This calls for establishing rail links between Bansapani, Bimalagarh, Talcher and Daitari with Jakhpura. The Central Government should not hesitate to provide the minimum infrasstructure for the regional development of the State.

The time has come when the intra-regional disparity in a region and regional disparity in the country have to be viewed from the broader angle of national economic development and the people of the backward districts should continue their effort in this direction.

TABLE 1

POPULATION IN BACKWARD DISTRICTS AS PERCENTAGE OF TOTAL POPULATION IN THE STATES

Name of the State.	No. of districts	No. of backward districts	Total population in crores	Population in backward districts	Col. 4 as % of col. 3
1	2	3	4	5	6
Bihar	17	13	4.65	3.86	83.0
Uttar Pradesh	51	36	7.37	4.92	66.7
Orissa	13	9	1.76	1.01	57.7
Madhya Pradesh	43	24	3.24	1.74	53.7
Rajasthan	26	13	2. 2	0.84	41.5
Andhra Pradesh	20	9	3.60	1.43	39.7
Assam	11	4	1.19	0.24	36.1
Maharastra	26	5	3.96	0.67	16.9
Mysore	19	3	2.03	0.30	12.7
Gujarat	17	3	2.06	0.25	12.1
Madras	12	1	3.37	0.38	11.2
Punjab	18	1	2.03	0.05	2.4

Quoted from Somani "Industrialisation in Backward Areas"—1965.

TABLE 2

PERCENTAGE OF SCHEDULE CASTE AND SCHEDULE TRIBE POPULATION TO TOTAL POPULATION

Name of the Districts	Percent
Bolangir	38.2
Balasore	25.6
Cuttack	20.7
Dhenkanal	32.1
Ganjam	26.5
Kalahandi	32.1
Keonjhar	60.9
Koraput	73.3
Mayurbhanja	69.3
Phulbani	60.9
Puri	17.8
Sambalpur	45.3
Sundargarh	67.7
Orissa	39.80

Quoted from the "Industrial Potential Survey" of Orissa.

TABLE 3

STATEMENT SHOWING THE RATIO OF NON-WORKERS TO 1000 WORKERS BY DISTRICTS

State/Districts	Workers	Non-workers	Ratio of non-workers to 1000 workers in 1971.
Orissa	6,940,040	14,994,787	2161
Sambalpur	660,719	1,183,461	1791
Sundargarh	325,843	704,970	2164
Keonjhar	295,200	660,074	2236
Mayurbhanj	481,327	948,337	1970
Balasore	498,560	1,334,118	2676
Cuttack	1,066,669	2,761,909	2589
Dhenkanal	389,894	904,232	2319
Baud Kandhmal	225,865	394,059	1745
Bolangir	434,387	829,150	1909
Kalahandi	389,156	774,332	1990
Koraput	729,754	1,311,762	1798
Ganjam	755,284	1,536,383	2034
Puri	687,382	1,652,000	2403

Provisional population total of Orissa, 1971

TABLE 4

ROADS, RAILWAYS AND ROAD TRANSPORT IN ORISSA AS A PERCENTAGE IN INDIA

Items	Reference year	Orissa	India
(a) Railways route length per 100 square Kms. of areas in Kms.	67-68	11	18
(b) Railway Route length per lakh of population (Kms)	"	9	12
(c) Road length per 100 square Kms of area in (Kms.) P.W.D. Roads.	"	11	28
(d) Road length per lakh of population Kms. (P. W. D.)	"	83	176
(e) Surfaced Roads per 100 square Kms. in (Kms.)	"	6	10
(f) Surfaced per lakh of population. (Kms.)	"	44	60

-Compiled from Industrial Potential Survey.

TABLE 5

STATEMENTS SHOWING THE RANKING OF DISTRICTS IN POPULATION SIZE

Rank In 1971	Districts in order of population size	Population in 1971	Percentage to total population
1.	Cuttack	3,828,578	17.45
2.	Puri	2,339,382	10.67
3.	Ganjam	2,291,667	10.45
4.	Koraput	2,041,516	9.31
5.	Sambalpur	1,844,180	8.41
6.	Balasore	1,832,678	8.35
7.	Mayurbhanj	1,429,664	6.52
8.	Dhenkanal	1,294,126	5.90
9.	Bolangir	1,263,537	5.76
10.	Kalahandi	1,163,488	5.30
11.	Sundargarh	1,030,813	4.70
12.	Keonjhar	955,274	4.35
13.	Boudh Kandhmal	619,924	2.83

Provisional Population Totals, 1971.

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REGIONAL IMBALANCE AND THE ECONOMIC BACKWARDNESS OF ORISSA

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Orissa is one of the poorest states of the Indian Union having considerable number of tribal population inhabiting a large tract of the state's territory. The stagnant character of its economy with the perpetuation of abject poverty of the mass appears puzzling when viewed against its abundant mineral and forest resources. Yet, stagnation is endemic because of its structural imbalance which has undergone no perceptible change despite two decades of planning.

Nature and structure of the economy

Orissa is predominantly an agricultural state where agriculture absorbs more than three-fourths of the total working force. As per the 1961 census percentage of cultivators to total workers in Orissa was 56.82 against its counterpart of 52.78 in India as a whole. The 1971 census shows that the percentage of cultivators to total workers in Orissa is 48.51 against its counterpart of 42.87 in the country. As per the 1961 census agricultural labour constituted 17.01 percent of total working force in Orissa against its counterpart of 16.71 percent in the country. But according to the 1971 census agricultural labour forms 27.79 percent of total workers in Orissa while it forms 25.76 percent of India. Notwithstanding the difference in concepts used in two censuses, it is revealing that non-agricultural workers as a per cent of total workers increased from 30.5 in 1961 to 31.37 in 1971 in case of India while it declined from 26.17 to 23.70 during the period in case of Orissa.[1] Thus the increasing dependence of Orissa on agriculture is suggestive of its widening structural imbalance. Of course industrial income as a proportion of the state's income increased from 5.7 % in 1951 to 12.0 % in 1968-69 and with the additional investment of Rs. 136.37 crores in industries the ratio is

expected to rise to 25 %. Even then, industrial income of the State will form only 2 % of India's industrial income. This is both a cause and effect of the State's backwardness.

The most striking feature of Orissa's economy is the existence of a large chunk of tribal region with vast tribal population. Of the thirteen districts of the State as many as nine districts have considerable number of tribal population each. Some of the districts have overwhelming proportion of tribal population and peculiar characteristics of tribal economy. As many as seven districts, Bolangir, Phulbani, Dhenkanal, Kalahandi, Keonjhar, Mayurbhanj and Sundargarh were carved out of the erstwhile ex-state areas. As these Districts were utterly backward before the merger, they continue to lag behind in the march for progress. As per the 1961 census, Orissa's total tribal population numbering 43 lakhs formed 24 % of the states total population. Then the tribal population of Orissa formed 14.15 % of the total tribal population of the country. One-third of the total area of the State has been declared as "scheduled area" and 21 lakhs of tribal population have been categorised as 'A' tribes who lead almost a sub-human life. To the tribal population, if we add the large number of scheduled caste population who form 15.7 % of the state's population, the population under "depressed classes" comprises 40 % of the state's total population.[2] It is no wonder that an economy like Orissa's is exasperating under the dead weight of huge backward population.

Anatomy of backwardness

Growth of an economy depends upon numerous factors, most important of which are, adequacy of demand based upon flow of funds, market structure, level of technology, diffusion of knowledge, strong infra-structure and growth of population.

A poor population cannot afford viable market for diversified investment, nor it can generate enough investible surplus for investment. According to the 17th round N. S. survey the average per capita rural expenditure in Orissa is Rs. 21.13 and that of urban expenditure is Rs. 30.39. Thus 90 % population and 83 % of rural households in Orissa spend not more than one rupee per day.[3] Autonomous investment which is "typically the spark plug that

starts an upward business movement" is opened up by new discoveries, new products and new processes. Such things have not made any perceptible dent into large parts of Orissa's economy partly because there is no virile class of entrepreneurs in the State to set the ball of progress in motion. In Orissa the 'entrepreneurial ability which is the catalytic agent for harnessing raw materials, labour and capital in still conspicuously absent.'[4] This situation can largely be explained by the historical legacy of backwardness manifested in stark nakedness through the feudal character of Orissan society and by the large proportion of depressed population who are completely fatalistic, utterly passive, unlettered, short-sighted and devoid of any ambition in life.

Some years back the N. C. A E R. found out that net output per worker in Orissa is 83% of national average in agriculture, 70 % of the national average in non-factory production and 70.6% of the national average in factory industry. The relative low productivity of labour was attributed to the prevalence of backward technique, lack of capital, lack of skill and technical knowledge.[5] With the passage of time, application of technology has made some progress, technical knowledge has been diffused to some extent. But this has not made tangible progrees in agriculture of vast areas and has not affected perceptibly the tribal working force.

As to the infrastructure, the state has made considerable progress in respect of road construction and generation of electricity. Road length in terms of all roads per 100 square km. increased from 24 km in 1960-61 to 43 kms. in 1969-70 and in terms of surfaced road it increased from 7 km to only 8 km during the period. Even then its surfaced road length per 100 km is much less than the all India average which is 12 kms.[6]

In spite of the remarkabale progress in the field of generation of electricity (the installed capacity which was 9.6.M.W. at the end of 1950 reached 563.7 M. W. in 1971-72) the percentage of villages electrified in Orissa by the end of the Third Plan was only 1.20 as against the all India average of 9.30. The respective percentages in 1972 are 8.95 and 28.74.[7] There is acute dearth of irrigational facilities in Orissa especially in tribal areas. Irrigated area constitutes only 14.3 % of the cropped area of the state. In tribal areas

irrigated area as percentage of cropped area varies from 0.3 to 7.3.

Thus in Orissa the basic prerequisites of growth have not been sufficiently developed to lift the economy from the morass of stagnation to the dynamics of progress. Consequently the state income and per capita income with base year 1960-61 grew at rates of 3.1 and 0.6 % per annum over the period 1950-51 to 1965-66. The corresponding figures for the period 1955-1956 to 1963-1964 for Madras were 3.9 and 2.5, for Kerala 3.7 and 0.9 for Gujarat 4.5 and 1.6 respectively. [8] Agricultural production rose by 2.72 % per annum against 3.42 % in India over three plans.[9] By 1966 Orissa's per capita income was less than the Indian average by Rs. 92.00 per capita income of Orissa at 1960-61 prices stood at 248.70 in 1968-69 against the all India average of Rs. 321.3 at same price. The state is enwrapped in a vicious circle of poverty and stagnation. The vicious circle has not been broken on its weakest points, that is the tribal part of the economy.

Tribal economy : Liability or asset

As mentioned earlier a large chunk of Orissa which was under the rule of the native chiefs till 1949 and which contains predominantly tribal population constitutes the most backward part of the economy reducing the state's average per capita income to a pathetically low level. This does not mean that the people of the coastal region of the state or region which was directly administered by the Orissa Govt. before 1949 are so rich. Yet, it goes without saying that the ex-state areas or the areas predominantly inhabited by tribals are the relatively more backward areas and they suffer from formidable difficulties in the respect of development and mobilisation of resources, both man and matter. Table 1 clearly shows the relative backwardness of districts like Kalahandi, Keonjhar, Phulbani, Bolangir, Mayurbhanj, Dhenkanal and Koraput. Sundargarh could occupy a high position because of the existence of Rourkela steel plant and other allied plants. But this conceals the real condition of the vast tribal people who live in villages, and the low position of the district in terms of agricultural output suggests the real poverty of the mass.

The tribal region is so utterly backward because of the following reasons :

(*i*) Inadequacy of infrastructure particularly inadequate transport facilites.

(*ii*) Poor cultural practices—shifting cultivation.

(*iii*) Lack of irrigational facilities.

(*iv*) Illiteracy and spell of liquor and hold of customary rituals on the tribes.

(*v*) Exploitation by the middlemen and moneylenders.

In tribal regions there is on an average one mile of road for an area of 5.54 square miles against the requirement of one mile road for every square mile of area for proper utilisation of agricultural and forest resources.

The inadequacy of transport facilities has isolated the tribal people from the outside world, has put them in the blissful ignorance of good life, has encouraged exploitation by the middlemen and has stood on the way of obtaining adequate governmental support in form of modern input and credit.

As many as 65 % of tribal population are engaged in shifting cultivation or (Podu chasa). This covers about one lakh acres and about 12,700 square miles of land are affected by this harmful cultivation.[10] This has resulted in the destruction of forests and caused soil erosion.

Banking facilities in Orissa are meagre and they are too scarce in tribal districts. The poor tribal people cannot procure their loan from cooperatives or banks as they have no acceptable securities. The Tribal Research Bureau of Orissa found that rate of interest on loan varies from 11 to 50 % in some scheduled area.[11] Literacy percentage in these regions is very low and obviously technical or vocational education amongst the tribes is quite negligible (Table 1).

TABLE 1

AREA, POPULATION, LITERACY, WORKERS, ETC. OF DIFFERENT DISTRICTS OF ORISSA

District	Area in thousand square kms.	Density of population per km.	Percentage of literacy	Workers as % of population	No. of Banks, Offices at end of Sept. 1970	Surface road per hundred k.m. (In k. m.)
Sambalpur	17.5	105	27. 0	35.83	13	4.60
Sundargarh	9.7	106	26.28	31.61	18	4.27
Keonjhar	8.3	115	20.95	30.90	4	3.44
Mayurbhanj	10.4	136	27.93	33.67	5	6.51
Dhenkanal	10.8	120	27.41	30.13	8	5.80
Phulbani	11.1	56	19.67	36.43	1	4.93
Bolangir	8.9	142	19.73	34.38	4	2.65
Kalahandi	12.1	96	13.74	33.45	5	4.42
Koraput	26.7	76	10.57	35.75	13	3.52
Ganjam	12.5	183	24.39	32.96	20	10.10
Puri	10.4	226	35.42	39.38	18	8 20
Balasore	6.5	283	33.96	27.20	7	8.23
Cuttack	11.0	349	36.37	27.86	27	7.59

Sources : Col—1, 2, 3, 4 of India paper-1, 1971 supplement. pp. 132-134
Col—5. R. B. I. Bulletin Nov. 1970. Supplement p. 23.
Col—6 is obtained by dividing the area of the district by the total area surfaced road given in Annual Administration of Transport Department, Govt. of Orissa for the year 1968-69 P. W.

But these tribal areas possess great potentialities of growth. They are the regions rich in mineral and forest resources. Orissa has abundant mineral resources comparable to those of Bihar and Madhya Pradesh, the two mineral-rich regions. Its deposits of iron ore, manganese, chromite and limestone are rich. The diverse and potential mineral occurrences give promise of discovering large deposits. The area having such mineral deposits are no other than the tribal regions.[13] The low density of population of these regions also reflect the capacity of absorbing more population without putting excessive pressure on land.

Thus with proper planning the liabilities can be well converted into assets.

Conclusion

The preceding discussion highlighted the following points :

(1) The Economy of Orissa has remained backward with other states of the Indian Union in spite of its rich mineral and forest resources.

(2) The dynamics of growth have not been generated because its main sector i. e. agriculture has remained stagnant, and because a virile entrepreneurial class has not been built up.

(3) The basic requirement of growth, a strong infrastructure, has not been developed.

(4) The poorest regions of the state and the poorest sections constituting a considerable portion of the population have not been given proper attention. But they hold the immense potentialities of growth. Perpetuation of regional imbalance in the State is the greatest cause of continuing backwardness.

The task before the State is formidable. It demands huge finance, unbiased leadership and intelligent planning on the part of the state.

The NCAER observed : "The poverty of the people of Orissa can be traced largely to the low productivity of the agricultural section. No attempt to raise the standard of living of the people can succeed unless the productivity of this sector is raised appreciably." The experience of 20 years of planning stands testimony to the truth of this observation. The economic development of Sambalpur district can be attributed to development of agriculture under the favourable influence of Hirakud Dam and package programme. This wise counsel the Govt. has ignored to the State's peril.

The NCAER suggested an investment of Rs. 1427 crores for the period 1961-71 and stressed that 'a larger volume of investment

than is suggested by more population consideration is justified both by the vast and inadequately exploited resources and the relative backwardness of the State. But neither the Central Govt. nor its specialised financial institutions have sympathetically considered Orissa's case for necessary lumpsum investment. The Industrial Resolution of Februry 1968 of the Govt. of Orissa offering financial and fiscal incentives to private entrepreneurs produces no encouraging response. Regional disparity in the flow of investible funds continues in India. This cannot be corrected nor the poor regions be developed unless Govts' (paricularly Centre's) massive investment appears in the regions.

The future of Orissa lies in the prosperity of the tribal region. The greatest impediment in the form of weak infrastructure has to be removed. Agriculture in the state as a whole and in these regions in particular has to be promoted through comprehensive, survey-based local plans. Shifting cultivation has to be given a go-by. Crops, horticulture and orchard, appropriate to the topography and soil of the tribal areas have to be introduced. Tribal co-operatives with the State sponsorship and assistance should be formed for agricutural purposes. Scope for starting agro-industries should be exploited. Development of the backward regions necessitates educational, psychological and social development of the people. Recruitment of well trained and well-disposed personnel for the purpose is essential. Investment in schemes relating to the welfare of tribal people which accounted for 7.2 % of total Plan investment in 2nd Plan but only 3 to 4 % of total investments in other Plans should be stepped up.

The complex problems of state's socio-economic development and the exploration of the States hidden resources call for thorough and incisive studies, both on macro and micro level. This necessitates the establishment of a research institute in the State.

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ECONOMIC GROWTH IN THE DISTRICTS OF ORISSA

Dr. S. TRIPATHY

Orissa as a State is economically underdeveloped. The State's per capita income at current prices was Rs. 467 in 1969-70. As against this the per capita income of Punjab was Rs. 881 for the same year. Except Bihar, whose per capita income was Rs. 402, no other State was below Orissa, so far as this economic indicator is concerned. The following Table will show the per capita income of different States at current prices for 1969-70.

State	Per capita income at current prices in 1969-70 (in Rs.)
Punjab	881
Haryana	783
Maharastra	759
Gujarat	657
Tamilnadu	616
Madhyapradesh	569
Assam	545
Mysore	515
Andhra Pradesh	513
West Bengal	511
Uttar Pradesh	506
Kerala	505
Rajasthan	480
Orissa	467
Bihar	402

Rural-Urban disparity

Even within the State the urban areas are more developed than the rural. This is generally known. The extent of economic disparity can be better known from the fact that in 1970-71 the monthly per capita consumption expenditure of rural areas of Orissa was Rs. 32.18 as against a monthly per capita consumption expenditure=Rs. 45.77 for urban areas.

It is also generally known that higher the proportion of consumption expenditure spent on food, greater is the level of underdevelopment. In 1970-71 the percentage of consumption expenditure spent on food in the rural areas of the State was 87 whereas for the urban areas it was 73. There is perhaps no need to substantiate the contention that rural areas are more underdeveloped than urban areas by more statistics.

Economic growth in the districts

All the districts of Orissa are not equally developed. We have, at present, no reliable estimates of per capita income of each district of the State. There are, however, other economic indicators which will help in analysing inter-district comparison of economic growth.

There are certain indicators which reflect the stage of economic growth of an area. Some of these indicators are :

1. Density of population.
2. Number of workers engaged in agriculture as percentage of total workers.
3. Cultivable area per agricultural worker.
4. Net area sown per agricultural worker.
5. Percentage of gross irrigated area to net area sown.
6. Percentage of area sown more than once to net area sown.
7. Per capita gross value of agricultural output.
8. Gross value of agricultural output per hectare of net area sown.
9. Number of establishments (non-household).
10. Number of workers per lakh of population in registered factories.

11. Mileage of surface roads per hundred square kilometres.
12. Mileage of surface roads per lakh of population.
13. Number of commercial vehicles registered.
14. Percentage of school-going children to total children in 6-10 years age group.
15. Percentage of school-going children to the total children in the age group 11-13 years.
16. Hospital beds per lakh of population.
17. Per capita expenditure on education.
18. Per capita consumption of electricity.

Taking the totals of these indicators into consideration, on the basis of the 1969-70 statistics, Cuttack is the best developed and Mayurbhanj the least developed district. Ranking of all the thirteen districts are as below :

1.	Cuttack
2.	Sambalpur
3.	Puri
4.	Sundargarh
5.	Ganjam
6.	Balasore
7.	Dhenkanal
8.	Koraput
9.	Bolangir
10.	Phulbani
11.	Keonjhar
12.	Kalahandi
13.	Mayurbhanj

In the last one decade only Cuttack has been retaining its first position as the best developed district, but the fortunes of all the other districts have been fluctuating, as for example, Balasore whose relative ranking was sixth from the top in 1960-61 promoted itself to third position in 1968-69. But it again slided back to sixth position in 1969-70.

All the districts are not endowed equally with natural and human resources. As for example, the delta regions of Cuttack, Puri and Balasore districts are agriculturally better developed than the relatively rocky areas of Koraput, Phulbani and Sundargarh. But availability of industrial raw materials like iron ore, coal, limestone, etc. are more widespread in districts such as Sundargarh, Kenonjhar etc. Therefore, in term of indicators of agricultural sector, the districts of Cuttack, Puri, Ganjam, Sambalpur, Balasore show a better position and in industrial indicators Sundargarh and Keonjhar have upper hand. Similarly in the infrastructure area, the districts such as Ganjam, Balasore, Puri and Cuttack are much more developed than Koraput, Balangir and Keonjhar.

Density of population

Greater concentration of population indicates that more and more people are residing in a particular area because of higher economic activities located in that area. In terms of density of population, Cuttack is the most densely populated district and Phulbani is the least. The relative ranking of all the districts are as below :

Cuttack	1
Balasore	2
Puri	3
Ganjam	4
Balangir	5
Mayurbhanj	6
Dhenkanal	7
Keonjhar	8
Sambalpur	9
Kalahandi	10
Sundargarh	11
Koraput	12
Phulbani	13

Workers engaged in agriculture

Agriculture being the most important vocation in the State, the number of people engaged in agriculture as percentage of total

workers, constitutes a good economic indicator. In terms of this indicator, the relative ranking of all the districts are as below :

Cuttack	1
Sundargarh	2
Ganjam	3
Puri	4
Sambalpur	5
Dhenkanal	6
Phulbani	7
Balangir	8
Koraput	9
Balasore	10
Kalahandi	11
Keonjhar	12
Mayurbhanj	13

Cultivable area

The cultivable area available per agricultural worker indicates the level of prosperity of those workers located in the specific areas, other things remaining the same. However, more land per head would not bring economic prosperity as such unless proper agricultural practices are followed. The relative ranking of all the districts in terms of this indicator are given below :

Koraput	1
Dhenkanal	2
Sundargarh	3
Sambalpur	4
Keonjhar	5
Balangir	6
Kalahandi	7
Balasore	8
Puri	9
Cuttack	10
Phulbani	11
Mayurbhanj	12
Ganjam	13

From the above it is seen that in terms of cultivable area per agricultural worker, both Ganjam and Cuttack occupy very low posi-

tions, yet they are better developed in agriculture because of intensive and better agricultural practices as compared to the districts such as Koraput, Dhenkanal, Sundargarh which occupy higher positions in this indicator ranking

Irrigated area

Irrigation is an important input of agriculture. Other things remaining the same, better the availability of irrigation facilities, more prosperous the area agriculturally. Therefore, percentage of gross irrigated area to gross area sown is an important economic indicator.

The relative ranking of different districts on the basis of this indicator starting with the best district is given below :

Cuttack	1
Puri	2
Ganjam	3
Sambalpur	4
Balangir	5
Phulbani	6
Balasore	7
Dhenkanal	8
Mayurbhanj	9
Sundargarh	10
Kalahandi	11
Keonjhar	12
Koraput	13

Intensity of cropping

The intensity of cropping is yet another indicator of agricultural prosperity. Here again other things remaining the same, more the number of crops raised in a year, higher is the level of agricultural development of that year. The percentage of area sown more than once to net area shown is, therefore, an important economic indi-

cator. The relative ranking of the districts in terms of this indicator is given below :

Puri	1
Ganjam	2
Cuttack	3
Phulbani	4
Kalahandi	5
Dhenkanal	6
Balangir	7
Sambalpur	8
Koraput	9
Mayurbhanj	10
Balasore	11
Keonjhar	12
Sundargarh	13

Value of agricultural output

Unless the farmers receive higher price on produced goods, more quantity of production does not bring economic prosperity. Therefore, the value of agricultural output is an important economic indicator. Other things being the same, higher the per capita gross value the agricultural output in any particular district, greater is the agricultural prosperity of that district. In terms of per capita gross value of agricultural output (rural population), the relative ranking of the districts are as below :

Sambalpur	1
Cuttack	2
Koraput	3
Dhenkanal	4
Balangir	5
Puri	6
Balasore	7
Kalahandi	8
Ganjam	9
Sundargarh	10
Keonjhar	11
Mayurbhanj	12
Phulbani	13

A slight deviation from this indicator is the measure which shows the gross value of agricultural output per hectare of net area sown. In terms of this indicator, the relative ranking of the districts are as below :

Cuttack	1
Puri	2
Sambalpur	3
Ganjam	4
Balasore	5
Dhenkanal	6
Kalahandi	7
Balangir	8
Mayurbhanj	9
Keonjhar	10
Koraput	11
Sundargarh	12
Phulbani	13

Industrial employment

The districts with relatively larger number of people employed in factories are relatively more prosperous than others with lesser industrial employment. Taking the indicator 'number of workers in registered factories per lakh of population' into consideration, the relative ranking of the districts comes to the following order :

Sundargarh	1
Sambalpur	2
Cuttack	3
Koraput	4
Balasore	5
Keonjhar	6
Ganjam	7
Puri	8
Kalahandi	9
Mayurbhanj	10
Balangir	11
Dhenkanal	12
Phulbani	13

Infra-structural development

Roads constitute a most important infra-structural item of economic development. The mileage of surface roads per 100 sq. kms. and per lakh of population are generally the two indicators adopted to measure the relative development of different areas in the field of infra-structure. The relative ranking of districts in terms of these two indicators are given below :

Ranking in the mileage of surface roads per 100 sq. kms.		Ranking in the mileage of surface roads per lakh of population.
Ganjam	1	Phulbani
Balasore	2	Ganjam
Puri	3	Puri
Cuttack	4	Koraput
Mayurbhanj	5	Dhenkanal
Dhenkanal	6	Kalahandi
Phulbani	7	Sundargarh
Kalahandi	8	Sambalpur
Sambalpur	9	Mayurbhanj
Sundargarh	10	Keonjhar
Keonjhar	11	Balasore
Balangir	12	Balangir
Koraput	13	Cuttack

Power consumption

As economic prosperity comes, per head power consumption generally increases. Taking this economic indicator into consideration we find the relative ranking of the districts is as given below :

Sambalpur	1
Sundargarh	2
Keonjhar	3
Koraput	4
Ganjam	5
Dhenkanal	6
Cuttack	7
Kalahandi	8
Puri	9
Balasore	10
Balangir	11
Mayurbhanj	12
Phulbani	13

Social services

Availability of educational facilities is an important indicator of economic development of a particular area. More prosperous an area more are the number of children that go to school and more is the per capita expenditure on education. The relative ranking of different districts in terms of indicators covering these aspects are given below :

Percentage of school-going children to the total children (11-14 years)		Per capita expenditure on education
Cuttack	1	Puri
Sundargarh	2	Sundargarh
Balasore	3	Cuttack
Puri	4	Balasore
Mayurbhani	5	Sambalpur
Dhenkanal	6	Ganjam
Balangir	7	Dhenkanal
Sambalpur	8	Phulbani
Ganjam	9	Mayurbhanj
Phulbani	10	Keonjhar
Keonjhar	11	Balangir
Kalahandi	12	Kalahandi
Koraput	13	Koraput

The abovementioned indicators show that there is considerable inter-district economic disparity. It is not necessary that all districts should come up equally in respect of each economic indicator. The comparative advantage of each district in terms of resources should be fully exploited by concentrating on all those advantageous factors so that the rate of economic growth will be higher. As for example, the districts which have abundant mineral resources should concentrate on these aspects and develop the economic activities relating to mining industries only. There will be no harm if that district has less irrigation facilities or fewer educafional institutions. Because, higher income from mining can

reduce the dependance on agriculture and with a higher disposable income, the educational facilities available in adjacent districts or far-away places can be availed of. For this purpose detailed district plans, as integral part of the State Plan must be prepared, both current and perspective and thus efforts will have to be continued to bring up the districts which are economically backward to the level of more developed districts.

ECONOMIC DEVELOPMENT OF ORISSA : NEED FOR A STRATEGY

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Orissa has remained a pocket of poverty after two decades of planning in India. The per capita income of Orissa which was Rs. 187.80 in 1951-52 has gone up to Rs. 467 at current prices in 1969-70. Compared to all India average of Rs. 589, Orissa's per capita income is the lowest in the country save the case of Bihar. This rate of increase in per capita income of Orissa during the period of planning has been rather disquieting. At 1960-61 prices, the per capita income of the state has increased by 0.9 % in First Plan, by 1.6 % in the Second plan, by 1.8 % in the Third plan, by 2.8% during the three years of annual plan and by 0.4% and 1.2% during the 1st and 2nd year of the IV plan. This increase in per capita income has not at all improved the lot of the people compared to their counterparts in the country. The gap between the per capita incomes of Orissa and India at 1960-61 prices has increased from 80.7 in 1962-63 to 89.8 in 1969-70 (which is 122 in terms of 1969-70 prices). From this it is evident that, given the rise in all India price Index, the people of Orissa have been subjected to glaring inequalities in the standard of living.

Planning was said to have been designed for a fair distribution of income among various regions of the country and for better provision of amenities to the weaker sections of the country in education, health, food and housing, etc. But figures show that the regional disparities during the two decades of planning have increased.

There have been extremely inadequate facilities in Education, Medical Services, Public health and Rural electrification etc. in Orissa during this period. In 1971-72 per capita expenditure on Education in

Orissa stood at Rs. 13.12 compared to Rs. 16.14 for the country as a whole. The corresponding figures in states of Kerala, Punjab Haryana, Tamilnadu, Maharastra, Karnatak, West-Bengal, Gujrat, and Assam were 30.70, 24.41, 20.25, 19.91. 19.84, 19.01, 18.41, 17.34 and 17.26 rupees respectively. On the provision of medical facilities, Orissa in 1968-69 had only 37 beds per one lakh of population compared to 94 in Kerala, 85 in West-Bengal, 70 in Tamilnadu, 69 in Punjab, 61 in Andhra, 52 in Karnatak, and 50 in Maharastra. The per-capita expenditure on health services in Orissa in 1970-71 was only Rs. 4.59 as compared to Rs. 5.59 for all India. Leaving the case of U.P. and Bihar, the per capita expenditure in health services in Orissa is lower than those of all other major states of the country. Orissa has only 8 k.m. of surface roads per 100 sq. km. of area. By 1967, the total railway mileage in Orissa was 2115.97 km as against 4612.40 km in Andhra, 5201.41 km in Bihar, 5377.79 in Gujrat, 5283.79 km in Madhya Pradesh, 3068.49 km in West-Bengal and 3585.56 km in Tamilnadu. Orissa has only 11 km of railway mileage per 100 sq. km of area and its position is lowest in the country except Nagaland and Assam. The positions of rural electrification is still very bad. All the states of the Indian Union except Assam are ahead of Orissa in this respect and States like Haryana, Kerala and Tamilnadu have completed electrification of 100% of their villages whereas by March 1972 only 8.4% of the total villages in Orissa have been electrified. In the sphere of irrigation, Orissa has supplied irrigation facilities only to 15.21% of cultivated area which is only better than the average of Rajasthan which is 10.52%, but less than all other states. After 19 years of planning in 1969, Orissa was having only 1049 factories employing 71,000 persons whereas the corresponding figures of factories and employment for the States like Maharastra 9655 and 978000, Bihar 14704 and 202000, Tamilnadu 5757 and 411000 and West-Bengal 5619 and 823000 respectively. Figures stated above help to reinforce the argument that Orissa is backward industrially and the entire economy rests on agriculture.

In spite of the dependence on Agriculture, the progress reached by the state in that sphere is also very much disappointing. During 20 years of planning concentration of working force in agriculture between 1951 and 1971 has increased from 70% to 76% in Orissa compared to the all India average which has declined from

70% to 67 %. Orissa depends for 55 % of her income from agriculture whereas states like West Bengal, Bihar and Assam only depend to the extent of 29.98 %, 45.80 % and 44.70 % respectively. The disturbing fact is that, while the State's dependance on agriculture is increasing, the agricultural productivity is declining. Taking 1960-61 as the base, by 1970-71 it is noticed that the area under cultivation increased by 31.2%, agricultural product by 44.3%; but productivity by only 10 %. Though in general terms, agricultural productivity has increased, in terms of productivity of food grains it has actually declined by 2.3%.

Figures stated above show that Orissa has lagged behind most of other states of India in the matter of economic development. In between the period 1965-66 to 1972-73, natural calamities have dealt a shattering blow to the State's economy in terms of crop failures, loss of cattle population, houses and roads etc. whose money value has been estimated to be of the order of Rs. 628.94 crores; whereas the total developmental expenditure in Orissa during 23 years of planning taken together comes to only Rs. 563.45 crores. Thus it may be concluded that in net terms the development expenditure has been negative.

In a federal set-up having two tiers of Government and separation of powers, expansion and development of education, public health and medical facilities, agriculture, co-operation, irrigation and powers have become the responsibility of the State Governments. The Central Government is to assist them in these matters, but the irony of the fact is that central assistance to the states is not governed by economic criteria but by political equations. It has become a question of squeezing resources from the central exchequer depending on the strength and the political complexion of the State leadership.

In view of these facts, Orissa has to find out her own ways and means for bettering her lot through planning. She has to build up her own strategy of development, the means of economic growth to come up to the level of other states. Resources coming from the Centre are uncertain. She has to devise her own ways and means for it. Those who plan should bear in mind in clear-cut terms that the path of development in under-developed parts of the country as ours

is strewn with vicious circles and there is an urgent need for drastic, quick and revolutionary measures to break the vicious circle. There is necessity to evolve a suitable strategy for long-term development and to determine the choice of techniques to be used in different processes of production depending on the initial conditions of technical knowledge, capital formulation, population and resources capacity, etc.

Because of the baffling nature of the economic problems encountered by this State, a strategy of simultaneous complementary system of investment over a wide range of productive activities employing more labour and small amounts of capital is advocated in preference to a system of heavy capital investment in few selected fields. The arguments in support of a wide range of complementary system of investment are as follows :

The emphasis on heavy capital investment strategy adopted in the past has not delivered the desired "spread-effects" in the economy. Rather it has released a chain reaction of back-wash effects by increasing the bank balance of a few rich persons and has perpetuated inequality in the economy of the State.

The heavy capital investment industries taken up have not improved substantially the employment prospects in the State. It has not succeeded in withdrawing the under employed people from land, which is clear from the statistical figures of increasing dependence on agriculture during the period of planning in the State. There is a great need for providing more employment opportunities in the rural areas.

In an agriculture pre-dominated economy like Orissa where about 50% of the State income comes from agriculture, any improvement of the economy is not possible without having a dynamic change in agriculture first. There is need for a series of labour intensive projects to attract and absorb the under employed people and free the land for introduction of improved techniques of production.

Going for a heavy capital investment strategy by the State will make the state planning dependent on the wishes of the Centre.

When the State planning outlay exceeds the sum provided by the Centre, then the inevitability is a general prunning of the State plans to fit-in to the resource position, a process in which the special problems of a particular state is completely ignored. The State Government's proposal in the Fifth Plan for an expenditureof Rs. 216 crores on Basic Minimum Needs Programme is likely to be reduced to Rs. 157 crores by the Centre. The Centre while allocating resources is guided more by their own constraints than those of the States. So it is argued that the path of heavy capital investment should be given up and search should be made for starting industries requiring employment of more labour and less capital. The State Government's proposal for an investment of Rs. 4000 crores during the Fifth Plan period for achieving a growth of 5% in per capita income to come on a par with the National per capita average is not too much considered from the standpoint of backward characteristics of the economy. Coming to the finance part of it, the break up is 3/4 : 1/4 the ratio of shares of the Centre and the State, the plan appears to be too ambitious in the sense that the assistance to the tune of Rs. 3000 crores is not likely to be provided by the Centre. This apprehension has come to be true necessitating a complete overall change in the State Planning targets. Therefore the State's Planning has to find out its own strategy of depending less and less on the Central resources.

But the resources position of the State is alarming which can be well judged from the revenue and the debt liabilities and non-plan expenditures. The annual debt liability of the State by 1972-73 including the principal and interest is Rs. 33 crores 73 Lakhs. Of course the State Government gets back repayment of principal and interest from the financial intermediaries taking loans from it which comes to Rs. 15 crores 24 lakhs. Thus the net burden on the State exchequer is Rs. 18 crores 49 lakhs. The State's non-plan expenditure during this period is Rs. 70 crores 75 lakhs 75 thousands. Both these added together comes to the tune of Rs. 89 crores 24 lakhs 75 thousands against which the tax revenue of the State in 1972-73 is Rs. 40 crores 16 lakhs, The State's current tax revenue is insufficient to meet its recurring expenditure burden, not to speak of making provision for developmental expenditure.

Certain sections of the planners emphasise that economic viability of the State can be improved by the growth of mineral based industries. This policy may be fruittul in the long run, but the extractive industries immediately impose a heavier burden on the economy through its requirement of heavy capital investment and the need of foreign exchange. These industries require large capital for obtaining and processing mineral products for export. They require comparatively high ratio of capital to labour, the capital required is highly complicated machinery and the labour skilled. Such industries can only be started with the help of foreign capital. On the score of providing employment to unskilled labour force, the direct and indirect impact of mineral based industries is not significant. So the idea of lifting the economy through export promotion of natural resources is not very bright. Such a policy pay rich dividends when emphasis is placed on the growth and promotion of plantation industries like Tea, Coffee and Rubber where the scope of employing unskilled labour is vast. But the same benefits are not there for mineral based industries. So the hopes of planners in Orissa to lift the economy from its backwardness and to solve the problem of unemployment will not be realised in the short run. From the point of social justice, employment creation should be given top-most priority. Therefore, the emphasis should be on labour-intensive small-scale and cottage industries producing consumable goods which will not only provide employment, and give more income but also cater to the increasing demand for goods and services with relatively less capital investment and local technology.

The change in strategy is argued from the standpoint that the approach of heavy investment projects not only takes a long time for its implementation due to scarcity of resources, but also by the time they are completed, the cost of the projects increases by a number of times. Thus they impose a heavy real burden on the society. Orissa Government had planned to execute 13 medium irrigation projects at a total outlay of Rs. 12 crores 63 Lakhs 21 thousands during the Second Plan period. Due to paucity of resources only 8 out of the 13 projects were started in the Second Plan period. Even for these projects funds could not be provided in time,

construction could not be completed as per schedule and had to be carried over to the succeeding plans. Had these eight projects been completed as per schedule, the total cost of these would have been Rs. 9 crores 19 lakhs 92 thousands. But by the end of 1971-72, these projects were still to be completed even after an expenditure of Rs. 33 crores 7 lakhs 94 thousands i. e., there has been a four-fold increase in cost. So a State which has scarcity of resources and has to depend heavily on Central assistance for implementation of its plan should better go in for such projects which are not beyond its resources capacity. Of course in a federal set-up the state plans have to be dependent on the flow of Central resources. Though this is a fact, yet the other reality is that the Centre is also facing the scarcity of resources and its allocation of resources among states is not always guided solely by economic considerations, but on forces of political push and pull. Poor states like Orissa which want to come up a par with other advanced states of the country should change its strategy of planning.

Without heavy investment projects when states like Haryana and Madras have succeeded in providing extensive irrigation facilities the same can be done by Orissa. In the Orissa plan, rural electrification and lift irrigation should get top-most priority. Once rural electrification is taken up on war footing, this will save agriculture from the uncertainty of rainfall, improve productivity and help in starting small scale industries in rural areas where the unemployed people can be provided with work. This can work as a double-edged weapon in solving the problem of rural unemployment and improving agricultural productivity.

A change in the strategy of planning is also desirable from another point of view. Planning should have the aim of increasing incomes and taxable capacity of the people. The revenue of the State which was 69.20 crores in 1963-64 has increased to 163.57 crores in 1972-73, almost a 136% increase. This revenue can be broadly divided into Tax Revenue and Non-tax Revenue. The Tax Revenue contributed 41.5 % in 1963-64 and its share in 1971-72 is 48.6 % indicating almost an inelastic growth, because during a period of 10 years it has increased by 7 % only when the total revenue has increased by 136%. Though the contribution

of Tax revenue shows a rate of increase of 7.1%, the share of direct taxes has declined from 35.69% to 32.7% as a percentage of total tax revenue. Out of the direct taxes the share of Income Tax is 63%, Land Revenue 11%, Taxes on Vehicles 11.9%, Stamp Duties and Registrations 12%, Agricultural income tax 1% and Estate duty 1%.

The share of indirect taxes which was 64.3% of the total tax revenue in 1963-64 has increased to 67.3% in 1972-73, thus as a proportion the rate of increase is only 3%. But in real terms it has risen from 18.48 crores in 1963-64 to 53.6 crores in 1972-73, about a threefold increase. The important items of indirect taxes are Central Excise duties, State Excise duties, Sales Tax, Entertainment Taxes and Electricity duties. In 1972-73, as a proportion of total indirect tax revenue, the share of Central Excise is 42.45%, State Excise duties is 8.09%, Sales Tax is 39.26%, Electricity duty is 6.4% and Entertainment tax is 1.3%. Between 1963-64 and 1972-73, all of these have increased by more than 3 times in their yields.

From the above discussion, it will be very clear that any substantial increase in the share of tax-revenue either direct or indirect is out of question, leave alone the case of Agricultural income tax. As per the report of Dr. K. N. Raj, the Chairman of the Agricultural Taxation Inquiry Committee there is room for substantial increase in the rates of agricultural income tax. But in practice the state governments are not prepared for this measure because of many political considerations. Orissa cannot be an exception to this. So any search for increasing the revenue has to explore its possibility in raising the proportion of non-tax revenue.

In 1963-64, the total nontax revenue was 40.55 crores which rose to 84.03 crores in 1972-73, about a twofold increase. But the disquieting feature is that out of the total non-tax revenue the share of the statutory grants and other grants received from the Central Government constitute 53.5%. These items were 22.13 crores in 1963-64 and reached 45 crores in 1972-73. Among the items of non-tax revenue, substantial contributions are made by social development services 7.5%, Irrigation and electricity 2.74%, Forests 9.73%, Interests 18.14%, Transport and Communications (other

than roads) 4.23% and other non-tax revenue which includes earnings from public undertakings 3.28%. The last named one should have to be planned properly and expanded sufficiently to contribute still more to meet the growing requirements of finance of the State.

Coming to the expenditure side, the development expenditure has increased from 45.45 crores to 109.40 crores and non-development expenditure from 26.56 crores to 70.86 crores between 1963-64 to 1972-73. Compared to total expenditure, the share of non-developmental expenditure is about 40% of the total expenditure. This is due to the increase in the payment of dearness allowances to the employees of the state and, heavy expenditure on fighting natural calamities such as recurring floods, drought and cyclone. From the developmental expenditure also, the portion of expenditure spared for the promotion of social services has risen from 16.86 crores in 1963-64 to 51.55 crores in 1972-73, an increase of 206 %. Though this figure shows a great sacrifice on the part of the State, yet compared to all India averages the rate of growth of social services in this part of the country have been too inadequate (as pointed out earlier). It necessitates still more allotment of funds to come on par with other States in the country. So the developmental expenditure both for economic and social services will have an ever increasing tendency. So far as non-developmental expenditure is concerned, the persistent rise in prices will have a tendency to raise up the dearness bill of the State employees. There is also no hopeful relief from expenditures on account of drought, flood and cyclone as they have almost become a recurrent phenomena in the economy and life of the State.

As per existing scheme of revenue and expenditure, while revenue will have more or less a static tendency, the expenditure will have an increasing tendency.

In the past, i.e., between 1963-64 to 1972-73, the finances of the State have always been on the red, the deficits touching the tune of 23 crores in 1971-72. So in the strategy of future planning, positive effort has to be made to raise earnings from non-tax revenue as the tax revenue is inelastic. The State cannot afford to wait for long to get increased non-tax revenue from capital intensive

projects whose gestation period is very long. Therefore planning should be done for small labour-intensive schemes which will not only cause relatively less drain of resources from the state exchequer but will also work to bridge the gap of resources capacity at the earliest and shortest opportunity. The attention of the planners has been drawn in that direction, but a sustained and wholehearted effort is required to bring the programmes to success.

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PROBLEMS AND PROSPECTS OF NEW TECHNOLOGY OF RICE FOR INCREASED PRODUCTION IN ORISSA

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Rice is grown in almost all states of India with its cultivation mainly concentrated in North-Eastern and Southern India. In Orissa rice occupies nearly 70% of the gross cropped area of the State, of which 80% of rice is grown under rainfed condition. About 13% of the gross cropped area is devoted to the cultivation of pulses grown mostly under residual soil moisture conditions. Therefore, it is evident that the agril. economy of the State is completely dependent upon the success with which the crop is produced. The yield rate of traditional rice is very low to the extent that it hardly exceeds 1.5 tons per hectare. The poverty, unemployment and low rate of capital formation in this State are the direct outcome of the low productivity of this crop. However, with the introduction of HYV programme of rice, one was very much optimistic of a rapid economic growth and consequent removal of poverty of this state. But this has not been achieved to the extent desired so far. There are certain constraints which limit the extension of its cultivation particularly in the rainfed areas during kharif. If is therefore necessary to examine what are the prospects of substitution of local varieties by the new ones.

Objectives

The objectives of this paper are as follows :

(1) To compare the relative profitability of new technology of rice under different situations with that of the traditional ones.

(2) To study the employment opportunity created by the new technology of rice in agriculture, and

(3) To examine the prespects for further extension of this technology so that its real impact on the economy of the state can be effectively felt.

Methodology

The sampling technique adopted for the field investigations was based on stratified random sampling. Four villages from the alluvial plains of the Bhubaneswar area, which had assured irrigation system, were selected for this study. For the purpose of selection of ultimate unit (the holdings) the operational size of holdings of each individual household in each selected village was classified into four size groups, namely, size group I (below I hectare), Size Group II (1 to 2 hectares), Size Group III (2 to 3 hectares) and size group IV (above 3 hectares). In the final stage, 20 farms from each size group were randomly selected. Thus the total number of sample farms were 80. Data relating to the economics of high yielding varieties were collected by survey method from these 80 sample farms.

In order to examine the factors limiting the adoption of new technology on rice during kharif season a sub-sample consisting of 45 farms from the existing samples were selected on simple random basis. The study relates to the year 1971-72.

Estimation of cost per unit area

The cost estimates in this study include items such as cost of seed, manures, fertilizers and pesticides, human and bullock labour expenses, irrigation charges, depreciation of dead stock, interest on operating expenses. The inputed value of family labour and owned bullock labour have also been included in this cost.

Estimation of cost per unit output

Cost per unit output has been estimated just by subtracting the by-product value for the gross return and then dividing the remainder by the output of rice.

Estimation of net profit

Net profit in this study was the difference between gross return per unit area and the cost of production per unit area.

Economics of rice production :

Cost of cultivation of HYV and local varieties of rice

Table 1 compares the average cost of cultivation of high yielding and local varieties of rice. While the range of cost variation of local variety is Rs. 1115 to Rs. 1228, the corresponding estimate for kharif high yielding varieties is from Rs. 1668 to Rs. 1798. This estimate for summer high yielding varieties is Rs. 1714 to Rs. 1811. In other words, the difference in investment in high yielding varieties is significantly greater than that of local ones. Summer H. Y. V.s have a little larger investment. The investment level of H. Y. V.

TABLE 1

AVERAGE COST OF CULTIVATION OF HIGH YIELDING AND LOCAL VARIETIES OF RICE
(Cost per hectare in Rs.)

Size group	Local variety kharif	Long duration H Y V kharif	Long duration H Y V Summer	Precentage increase of (3) over (2)	Percentage Increase of (4) over (3)
1	2	3	4	5	6
I	1226	1688	1714	37.68	1.54
II	1210	1725	1754	42.56	1.68
III	1159	1749	1808	50.90	3.37
IV	1115	1798	1811	61.25	0.72

(summer) is higher as risk involved in growing this crop is relatively much less. The recorded increase in expenditure for unit area is largely due to the use of higher levels of fertilizers, plant protection chemicals and larger units of labour. While the cost per hectare

is negatively associated with farm sizes for traditional varieties, the association is positive in case of modern varieties. The reason is not far to seek. Small farmers cultivate traditional varieties by means of intensive labour use since they have enough labour resource in relation to their farm sizes and alternative source of employment is nonexistent. Further, since the traditional varieties are not fertilizer responsive, large farmers restrain from any additional investment on these inputs. But, the responsiveness of H. Y. V. to various cash inputs induces large farmers to invest more on them. The capital constraint of small farmers makes them use relatively less capital intensive methods for these varieties. Therefore, the earlier conclusion about investment and farm size is gradually going out and agriculture is tending to become capital intensive in character.

Productivity of H. Y. V. and local varieties of rice

Average productivity of high yielding and local varieties of rice is shown in Table 2. The estimated yield rates of traditional varieties come to about 2.2 to 2.7 tons per hectare. In case of new varieties the yield rates vary from 4.3 to 4.7 tons in kharif crop and 5.4 to 5.8 tons in summer crop. In other words, the new varieties grown in kharif give on an average 2 tons of additional

TABLE 2

AVERAGE PRODUCTIVITY OF HIGH YIELDING AND LOCAL VARIETIES OF RICE

(Yield per hectare expressed in tons)

Size group	Local varieties kharif	HYV Long duration kharif	HYV Long duration summer	Percentage increase in (3) over (2)	Percentage increase in (4) over (3)
1	2	3	4	5	6
I	2.7	4.3	5.4	59.25	25.58
II	2.5	4.5	5.6	80.00	24.44
III	2.4	4.6	5.8	91.56	26.08
IV	2.2	4.7	5.8	113.63	23.40

yield and those grown in summer, yield more or less 5 tons extra return over the old varieties of rice. The most significant contribution of these new genetic strains is that they have been successful in breaking the yield barriers of our traditional ones. Therefore, though the new strains of rice cost 50 to 60 per cent more, their return is more than 100 per cent than that of local varieties. The study further indicates that these new varieties perform relatively better during summer than during Kharif. This is ascribed to many reasons such as better soil and water management, relatively less incidence of pests and disease problems, fair weather, etc. The factors which lead to their popularity as a summer crop are examined later in this paper. Earlier investigation in India has revealed that farm size and productivity are negatively correlated, This is also true in this study as far as traditional varieties are concerned as evident from the table. Traditional varieties are not responsive to greater capital investment in the form of fertilizer and chemicals. With regard to high yielding varieties, however, this conclusion appears to be wrong. On the contrary, it is observed that large farmers are found to be more efficient. This is obviously due to capital intensive character of H. Y. V.s of rice.

Cost of production per ton of rice

The foregoing analysis has indicated clearly the cost and productivity per unit area of operation in case of modern and traditional varieties of rice with regard to different farm sizes and crop seasons. It is necessary to compare the nature of variation in the cost per unit of produce with higher investment and larger production rate or H. Y. V. and lower investment and smaller production rate of local varieties. Table 3 presents, the estimated cost of production per ton of rice for new and traditional varieties grown in different seasons in different farm sizes. The estimated cost of production per ton varies from Rs. 435 to Rs. 484 in case of traditional varieties of rice, whereas it varies from Rs. 371 to Rs. 382 for new varieties grown in kharif and Rs. 304 to Rs. 310 for new varieties grown in summer. The cost of production of H. Y. V. of rice per unit of output is significantly lower than that of old rice varieties despite their higher cost of cultivation per unit area. Lower cost per unit of production of new varieties of rice can be attributed to higher levels of productivity per hectare of land. These are examples

TABLE 3

COST OF PRODUCTION PER TON OF RICE
(Expressed in rupees)

Size group	Local varieties kharif	H Y V long duration kharif	H Y V long duration Summer
1	2	3	4
I	435	382	310
II	464	374	306
III	462	371	304
IV	484	374	305

where increased expenditure often increases productivity and lowers the unit cost of production.

Net return

Table 4 compares the net return per hectare of old and new rice varieties grown in different farm sizes. As the net profit per unit area is a residual of gross return and total cost per unit area of operation, the reasons for this differential result between old and

TABLE 4

NET RETURN PER HECTARE OF HYV AND LOCAL VARIETIES OF RICE

Size group	Net return expressed in Rs./hectare			Percentage	
	Local varieties kharif	HYV Long duration kharif	HYV Long duration summer	Increase of (3) over (2)	Percentage increase of (4) over (3)
1	2	3	4	5	6
I	737.71	1437.40	2132.01	94.84	48.32
II	650.63	1515.83	2254.28	132.97	48.71
III	607.43	1595.98	2317.18	162.74	45.18
IV	533.77	1611.22	2347.97	201.85	45.72

new varieties have already been given while analysing their cost and productivity. Negative association between net return per unit area and farm size is obvious for local varieties. But this tendency appears to be reverse in case of new varieties irrespective of seasons in which they are grown.

The net return from one hectare of local varieties is estimated to vary from Rs. 534 to Rs. 738. This difference is significantly wider in case of modern varieties which are grown in the same kharif season, the estimated range being Rs. 1437 to Rs. 1611 and for summer Rs. 2132 to Rs. 2348. The percentage increase in net profit of H. Y. Varieties grown in kharif over the local varieties is estimated to vary from 95 to 202. However, the most encouraging result is observed from H. Y. V.s grown during summer. The percentage increase of net profit of H. Y. V. grown during summer over the same varieties grown under kharif season is as high as 45 to 49. This partly explains the relative popularity of H. Y. V. during summer.

Labour utilization

Table 5 illustrates the impact of high yielding varieties of rice on labour utilization.

TABLE 5

HUMAN LABOUR UTILISATION OF HIGH YIELDING VARIETIES AND LOCAL VARIETIES OF RICE

Size group	Human labour utilisation/hectare (In Man-days)				
	Local varieties kharif	HYV long duration kharif	HYV long duration Summer	Percentage Increase of (3) over (2)	Percentage Increase of (4) over (3)
1	2	3	4	5	6
I	162	205	214	26.54	4.39
II	154	195	204	26.62	4.61
III	144	184	193	27.77	4.89
IV	134	170	182	26.86	7.05

The study shows that the utilization of labour per unit area of operation declines with the increase in size of farms. This is true for all the cases both local and high yielding varieties, kharif as well as summer. In other words, labour per unit area is thinly distributed when farm size increases. This is ascribed to the availability of larger labour force per unit area in smaller farms, and in the absence of other employment opportunities, they invest their labour in farms. While the utilization of labour per hectare of traditional rice cultivation comes to 134 to 162 mandays, the range of variation for HY kharif rice is 170 to 205 mandays and for HY summer rice it is 182 to 214 man-days. The percentage increase of labour utilization of HYV (kharif) over local varieties is 27 and of H. Y. V. summer over H. Y. V. kharif is 5 to 7. The high yielding varieties of rice absorb more labour through better soil and water management, better pest and disease management and cultural practices.

This high yielding varieties provide better opportunities for employment in agriculture than the local varieties.

Factor influencing the adoption of new technology of rice

As we know, there are many socio-economic factors which motivate the farmers to take up various kinds of innovations in rice production. At the same time, there are some other elements which create resistance in the minds of farmers towards any change. It is always, therefore, desirable to identify the characteristics of the adopters in order to accelerate the rate of transformation of rice technology.

Out of 100 farmers interviewed for this purpose, 74% are adopters and 26% are nonadopters. The following factors responsible for adoption of new technology emerge from Table 6.

(*a*) The influence of size of holding on adoption is statistically not significant. In other words, the farmers adopt new technology independent of their farm size. It can be said that new technology of rice is neutral to farm size.

(*b*) Land ownership right does bear significant relationship with the adoption of high yielding varieties of rice. In other

TABLE 6

RELATIONSHIP BETWEEN SOCIO-ECONOMIC FACTORS AND ADOPTION OF NEW RICE TECHNOLOGY

Factors	Frequency (N—100)	Adopters (No)	Non-adopters (No)	X^2 value
1	2	3	4	5
I. Size of holdings :				
a) Below 1 hectare	47	34	13	
b) 1 to 2 hectares	41	22	8	2.78 (NS)
c) More than 2 hectares	12	7	5	
II Land ownership :				
a) Fully owned	33	30	3	
b) Partly owned and partly leased in	52	42	10	34.82*
c) Fully leased in	15	2	13	
III Net disposable income (Rs.) :				
a) Less than 500	44	27	17	
b) 500-1000	39	30	9	9.77*
c) Above 1000	17	17	0	
IV Age of the farm owner				
a) Less than 30	12	7	5	
b) 30 to 40	47	34	13	2.78 (NS)
c) More than 40	41	33	8	
V Level of Education :				
a) Illiterate	22	10	12	
b) Primary School	64	50	14	15.67*
c) Post-Primary School	14	14	0	

NS=Not signification, *=Significant at 1% level.

words, the acceptance of new rice technology is dependent upon ownership of land. The land rent is very high and in most cases it goes up to the extent of 50% of the gross produce. Additional yield brought about by the tenant by adopting capital intensive new technology has to be shared by both landlord and tenant. This discourages the tenants to take to the cultivation of H. Y. V. of rice. It is therefore on owned land that new varieties are grown.

(*c*) The relationship between net disposable income of the family and the rate of adoption is found to be significant. In other words, in most cases we would expect that the higher the size of new disposable income, greater is the proportion of adoption of new technology on rice.

(*d*) Age of the farm owner does not influence the decision about the adoption of H. Y. V. of rice. This shows that age is not a barrier for the adoption of new rice technology.

(*e*) The x^2 test reveals that level of education is not independent of the adoption of H. Y. V. In other words, level of education tends to influence the farmers for acceptance of new technology.

Prospect

It is observed from the foregoing analysis that H. Y. V. grown during summer is more productive and remunerative besides providing greater degree of employment to labour.

The popularity of new varieties of rice in summer can be ascribed to their relatively greater profitability, relatively less incidence of pests and diseases, better water management, absence of differentiation of land types, etc. But the important constraint limiting their extension of cultivation is irrigation. The area irrigated in Orissa hardly exceeds 20% of the cultivated area. Therefore, possibilites have to be explored for extension of H. Y. V. in kharif season. The relative advantage of the kharif H.Y.V. over the local ones has been illustrated in our earlier analysis. Here again about 40% of the cultivated area are extremely low lands, and are not subject to easy drainage. They are particularly unsuitable for the new varieties. New strains are well adopted to medium and uplands, H. Y. V. (kharif) however are not very popular in these areas. In order to ascertain the factors hindering the adoption H. Y. V. during kharif, 45 farmers were asked to explain the reasons of its unpopularity. The reasons advanced by the farmers are presented in Table 7. It appears that the main factor for non adoption of new varieties is the uncertainty of rainfall. Since the variety requires more investment per hectare,

TABLE 7

PROBLEMS THAT CAUSE NON-ADOPTION OF HYV DURING KHARIF

Total samples taken—45

Causes for non-adoption of High yielding varieties	No. of farms reported	Percentage to total samples
1	2	3
1. Uncertainty of rainfall	45	100.00
2. High incidence of pest diseases.	44	97.77
3. More expensive	39	86.66
4. Leaching of fertilizers	29	64.44
5. Low yield of straw	25	55.55
6. Shortage of labour during peak time	13	28.88

the loss to the farmers increases in the event of the failure of monsoon. Next in order of importance comes higher incidence of pests and diseases. Expensive nature of the crop discourages about 87% of farmers for adoption of H. Y. V. of rice. Leaking of fertilizers to other plots is yet another factor. This cannot be prevented when there is heavy downpour. Further farmers need straw for thatching their houses and for feeding their cattle. As the H. Y. V. of rice are low yielder of straw, 56% of the sample farmers are apathetic to the adoption of H. Y. V. on this ground alone.

Monoculture in rice is very widespread. As such labour shortage is acutely felt in peak loads in kharif. H. Y. V. being more labour intensive, many do not favour the new strain for this reason.

Conclusion

The following conclusions emerge from this study :

(1) The high yielding variety both grown under kharif and summer (under irrigated condition) are more productive and profitable than the local ones, summer rice being more profitable

than kharif. It also generates higher levels of employment opportunity in agriculture.

(2) Since the H. Y. varieties are grown only under irrigated condition during summer, the scope of its extension lies with the larger extension of irrigation facilities.

(3) There are certain factors contributing to the unpopularity of H. Y. varieties grown during kharif. Based on this finding the prospect of its wider adoption involves evolving pest and disease resistant varieties, drought resistant varieties, provisions of institutional finance, better soil and water management, land reforms and properly educating the farmers about new technology on rice.

NEED FOR REGIONAL BALANCE IN THE ECONOMIC DEVELOPMENT OF ORISSA

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In the context of postwar discussions on planning and development a new discipline i.e. "Regional planning" has emerged. In this new discipline a 'region' is variously used from a tiny village in a small state as a nodal point of growth to a cluster of independent countries as a region. We are familiar with the United Nations' references to the ECAFE area as a region. This concept of region emphasizes three points :

(*a*) Space or area.
(*b*) Contiguity, and
(*c*) Common developmental problems.

The discussion on regional planning has relevance in the context of discussion on balanced development. What should be the developmental goal for the world or for a country ? Should it be balanced development for optimum growth or output maximisation given the problem and resources ? Currently the emphasis has been on planning for securing growth via balanced dispersal of investment, territorially as well as sectorally.

Economic development may not be an even process. The pace of growth may vary from one region to another. At any given time there will be some regions acting as 'centres or poles' of growth developing rapidly, leaving other regional pockets behind in the process of development. This relative lower development

of a region may give rise to economic and social tensions creating problems of law and order for the state. In the absence of adequate and effective regional policies and developmental programmes, the possibility of implementation and realisation of objectives may be decreased and the overall gains from national developments will be reduced. So the nation will suffer. True geographical factors like diversity of climates and natural resource endowments allow plenty of scope for concentrated growth in particular regions. But regional balance has social and economic compulsions in view of attainment of better employment of labour force, opening greater equality of opportunity and securing even increase in standards of living as well as for stabilising the feelings of regional pride and identity. Of course, the aim of regional development should be one of securing maximum efficiency in the utilisation of available resources rather than the adjustments of rival claims of different areas to achieve their own ambitions.

This need for balanced development has been admitted in the Third Plan for the purpose of avoiding "further concentration of individual activity where considerable development has already taken place or has been planned". This has been corroborated in the Fourth Plan as it says that, "One of the principal aims of planned economic and social development of this country is to promote a balanced development of different regions through the provision of planned benefits to the less developed areas." The emphasis has therefore been shifted to regional planning as a complementary to national planning. By locating targets of development, regional planning can specify the government action more clearly. They are not, however, antagonistic but interdependent. That is why Prof. S. D. Mansholt has aptly remarked that "Economic development and social improvement also have regional aspect which cannot be judged adequately in the dimensions of the central planning. I personally feel that mere aggregative picture of the economy as a whole does not reveal complex or of different regional complexes."

The need for bridging regional disparities in Orissa becomes evident when the extent of regional imbalance in it is

analysed. The intra-regional disparities here are due to historical reasons, but complicated by certain geographical situations. Part of the state has to entirely depend upon rainfall conditions which vary from heavy to lean and from sporadic to irregular. In 1972 out of the thirteen districts in Orissa, three districts viz, Kalahandi, Keonjhar and Koraput did not have any major and medium irrigation projects. Out of the other ten districts, irrigation facilities were concentrated in three districts viz. Cuttack (34.53%), Sambalpur (21.14%) and Puri (14.79%). The rest of the 30% of irrigation is shared by the other seven districts.

At present only about 16% of the cultivated land receives the benefit of irrigation. The failure of monsoons at frequent intervals, aggravates the situation in the rest of the regions. Assuming that drought-prone area is the one where drought conditions prevailed for five years or more during the last seven years, it is noticed that as many as 242 C. D. Blocks out of 314 are drought-prone. The drinking water facilities are also scarce in some of these regions. In places like Padampur, Boden, Sinapani and Himgiri, the water level is low and dug-wells have not succeeded. Due to inadequate ground-water survey, it has not been possible to tap drinking water sources. With neither irrigation facilities nor even with drinking water, the agricultural activities are weak and the general stamina of the people is poor.

For the districts of Koraput, Keonjhar, Kalahandi and Mayurbhanj the percentages of gross irrigated area to gross area sown in 1970-71 were 3.7, 4.8, 5.7 and 7.8 respectively whereas the comparable state figure was 18.4% and those for Cuttack (42.6%), Ganjam (25%) and Sambalpur (24.9%) were much higher.

It is unfortunate that our previous plans did not help in the removal of the regional imbalances. This can be seen from the analysis, given below of districtwise percentage of cumulative potential achieved by the end of the Fourth Plan out of the total irrigable area in each district under major and medium irrigation schemes.

Name of the district	Percentage of cumulative potential by end of Fourth Plan out of the total irrigation potential under major and medium irrigation schemes
Balasore	52.00
Bolangir	18.90
Cuttack	56.00
Dhenkanal	1.60
Ganjam	27.40
Koraput	0.99
Kalahandi	2.80
Keonjhar	—
Mayurbhanj	1.50
Puri	30.60
Phulbani	14 50
Sambalpur	36.70
Sundargarh	2.40

From the above Table, districts lagging behind in respect of the irrigation development can be identified as Dhenkanal, Koraput, Kalahandi, Keonjhar, Mayurbhanj and Sundargarh.

Regional disparities also exist amongst different districts of the state although a precise qualification of such differences has not yet been done. There are, however, differences in the availability of various infra-structure facilities which promote economic growth. For example, in a district like Koraput which has a large tribal population, there are 3 6 kms. of surfaced roads per 100 sq. kms. of area as against the state average of 6 kms and the figure of 12.2 kms. for the Ganjam district.

Apart from these deficiencies in the infra-structure facilities, there are areas in the state which suffer from various demographic and physical constraints. The districts of Koraput, Keonjhar. Mayurbhanj and Phulbani have a large percentage of their population under the category of Scheduled Tribes. When we consider the existence of Scheduled castes and other backward classes the percentage becomes larger for these districts. The areas inhabited

by tribal and other backward population need to be developed on priority basis to bring them up to the level of other areas in the state. Similarly there are specific areas which suffer from natural calamities like cyclone, flood and drought repeatedly over the years. These areas have special problems and concentrated attention for their development and for the welfare of the people inhabiting in those areas.

Since the percentage of literacy of the state is about 26 %, the majority of the people deserve special programme under education. To this a wide disparity is also added. Among the 13 districts of the state, there is great variation in the field of education i.e. in the number of schools of different categories, the population served per school, the percentage of enrolment of both boys and girls in the different age groups and the teacher-pupil ratio. A number of districts have conspicuously lagged behind the state average.

There is disparity in the population served by the different categories of schools among the districts. A primary school in Puri district serves a population of 968 whereas in Phulbani it serves a population of 480.

Similarly, in the matter of coverage of M. E. and H. E. Schools, Koraput is the most backward, the coverage being 13.4 and 37 thousands per M. E. school and H. E. school respectively,

The districts of Kalahandi, Phulbani, Ganjam and Bolangir are backward in the matter of coverage in High schools. It is noticed that in the district of Balasore, the coverage by M. E. Schools is about 3,300 per school.

The districts of Koraput, Mayurbhanj, Kalahandi, Bolangir and Keonjhar are poor in the matter of enrolment in Primary schools. In the district of Balasore the enrolment in the Primary stage is reported to be 93 %. In the backward areas, the low average is due to socio-economic factors which do not permit a child to devote full-time attendance at schools which are situated at a long distance from his house.

From the above analysis a pattern of imbalances has emerged. This pattern indicates that the areas predominantly inhabited by

the scheduled caste and scheduled tribe population are also the areas where the literacy percentages are lower. This is due to a variety of reasons such as habitation in inaccessible hilly tracts, abject poverty, special prejudices, instruction through non-tribal medium, non-availability of local teachers and general lack of appreciation of the values of education. Normally their enrolment at the primary and middle stages, at least, should have been in proportion to their total population, but this is not the case. During the Fourth Plan, there was no well thought and premeditated scheme tailored to the needs of this section.

So far electrification is concerned, there exists imbalance in rural electrification. Only 5 districts of Orissa viz. Cuttack, Dhenkanal, Ganjam, Puri and Sundargarh will have 40 % of their population covered under electrification by the end of the Fourth Plan period whereas other districts will not have this facility by the end of 1973-74.

Out of the 22 million population of Orissa, 38 % constitute the scheduled tribes and scheduled castes. The scheduled tribes are mostly concentrated in Mayurbhanj, Phulbani, Koraput, Keonjhar and Sundargarh districts. A survey of the state Tribal Research Bureau during 1967-68 revealed that the percapita annual income of some of the backward tribals is as low as Rs. 158 at current prices whereas the percapita income of Orissa in the same year was Rs. 433.76. It may be the result of underemployment of productive factors or of complete negligence of certain regions. The typical underdeveloped regions with little or no secondary sectors, have an extremely high proportion of active population engaged in agriculture. In such cases the problem can easily be diagnosed : the root cause for such low incomes is that a major portion of manpower, if not all, is engaged in the primary sector resulting in low productivity. Hence per capita income tends to be low, underemployment rather than unemployment tends to be the problem.

These regional variations are supported by the nature of economic activity pursued in those regions. It is a clear evidence of the injustice done to those districts which have been allowed to remain in a state of retarded development.

The Approach paper for the Fifth Plan of Orissa envisages the following two important objectives in this connection.

(*i*) To improve considerably the status of the relatively backward tribal population in the state whose conditions still remain at the lowest level.

(*ii*) To remove the imbalances in the development of various regions within the state.

To materialise these objectives, attention should be given to

(*i*) Areawise resource development.

(*ii*) There should be a dynamic approach to the question of regional development and regional planning should aim at maximum development of the local human and natural resources available in the area.

(*iii*) Some social and economic overheads must be made available to all the regions—the more backward ones getting a better priority over the more advanced.

(*iv*) There are certain problem areas which should receive a fair enough priority.

Similarly for balanced economic development, regional planning has to take note of advances in other regions. It does not mean planning of the region in isolation. The task of synthesis must go on simultaneously—synthesis between urban and rural areas; between agricultural and industrial regions; between areas endowed with rich resources and less or no resources; between normal areas and problem areas. This synthesis may take the form of pooling of human resources or material resources at the national level. It may also take the form of distribution of benefits through direct and indirect assistance. This will involve coordination. It will mean pooling of administrative, managerial and executive talent. It will mean a little thinning of the hedges of inter-district barriers. It will mean

greater use of State government's power to legislate in the field of inter-district legislations—fiscal, administrative and substantive. It will mean greater reliance on inter-district interdependence. Without this interdependence, coordination and synthesis no regional planning can succeed.

Hence one of our long-term aims definitely is to have a pattern of balanced regional development which means the overall development of an area rather than locating few projects in the same area. It also assumes that for production and consumption of different commodities, different areas would serve as different economic units. It may be a village, block, district or region. Each unit will maintain inter-relationship among themselves by exchange of surplus commodities through Inter-regional trade. This will be an indication of regional specialisation of production due to the immobility of capital investment and specificity of factor-endowment. But this could be assessed only if the relationship over time and space is maintained among different units, districts and social and economic groups. Nevertheless, to maintain the man-land ratio with an allowance for growing population, the rural areas must have a programme of intensive agricultural development, and must be thought of as a series of interchanges between agriculture and industry with rising intensity, industry supplying the basic needs of material inputs for agriculture, agriculture feeding back its surpluses for the development of industry and industry supplying back the various consumer goods on which agricultural surpluses can be spent.

Since the aim of planning is not only to increase per capita national income but also to reduce regional disparities in income, it is necessary to give special attention to low income districts in allocating development projects. Otherwise it is likely that these may continue to be low income and backward districts even if substantial progress is achieved in stepping up the per capita income for the state as a whole. What type of development projects should be located in these districts is a question which cannot be decided without making a factual study of the resources available for economic development in each of these districts. The development projects in some cases would be agricultural, other

districts may be suitable for industrial development while in some other cases the optional solution may be to facilitate migration. In any case it is necessary and also desirable to make a detailed study of these districts for gauging their potential for economic development and to recommend the types of development projects which should be located in these areas.

If balanced growth in regional income is to be achieved, along with increased per capita income for the country as a whole, there is a need to give consideration to less developed districts in allocating development projects. It is desirable to pay specific attention to backward districts. In the advanced districts where the number of educational institutions is more, low average strength would indicate that there has been proliferation of institutions and under-utilisation of capacities. In such pockets, the aim should be to utilise the existing facilities up to the optimum level before opening new institutions. In the backward areas, the low average is due to socio-economic factors which do not permit a child to devote full time attendance at schools which are situated at a long distance from his house. In such areas opening of new institutions is necessary.

An additional cause of disparities in regional development was identified as being the imposition of a common pattern of development throughout the country ignoring the fact that a region might have potentialities for an entirely different pattern of growth. The result has often been non-realisation of regional potentialities. Balanced growth aims a thorough consideration of this.

In Orissa, as is indicated above, there are a large number of sparsely populated villages which are widely dispersed. Most of these villages are in tribal areas which have remained backward over the years. It is absolutely necessary to provide links to clusters of villages in these hilly areas.

So far the tribal population is concerned it has essentially to be a programme of area development keeping the economics of their livelihood in view. A large section of the tribals will be directly benefited by the soil conservation measures taken

up by the department. This will provide them with employment and at the same time ensure an Improvement in their agriculture by measures like gully plugging, contour bunding, terracing, plantations, etc. In the tribal areas, it is also essential to popularise cold-resistant varieties of paddy and also early maturing varieties of high yielding paddy to be grown under rainfed conditions. It is also required to increase the coverage of jowar, bajra, ragi and maize in which particularly the tribals show interest. In all these crops better yielding varieties should be evolved and demonstration should be laid out in the tribal areas with 100 % subsidy to induce them to arrange their cropping pattern.

Demographically Orissa occupies a special position in the country. Its tribal population is dipersed in tiny villages in the extensive hilly tracts of the Eastern Ghats with the population of the villages varying from 20 to 250. The preponderance of hills and dense forests in the Eastern Ghats and the network of deltaic rivers in the coastal belt present a very difficult terrain which hampers the flow of health facilities to the interior. This should be taken into consideration so as to bring about a balanced growth in Orissa. Low level of literacy and the high concentration of population below poverty line are the other important features which have to be taken into account in farming sectoral plan on health.

To protect the tribals from exploitation by various money-lenders and unscrupulous private traders, the Orissa State Tribal Development Cooperative Society has to be suitably strengthened to expand its coverage and activity. In order to divert the Podu cultivators to settle down to better agricultural practices, a number of employment oriented schemes such as plantation of trees and processing of the forest produce are also to be provided, both as a transitory measure as also for the long term objective.

There is an uneasy feeling that perhaps, all that could be done is not being done to promote the regional principle in development. Therefore, it is suggested that time has come

when there must be an objective study made of the economic development of the country from the point of view of regional balance. A great deal might have been done by way of promoting regional development which is not adequately known to the people of the less well-off regions ; it is also possible that something more could be done consistently with the national interest. It is desirable that the measures that have to be undertaken at all levels when the state moves forward in its economic growth, all its component units also shares equitably and economically in the process.

Three principles can be suggested in this connection :

(1) There must be a national minimum of levels of living and economic opportunities that must be available to all the regions of the state.

(2) Development must be equitable between the less well-off and the better-off regions and at the same time consistent with a nationally high rate of growth.

(3) There must be a complete freedom of internal movement and all regions should welcome not only in law but also in the spirit.

It is obvious that any policy aimed at securing regional justice in planning presupposes a spirit of give and take on the part of the different regions and cannot succeed without proper communication and unifying contact between the people of India.

INDIA'S EXPORT PERFORMANCE IN THE CONTEXT OF DEVELOPMENTAL PLANNING

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Export is an important determinant of economic growth of a country. Developing economies are generally dependent on foreign aid as one of the important means to pay for mounting imports for development plans and projects. Consequently their foreign obligation increases which can be minimised and eventually eliminated by the expansion of exports. The rate of economic growth of India is dependent to a large extent on the expansion of exports which earn valuable foreign exchange and strengthen the sinews of economic development. To finance India's heavy imports for the development plans, exports can be regarded as the most suitable means because it does not create any foreign exchange liabilities for future. Further need for sustained and continuous rise in exports is increasingly felt by limited scope of foreign aid and growing maturiry of repayment obligation, increasing interest payments on foreign loans and expanding remittance by foreign private enterprises. The question of expansion of exports has assumed enormous importance in the context of the goal of zero net foreign aid by the end of the Fifth plan.

Indian exports during the first two Plans showed near-stagnancy. This was due to lack of export promotion measures. During the Third Plan this tendency was reversed when exports increased by 20 percent over those in the First and Second Plans. The annual average of exports of First Plan period was worth Rs. 605.86 crores and the annual average exports of Second Plan was Rs. 609.25 crores.

TABLE 1

INDIA'S BALANCE OF TRADE
(Value in Rs. Crores)

Year	Gross national product (at 60-61 prices)	Imports	Exports	Balance of Trade	Exports as percent of Imports	Exports as percent of G N P
Annual average of First plan	..	723.40	605.86	— 117.54	83.7	..
Annual average of second plan	..	976.45	609.25	— 376.20	62.4	..
Third plan 1961-62	14547	1107.18 (1719.97)	679.69 (1040.81)	— 427.44 (— 679.16)	61.4	7.1
1962-63	14930	1135.57 (1782.76)	713.61 (1079.79)	— 421.96 (— 702 97)	62.8	7.2
1963-64	15758	1222.85 (1926 72)	793.24 (1249.83)	— 429 61 (— 676.89)	64.9	7.9
1964-65	16900	1349.03 (2125.53)	816.30 (1286.16)	— 532.73 (— 839.37)	60.5	7.6
1965-66	16023	1394.05 (2219.26)	809.55 (1269.37)	— 584 50 (— 949 89)	58.1	7 9
Annual average of Third plan	..	1241.73	762.48	— 479.25	61.5	..
1966-67	16307	2078.35	1152.88	— 925.47	55.5	7.1
1967-68	17777	1974.27	1192.80	— 781.47	60.0	6.7
1968-69	18225	1908.63	1357.87	— 550.76	71.1	7.5
1969-70	19573	1582.10	1413.28	— 168.82	89.3	7.4
1970-71	..	1625.17	1335.16	— 290.01	82.0	..
1971-12	..	1535.16	1606.61	+ 71 45	104.6	..

Source : Imports and Exports (a) Commerce, March 1, 1969 P. 6
(b) Facts and Figures, November, 1972 P. 21
National Income — Economic Survey, 1972
Government of India

Figures in brackets are shown in post-devaluation terms.

Table 1 reveals that after the year 1961-62 value of exports has increased continuously though it has decreased by Rs. 16.79 crores in the year 1965-66 (in post-devaluation term) and in the year 1970-71 by a larger amount of Rs. 78.12 crores. And, it was for the first time after independence, that value of exports surpassed the value of imports in the year 1971-72. In the year under reference the value of import was at Rs. 1535.16 crores whereas the value of exports was Rs. 1606.61 crores which was 104.6 percent of total imports in the year.

With imports always running ahead of exports, the country has always experienced adverse balance of trade in varying degrees. Graph I reveals that imports reflected a falling secular trend whereas exports witnessed a rising trend. The slope of the trend lines for imports is smaller than the slope of the trend line for exports[1] which reveals that the rate of fall of Indian imports is smaller than the rate of growth of Indian exports over a decade. In the graph the actual lines of imports and exports intersect much before reaching the year 1971-72. But the trend lines do not intersect even in the year 1971-72. It reveals that the excess of the value of exports over imports in the year under reference is not of permanent nature, rather it is temporary and accidental.

In the Fourth Five Year Plan, exports were projected to grow from Rs. 1358 crores in 1968-69 to Rs. 1900 crores in 1973-74. This works out to an average annual rate of growth of 7%. The actual increase was 4.1 percent in 1969-70, 8.6 percent in 1970-71 and 4.6 percent in 1971-72. A change in the method of compiling export statistics effective from first November, 1970 seems to have over-estimated the rate of growth of exports in 1970-71 and understated it in 1971-72. There was sharp rise of 22.1 percent in exports in 1972-73.[2] Exports rose to Rs. 1960.9 crores in 1972-73.[3] A part of

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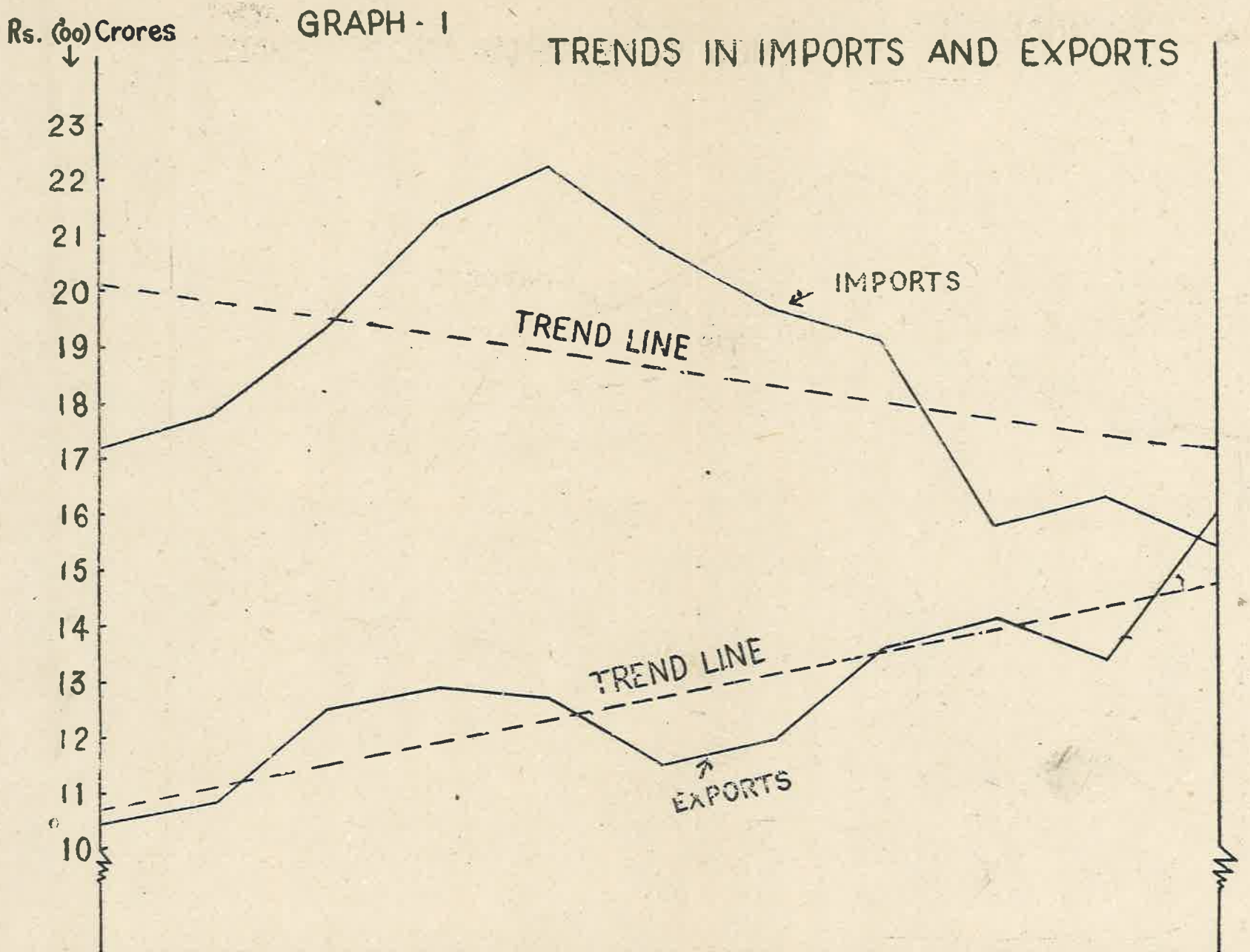
1. The least square estimators are :
   $Y_E = 1271.14 + 40.07\ X$
   $Y_I = 1861.63 - 30.61\ X$
   Where Y_E is estimated exports, Y_I is estimated imports and X is the deviation of year from the average year.
2. Draft Fifth Five Year Plan 1974-79 Vol. I p. 73
3. Ibid, p. 71

GRAPH - 1


Rs. (00) Crores
TRENDS IN IMPORTS AND EXPORTS
23
22
21
20
19
18
17
16
15
14
13
12
11
10
IMPORTS
TREND LINE
TREND LINE
EXPORTS

these exports were of an exceptional type such as for instance, were the grant financed exports as also the food grains exports to Bangladesh. In the absence of such exports in 1973-74 even though other exports are likely to show sizeable rise the total has been estimated to be higher by 2 percent as compared to 1972-73. The exports in 1973-74 are likely to be order of Rs. 2000 crores. Over the Fourth Plan period as a whole the trend rate of growth works out to 7.7 percent per annum. This is a good performance especially when judged against the unusual strains experienced by the economy on account of the influx of millions of refugees from Bangladesh, Indo-Pakistan hostilities, short supply of metals and power, adverse effect of severe droughts and floods, international currency uncertainties and respective trade policies pursued by the developed countries. On the import front there was once again a decline in 1972-73 to Rs. 1797 crores.[4] In 1973-74 the value of imports may increase due to high price of crude oil.

The country has diversified the composition and direction of its exports. While traditional items such as jute manufacturing, tea, cotton, textiles, tobacco manufactures, manganese ore vege table oils (non-essentials) and spices continue to dominate the country's export schedule, some non-traditional items such as engineering goods, iron and steel, chemical and allied products, clothings etc. have been added to the export list. Moreover, the country has experienced a fall of traditional items as percent of total value of exports and rise of non-traditional items as percent of total value of exports. Specially the export performance of engineering goods has been appreciable. Table 2 reveals that the exports of traditional items accounted for nearly 79 percent in the year 1953-54 whereas non-traditional items accounted for 21 percent of total exports. In the year, 1968 traditional items experienced a fall and it accounted for 58 percent whereas non-traditional items increased to 42 percent of total exports.

Although India's exports to the East European countries have grown at a very fast rate particularly during the Third Plan, stagnancy during the succeeding years is a matter of great concern. Hence

4. Ibid, p. 73

TABLE 2

COMPOSITION OF INDIA'S EXPORTS

(Percent of total exports)

Year	Traditional Items	Non-Traditional Items	Total
1953-54	79	21	100
1960-61	72	28	100
1967-68	62	38	100
January to August, 1967	63	37	100
January to August, 1968	58	42	100

Source: Review of India's Foreign Trade, Ministry of Commerce, New Delhi, November, 1968 (Mimeographed). p. 5

afterwards increase in India's exports has been confined to the region of America and West Europe.

During the Second Plan, the heavy investment in creating the capital infra-structure and laying the foundations for a sustained growth of economy led to a heavy draft on the country's foreign exchange resources. Third Plan witnessed significant growth of exports. But consequent on the devaluation of the Indian rupee, exports suffered a serious set-back.

TABLE 3

EXPORTS OF ENGINEERING GOODS

(Rs. in crores)

Year	Exports
1950-51	4. 3
1955-56	7. 1
1960-61	13. 4
1965-66	31. 2
1968-69	95. 0
1970-71	130.41
1971-72	118.36

Source: 1950-51 to 1965-66, Commerce March 1,1969. p. 8
From 1968-69 to 1971-72, Facts and Figures p, 21.

Engineering goods performed a brave target during plans. It increased more than 30 times over two decades from 1950-51 to 1970-71. Table 3 reveals that exports of Engineering goods increased from a total value of Rs. 4.3 crores in the beginning of First plan to Rs. 31.2 crores, by the end of Third Plan and it reached to Rs. 13.41 crores in the year 1970-71. Quite a few new products have been successfully introduced into the export market in recent times. These new products are thermal boilers, instrumentation, panel for thermal power station, surgical instruments, transmission line towers, cranes, telephone exchange equipments, helicopter body structure and teleprinters.

The export performance in 1971-72 is to be viewed against various constraints that were faced by the Engineering exporters of India such as (*i*) shortage of iron and steel, (*ii*) port strike in the U. S. A. and U.K., (*iii*) international monetary crisis subsequent to Dollar devaluation, (*iv*) deadlock to exporters to Arab Republic, Egypt and Sudan due to depletion of funds under mutual trade agreement, (*v*) restriction on exports to Yugoslavia for squaring off the rupee trade balance by January, 1973 since when the payment between the two countries has been in the free foreign exchange, (*vi*) the Indo-Pak conflicts in the second half of 1971 and the first half of 1972, and (*vii*) cost price Inflation. due to high cost of raw materials and low labour productivity.

Jute manufacture is a major item of our exports. It accounts for about 20 percent of India's total export earnings though there has been some fall in its percent of total exports. Exports of jute manufacture increased by about Rs. 75 crores during 1971-72 mainly because of a virtual stoppage of supplies from Bangladesh.

Confronted with a multitude of problems jute industry is in doldrums. Rising cost of production and falling international prices have eroded the capacity of the industry to face competition from substitutes and from Pakistan and Bangladesh. So far as competition from substitutes is concerned, the progress of science and technology in industrialised countries has led to the development of many alternative methods materials and practices for handling, purchasing, transporting and storing commodities which traditionally

depended on Jute manufactures, synthetic materials like polypropylene are giving tough competition not only to the market for sacking but also to jute carpet.

Tea is India's second important export goods and foreign exchange earner. Tea has shown near stagnancy in exports throughout. There has been fall in exports of tea in recent times. In 1967-68 the value of the exports of tea was Rs. 180.10 crores.[5] In 1970-71 it reached Rs. 148.25 crores and in 1971-72 it increased by nearly Rs. 8 crores.[6]

As the demand for tea is highly inelastic to price variations, the decline in price resulting from intensified competition among the exporting countries resulted in a sizeable loss of export realisations from this commodity which could have been avoided through non-price competitive measures. The problems of tea arise from the domestic policy due to multifarious taxes and export duty and operational environment provided by each country.

Indian export performance over a decade reflects its course of economic development. Upward trend of exports along with downward trend of imports and the diversification of exports from traditional to non-traditional items like engineering goods are the evidence of India's achievement of infrastructure economy and its economic transformation from agricultural sector to industrial sector. Performance of engineering goods exports indicated that India has completed the primary stage of Industrial development. The problem now is to maintain the established industries, to run them to full capacity to ensure economic production and to sell the products manufactured on a competitive basis in the world market. This is the stage when foreign trade becomes a crucial factor. Economic development does not mean a reduction in imports but a change in the quality of imports and an increase in exports.

Although there has been increase in the exports of Engineering goods its share is still less as compared to its total production.

5. Commerce, March 1, 1969 p. 8
6. Facts and Figures, November, 1972. p. 23

TABLE 4

RELATION OF EXPORTS OF JUTE, TEA, IRON ORE AND ENGINEERING GOODS TO PRODUCTION

(Exports as a percentage of total production)

Year	Jute	Tea	Iron Ore	Engineering goods
1961	76.2	58.2	—	1.6
1965	69.5	54.4	47.7	1.5
1967	66.5	56.2	52.9	1.9

Source : Commerce, March 1, 1969 p. 8.
Actual date of Engineering goods relate to the financial years.

Table 4 reveals that in the year 1965 percentage share of exports to total production of engineering goods was 1.5 whereas the share of exports of Jute textiles was 69.5, share of tea was 54.4 and the share of exports of iron ore was 47.7 In the year 1967 percentage share of Engineering goods was 1.9 to its total production, that jute textiles was 66.5, tea was 56.2 and of iron ore was 52.9. This trend clearly reveals that major parts of engineering goods are consumed at home and there is still less exportable surplus. Hence, India's industrial sector needs further development and production up to sufficient capacity.

Indian exports as percentage of national income account for nearly 7 over a decade which is certainly not sufficient for a developing economy like india. In Ceylon percentage share of exports to its national income is nearly 18, in Japan it is 11.[7] Table 1 reveals that India's national income has increased continuously from Rs. 14547 crores in 1961-62 to Rs. 19573 crores in 1969-70 (at 60-61 prices). But the percentage share of exports to national income remained at nearly 7. This is an evidence of unsatisfactory performance in the rate of growth of exports. Over the period 1960-67 compound annual rate of growth of exports of India was 2.8. Whereas this rate for U. S. A., Japan and Brazil was 6.3, 4.5 and 3.9 respectively.[8]

7. International Financial Statistics, February 1972 (data tabulated by the author)
8. International Financial Statistics, January, 1969 I. M. F. Washington pp. 34-39 (quoted in Commerce March 1, 1969 p. 80)

The above evidences suggest that there is further need for export promotion in India. But recent trends in Indian Economy reveal two things.

(*i*) There is supply inelasticity of agricultural products and its allied products due to various constraints which are related to domestic and technological factors.

(*ii*) Domestic demand tor traditional items is increasing rapidly due to increase in population, urbanisation, industrial development, change in culture and diet habits.

Hence there is an urgent need to shift Indian exports from traditional items to non-traditional items, specially the items like engineering goods, chemical and allied products etc. which have vast scope for better performance in future. For promotion of engineering goods exports during the fifth plan the Government of India and export promotion agencies should work together and see that the difficulties are removed. India has to place its exporters on par with their counterparts in the developed countries in respect of facilities available to them.

Some of the directions in respect of which due attention need be given are indicated below :

(*i*) Stability in export policy and assistance—need for quick disbursement of benefits.

(*ii*) Supply of raw materials—indigenous and imported in required sizes, quality and in time at international price.

(*iii*) Shipping space—competitive freight rates and modernisation of major parts.

(*iv*) Credit facilities and financial accommodation at concessional rates of interest.

(*v*) Creation of image in overseas markets by way of propaganda and publicity through advertisements, participation in trade fairs and exhibitions and show-room, fulfilment of contracts in time.

(*vi*) Intensification of marketing efforts—detailed market research, product development, appointment of agents, warehousing facilities, etc.

(*vii*) Efforts to bring down the cost and price level.

To maintain the exports of jute manufactures modernisation of jute industries is essential with higher production efficiency resulting in lower cost of production. To maintain an effective demand for the jute goods in world market a strict quality control should be observed.

To enable Indian Tea to fight fierce price competition export duty and other taxes both centre and the states should be minimised. Secondly, the efficiency of tea bushes can be maximised by more scientific picking and proning. Further, there is need for good understanding, quick agreement between India and Ceylon on the question of tea marketing so that the two countries can act in union and desist from price cutting and other unhealthy practices in the international markets.

PAPER INDUSTRY OVER THE LAST TWO DECADES

SRI D. TRIPATHY, I. E S.

The paper and pulp industry has made spectacular progress despite various hurdles and handicaps. Between 1950 and 1970 there was nearly a seven-fold increase in the production of paper and paper board. In order to find out the trend, a semi log trend is fitted to the production data (Table 1). During the fifties the annual growth rate was 11.4 per cent and between 1960 and 1970 the growth rate slowed down to 8.3 per cent. The production of paper and paper board is continuously on the increase during the twenty years under study. As of early 1970, 57 units were functioning in the industry paper and paper board only with an installed capacity of 768,000 tons and production totalling 753,000 tons. As the industry is highly capital intensive in nature a large proportion of the installed capacity belongs to the larger units. Twelve out of the 57 units accounted for 7.8 per cent of the total installed capacity.[1]

The paper industry is fairly well spread all over the country with a slight concentration in West Bengal and Orissa. The present production of paper and board caters to most of the requirements of the country in respect of common grades of writing, printing, wrapping and packing papers and paper board. The production of different main varieties of paper are given in Table 2. It shows that production of all varieties of paper is on the increase except for the special varieties which reveals slight variations between 1958 and 1959 and again from 1963 to 1966. Though there is nearly three-fold increase in the production of newsprint between 1956 and 1969, the rate of growth is lower than the growth in the production of paper. As the demand for news-print has been increasing very rapidly with the growth of literacy and economic progress, and the supply is falling short of demand, India is importing nearly 75 per cent of her total requirements.

There remains a wide gap between the domestic demand of different varieties of paper, articles made of pulp paper or paper

1. NCAER, Paper Industry, Problems and Prospects, p. 3

board and the domestic supply of these goods. This gap is bridged through imports. It has been found that in the year 1955-56 the import of paper and paper board was nearly 27 % of the total supply. Since then imports as a percentage of total supply is declining very rapidly.[2] In the year 1955-56, the import of news-print as percentage of total supply was nearly 95 %. As the domestic output did not make much headway larger imports have to be resorted to. However, the dependence on imports of newsprint has declined.[3]

The import figures of the above articles are given in the Table 3. Data for twelve years from 1960-61 to 1971-72 are taken, taking into account both the volume and value of above goods. In the case of paper and paper board the volume of imports has been declining during the years except for the year 1970-71 and 1971-72. But the value of imports have remained more or less constant up to 1964-65 and there after began to increase. This may be due to the inclus of better varieties of paper in imports. There is also a m ked change in the composition of imports after 1964-65. Another c for this may be the 1966 devaluation. Though the qua of imports has declined, the values of foreign currencies in erms of Indian currency have gone up resulting in the increasing trend in the value figures. This is quite evident if we look at the figures, for the year 1966-67 and 1967-68. Both the quantity and value of imports of articles made of paper and paper board have declined during the period under study. Due to the increase in literacy during planning period, specifically the marked increase in the sixties, the demand for newspaper and different magazines and periodicals have gone up considerably resulting in higher demand for newsprints. But the production of newsprint has remained almost stagnant after 1963. In order to meet the excess demand, larger imports have to be made specifically from 1968-69, the imports, both in quantity and in value terms have been increasing. Unless the production of newsprint goes up significantly it will be extremely difficult to curtail the imports in a situation of growing demand for different news-papers and periodicals.

2. K. K. Sarin and J. C. Khanna, Growth of Paper Industry in India, Jour. of Industry and Trade Nov. 1971, p. 32
3. Ibid, p. 32

Raw materials

Wood is the principal fibrous raw material in all leading paper manufacturing countries. But in Indian paper industry non-wood fibres constitute the principal source of raw material supply. The main cause of this is the lack of suitable wood species having economic location for the manufacture of paper. Bamboo so far has been the most important pulpable raw material which meets over 60 per cent of the total raw material requirements. In the sixties the wood fibres have come into use as the conventional sources of supply could not cope with the increases in demand for fibrous raw material. This indicates that progressively greater realiance will have to be placed on wood for future expansion of the industry. We give below a brief review of the supply of raw materials.

Bamboo is the principal long fibred raw material for the paper industry. This raw material assumes all the more importance because all other available cellulosic raw materials like hard wood, bagasse, straw, etc. are short fibred materials the pulp from which will have to be blended with 25 per cent of the long fibred pulp to make paper of good quality and adequate strength.

According to a recent study the estimates of bamboo potential and available surplus are 4.3 and 2.5 million tons respectively.[4]

	Potential (Million tons)	Available surplus
Assam	1.21	1.15
Tripura	0.21	0.21
NEFA	0.20	0.20
Bihar	0.20	—
Orissa	0.43	0.28
M. P	0.80	0.40
Andhra Pradesh	0.25	—
Maharastra	0.50	0.04
Mysore	0.47	—
All other states	0.23	0.22
Total	4.30	2.50

4. Mahalaha S. H., Pulping Material for Tomorrow, December 1969, pp. 17.

Though the total potential availability is estimated at 4.30 million tons, the presently utilised annual cut is only about 1.8 million tons of the rest as much as 1.5 million tons is centered in the eastern zone comprising of Assam, Tripura and NEFA. Presently this area is not developed. So there is not much scope for the significant expansion of the paper industry on bamboo base in near future, unless the inaccessible areas in Assam, Tripura and NEFA are made accessible.

"The stumbling block in raising the productivity of forests is basically the lack of finance traceable in turn to the hotch-potch pricing policies for bamboo. Prices are determined in an arbitrary manner and bear little relationship to the cost of production."[5] Royalties charged for extraction of bamboo differ widely from state to state and even from consumer to consumer. A mill in Mysore pays Rs. 4/5 per ton whereas the same mill pays Rs. 10/15 per ton for extracting bamboo from other sources. In Maharastra, the royalty charged from different consumers varies from Re. 1 to Rs. 30 per ton. In West Bengal the royalty charged is as high as Rs. 30 per ton whereas in the Punjab the royalty charged is about Rs. 22 per ton.

The cost of running bamboo plantation according to one study over a thirtytwo year cycle has been estimated at Rs. 1758 per acre. Against this cost, an aggregate revenue of Rs. 2100 per acre has been assessed on the assumption that bamboo is sold at Rs. 25/- per ton.[6] The difference meets the cost of regeneration of forest and ensures adequate return on investment.

If it is thought that this cost evaluation is representative of bamboo plantations in general, then the price policies followed by the states like Mysore, Maharastra and Andhara Pradesh show that the present resources are being frittered away at ridiculously low prices. Royalties should not only cover the variable cost of procurement but also the fixed costs of augmenting the productivity or equal to the refined version of the stumpage value.[7]

5. Pulp and Paper. Economic and Scientific Research Foundation.
6. Mr. S. F. Uppin's comments on 'View It as an Investment' published under letters to the Editor, The Indian Forestor, Vol. 94, Nov. 11. Nov. 1968.
7. Paper Industry, Problems and Prospects. NCAER p. 53 and Mahala : Pulping Materials for Tomorrow, Dec., 1969. p. 23.

Four recommendations have been made by the study made by Economic and Scientific Research Foundations :

(*i*) Strict control in selective felling during exploitation.

(*ii*) Closure of bamboo areas against grazing at least for 5/6 years after seeding.

(*iii*) Effective fire protection measures during and after seeding period, and

(*iv*) Cleaning and thinning operations in the congested crop in the earlier stages of natural regeneration.

The results show that pulping material to the extent of 1 05 million cubic metres is available in the Central Zone. About 277,000 cubic metres of conifers and 81,000 cubic metres of hard woods are available in the Northern Zone. In the Sourthern Zone wood supply calculations were confined to eucalyptus plantations. It is estimated that the yield from Government plantation is likely to reach 350,000 cubic metres of pulp wood a year by 1972. It is likely to double by 1977. The pre-investment survey shows a clear picture of the forest raw material in the surveyed zones. Forest experts believe, even with low intensity management of forests prevailing now, a total annual surplus of about 1.8 million cubic metres of hard wood can be expected on a sustained basis.[8]

In India wood is not used extensively due to the limited availability and relative inaccessibility of soft wood species like conifers and the prohibitive cost of exploiting the tropical hardwood which are abundant. Though we have a huge supply of hard wood, a significant portion of this supply has at present no better economic value than as fuel wood. But a significant portion of the limited soft wood supply is wasted in the process of extraction. The off-cuts, edgings, stables, splinters, etc. resulting from the conversion of logs in squares and railway sleepers which would conceivably be the ideal raw material for ground-wood pulp, are left in the forests

8. MAHALAHA, Pulping Material for Tomorrow, Dec., 1969, p. 16.

to rot along with all bark, branches, and tops etc. The loss due to this is reported to be roughly 40 per cent of the total volume of the trees felled. It has been reported that in Kulax and Saroj Division of the Punjab, not less than 75,000 tons of fir are allowed to rot annually.[9] It is not economical to use these resources unless there is break-through in paper technology.

Other raw materials are sabai grass, jute sticks, agricultural residues, bagasse, hemp ropes, rags, hessian cuttings and waste paper. Sabai grass is collected from Nepal, Terai and Sahibganj (Bihar). Grasses like ulla, panni, spear grass and elephant grass are also suitable for paper production. About 4 to 5 thousand tons of various grasses may be annually available in the country. About onethird of this is used in the pulp and paper industry.

Straw

The total production of wheat and rice in the country is about 60 million tons. The production of straw is on an average about 1.8 tons per ton of food grains and about half of the quantity is reserved for firm purposes and thaching the roofs. Hence about 54 million tons are still free for industrial application. Out of this enormous quantity the pulp and paper industry takes up barely 30 thousand tons.

Bagasse

It is a by-product of sugarcane processing. India which grows around 100 million tons of sugarcane is having enough bagasse potential for the use in the pulp and paper industry. In order to assess the availability of this material several considerations have to be made.

All types of sugarcane production does not yield bagasses of requisite quality for the production of paper. Secondly, bagasse is available seasonally and hence lead to the problem

9. M. P. Bhargava : Development of paper and paper board industry in Uttar Pradesh, Indian pulp and paper, July, 1963, p. 71.

of storing it before processing. This may reduce the quality of pulp in addition to enhancing the cost of this material.

Bagasse is used as principal fuel in the sugar industry. The diversion of bagasse from sugar industry to pulp and paper industry would involve considerable cost equal to the price of an alternative fuel like fuel oil, plus, the cost of replacement of old by new boilers.

The potential surplus of bagasse is about 5 million tons the bulk of which originate in U.P. (43%) and Maharastra (21%). The current availability of bagasse to the paper industry is from large and modern mills which are left with bagasse on account of their improved steam efficiency. Bagasse pulp is used for the production of printing and writing paper by Rhotas Industries Ltd, Shree Gopal Paper Mills. The Shasayee Paper and Board Mills, Mandya National paper mills and Bengal paper Mills. However the utilisation of bagasse for paper manufacture is as yet small.

Waste paper is another source of the fibrous raw material. But in India due to several reasons the recovery rates is as low as 15 per cent while in advanced countries the rate is nearly double. High cost of collection, bad quality of the waste paper and direct re-use for wrapping purposes are the main causes of this low rate of recovery.

The above discussion only shows the physical availability of raw materials for paper making. But nothing has so far been said about the cost of these materials at mill sites, which will reflect the relative scarcity or abundance of these existing raw materials. At the beginning of the fifties paper prices were at peak level as the supply was quite insufficient to meet the growing demand. There after the prices have been increasing. The growing inelasticity of raw material is the main cause of this price spiral. It is not possible to have any relief through easy exploitation of known resources as the existing resource base is shrinking. There should be more emphasis on the exploration of new resources.

Cost of production

During 1951-56, there was fall in the cost of production due to a significant fall in the prices of pulpable materials. The wholesale price index fell to 92.5 in 1956 (1952-53=100). There was significant gains in production during this period. But there was a shift from the low priced to high priced raw materials due to the necessity of having greater sophisticated final products. Between 1956 and 1964 there was an all round increase in the cost of manufacturing. This was the result of not only the rise in price of raw materials, but also the rise in prices of all inputs due to the serious inflationary pressures in the early sixties. The total cost of production per ton rose by about 28 per cent. After 1964 the prices of the raw materials have been increasing.[10]

The striking rise in cost of production has distorted the growth potential of the industry. The paper industry which maintained a satisfactory rate of growth in the fifties has lost its nomenclature in the sixties. While the rate of growth of production in the fifties has 11.4 per cent in the sixties it fell to 8.3 per cent.

As a result of the increased cost the profitability of the industry has diminished. Gross profits as a percentage of sales has dropped from 12.8 per cent in 1960-61 to 10.2 per cent in 1964-65 and 11.5 per cent in 1965-66.[11] As the return on investment fell fresh investment in this line of production was discouraged. The gross profits as a percentage of total capital employed went down from 9.5 per cent in 1960-61 to 6.6% in 1964-65 and 7.7 per cent in 1965-66.[12]

Under these circumstances the government decontolled the price with effect from May, 1968. Gross profits per ton went up by about 70 per cent in one year from 1967-68 to 1968-69.

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10. See NCAER, Paper Industry, Problems and Prospects, Table 29. pp. 130, 131, 132, 133.
11. Economic and Scientific Research Foundation, Pulp and Paper, Prospects for 1975, p. 40
12. Finances of Indian Joint Stock Companies, RBI Bulletin, Dec, 1967

The paper industry passed through a critical period between 1963-64 and 1967-68. The small units suffered more than the large firms. The percentage of profit (after tax) to net worth fell sharply from 4.7 per cent in 1963-64 to 1.0 per cent in 1967-68.[13] But in spite of the rise in costs the industry on an average reported a profit of Rs. 21 per ton due to some of the increase in the cost of production being absorbed through scale and other economics.[14]

Paper prices remained more or less static between 1960 and 1968. In May 1968 the control on paper prices was lifted. Since then there has been occasional rise in the prices depending on the grammage of paper.

There should be a reconciliation of the interest of both the consumers and the investors. If the price is raised, the consumer will be penalised. On the other hand, if the price of paper is kept at the current level it is likely to have an adverse effect on further investment. We are completely in agreement with the suggestion made by NCAER to decontrol the price structure as such indicating a ceiling price for one or two dominant varieties. "The NCAER think, a minimum price of Rs. 2,002.00 (not to the industry) is necessary for the growth of industry at current prices.[15]

Conclusion

In the highly industrialised countries paper mills of nearly 700 tons per day capacity are of economic size. Even in middle order countries, the minimum economic size is considered to be of 300 tons per day capacity. The pre-Investment Survey group (FAO) observes that the manufacturig cost per ton of printing and writing paper would fall from Rs. 1489 in a 100 ton per day plant and Rs. 1238 in a 200 ton per day plant and further to Rs. 1,104 in a 300 ton per day plant. This observation is also substantiated by the former observation that the profitability increases with higher scales of operation. In this situation one has to take into account the economies of this order in recommending the setting up of new

13. NCAER : Paper Industry, Problems and Prospects. p. 41.
14. Ibid : p. 41
15. Ibid : p. 67

plants. Paper plants of 200 to 300 tons per day will be considered as the economic size in the present circumstances. This may come either in the form of new plants or by allowing some of the old plants to expand to this capacity.

While suggesting paper plants of this capacity, one need not forget the dwindling raw material supply situation. There should be emphasis on the exploration of new sources of raw material. Moreover as most of the plants are unable to run plantations due to their smallness and poor financial position, it is suggested that the state governments should think forests as a vital field of investment specifically in the situation of growing revenue from this source. There should also be a multiproduct approach towards the utilisation of resources. As it is observed before, a lot of wood is being wasted in the forest at the time of extraction and also at saw mills (where less than half of the consumption of wood is used) one has to see the economic use of these wastes. If the forest based industries are integrated, the yield is expected to go up and the cost is bound to fall considerably.

TABLE 1

TREND IN PRODUCTION OF PAPER

Log Y=Log a + x Log b.

Year	Y	Log Y	X	Log Y	Log YC.	YC (in '000' tonnes)
1950	108,912	5.0370	—5	—25.1650	5.0307	107.4
1951	131,916	5.1202	—4	—20.4808	5.0776	119.6
1952	137,508	5.1383	—3	—15.4149	5.1245	133.2
1953	139,704	5.1452	—2	—10.2904	5.1714	148.4
1954	155,328	5.1911	—1	— 5.1911	5.2183	165.3
1955	184,884	5.2666	0	0	5.2652	184.2
1956	193,404	5.2865	1	5.2865	5.3121	205.1
1957	210,132	5.3224	2	10.6448	5.3590	228.6
1958	253,008	5.4031	3	16.2093	5.4059	254.6
1959	294,024	5.4683	4	21.8732	5.4528	283.6
1960	345,324	5.5382	5	27.6910	5.4997	316.0
				Log a=5.2652		
				Log b=0.0469 g=11.4 %		
1960	345,324	5.5382	—5	—27.6910	5.5405	347.1
1961	363,912	5.5610	—4	—22.2440	5 5753	376.1
1962	386,636	5.5873	—3	—16 7619	5.6101	407.5
1963	462,612	5.6652	—2	—11.3304	5.6449	441.5
1964	490,523	5.6906	—1	— 5.6906	5.6797	478.3
1965	537060	5.7300	0	0	5.7145	518.2
1966	585084	5.7672	1	5.7672	5.7493	561.4
1967	608784	5.7844	2	11.5688	5.7841	608.2
1968	646,596	5.8105	3	17.4315	5.8189	659.1
1969	706,548	5.8491	4	23.3964	5.8537	714.1
1970	753,000	5.8768	5	29.3840	5.8885	773.6
	Log a=5.7145		g=8.3%			
	Log b=0.0348					

TABLE 2

PRODUCTION OF NEWS-PRINT AND DIFFERENT VARIETIES OF PAPER

(Tonnes)

Year*	Newsprint	Printing and Writing	Wrapping	Special varieties	Boards	Total (Except Newsprint)
1950	..	70,152	14,616	5,196	18,948	108,912
1951	..	79,260	25,488	3,120	24,048	131,916
1952	..	91,428	21,540	2,820	21,720	137,508
1953	..	95,628	21,144	3,420	19,512	139,704
1954	..	102,876	24,156	4,788	23,508	155,328
1955	..	119,496	28,320	5,604	31,464	184,884
1956	10,968	122,988	30,924	5,772	33,720	193,704
1957	14,515	126,516	38,016	7,200	38,400	210,132
1958	21,708	154,416	40,020	6,300	52,272	253,008
1959	21,160	177,420	55,608	5,328	55,668	294,024
1960	22,598	215,172	64,908	8,592	56,652	345,324
1961	25,692	229,548	59,856	8,976	65,532	363,912
1962	24,864	234,384	75,540	8,040	68,672	386,636
1963	30,360	299,388	76,752	7,908	78,564	462,612
1964	28,824	319,595	85,044	6,180	79,704	496,523
1965	30,504	334,152	96,120	5,556	101,232	537,060
1966	29,316	381,240	99,912	6,468	97,464	585,084
1967	31,020	377,628	120,660	9,252	101,244	608.784
1968	30,564	393,672	127,404	19,452	106,068	646,596
1969	34,224	415,440	145,944	20,616	124,548	706,548
1970	..	..	..	..	..	753,000

* Calender Years.

Monthly statistics of the Production of Selected Industries of India C. S. O.

TABLE 3

IMPORTS OF PAPER & PAPER BOARD, ARTICLES MADE OF PULP PAPER OR PAPER-BOARD AND NEWS-PRINT

Year	Paper and Paper Board		Articles Made of Pulp Paper and Paper Board		Newsprint	
	Qty ('000' Kgs)	Value ('000'Rs)	Qty ('000' Kgs)	Value ('000' Rs)	Qty ('000' Kgs)	Value (000 Rs)
1960-61	27033	55,280.2	489	2930.9	73,363	59,464
1961-62	26627	56,265.7	648	3613.3	123,760	97084.2
1962-63	25462	54,293.1	517	2798.2	99,294	76,278.9
1963-64	25391	46,176.9	554	3059.4	95,519	69340.9
1964-65	23926	54341.16	548	2438.9	102,460	73980.1
1965-66	21165	69,385.7	647	3308.2	85,251	61,811.1
1966-67	16058	71,942.5	546	3252.3	93,090	107478.4
1967-68	16603	79,156.5	331	2814.6	81,609	94410.4
1968-69	14,414	51,301.4	296.5	1810.7	114,458	129518.4
1969-70	12574	49,783.0	202	1574.4	155,082	185714.9
1970-71	14,773	60,760.6	246	2259.0	144,212	187327.1
1971-72	14,279	71,110.0	229	1908.4	206,856	275,852.3

Source : Monthly Statistics of Foreign trade, Imports.

TABLE 4

AVERAGE ANNUAL CONSUMPTION OF CELLULOSIC RAW MATERIALS DURING THREE PLAN PERIODS 00' TONNES

	1st Plan (1951-55)	2nd Plan (1956-60)	3rd Plan (1961-64)
Bamboo.	260.4	412.7	741.4
Grass.	55.8	77.0	86.3
Waste Paper.	27.1	55.9	85.4
Pulpwood.	..	..	82.0
Bagasse.	10.7	30.2	76.3
Straw.	4.4	11.2	31.6

Source : Census of Manufactures and ASI, CSO.

TABLE 5

SURVEY RESULTS OF FOREST RESOURCES AND PRINCIPAL INDUSTRIAL PROPOSALS

Particulars	Central zone	Northern zone	Southern zone
Area of forest Survey	2,010,000 ha	412,000 ha	506,000 ha
Total wood growing stock[a]	132,000,000 m³	82,700,000 m³	110,000,000 m³
Available annual cut[b]			
a) Saw and Veneer logs			
Teak	101,000 m³ Conifer	646,000 m³	Not calculated
Sal	234,000 m³ Hardwood	115,000 m³	
Others	343,000 m³		
Total	648,000 m³ Total	761,000 m³	
b) Pulpwood[c]	1,055,000 m³ Conifer	277,000 m³	350,000 m³ d
c) Bamboo	228,000 tons	—	Not calculated
Principal Industrial Proposals :			
	I) Printing and writing paper production based on bamboo and later on hardwoods.	Saw milling expansion and improvements	Newsprint production based on Eucalyptus
	II) Saw milling expansion and improvements.		

a) Under bark volume excluding branch wood.

b) Based on the less intensive of the alternative management scheme suggested. Excludes inaccessible quantities.

c) Species in use as pulp wood and species shown in laboratory tests to be reading pulpable.

d) From Eucalyptus plantations only. Estimated allowable cut for 1972.

Source : FAO/Terminal Report, Pre-Investment Survey of Forest Resources. Rome 1970, p. 9

TABLE 6

MANUFACTURING COSTS IN PAPER INDUSTRY IN INDIA

	Rs. per Metric Ton			Percentage Change In	
	1951	1956	1964	1956 over 1951	1964 over 1956
1. Materials :					
i) Basic material	250.13	283.99	350.73	+10.3	+ 22.2
ii) Chemicals	206.10	164.14	201.42	—20.4	+ 22.7
iii) Others*	102.67	90.91	97.46	—11.5	+ 7.2
Total material cost	563.90	542.04	649.66	— 4.7	+ 19.9
2. Fuel, Electricity, Lubricants etc.	101.41	109.18	159.17	+ 7.7	+ 45.8
3. Depreciation	59.77	64.83	109.40	+ 8.5	+ 68.7
4. Miscellaneous	6.67	9.45	47.66	+41.7	+404.3
5. Value added by Employees**	200.99	182 46	198.48	— 9.2	+ 8.8
6. Total Cost of Product	946.74	909.96	1164.37	— 3.9	+ 27.9
7. Value added by employees***	295.83	290.10	189.83	— 1.9	— 34.5
8. Total gross value of output	1233.56	1198.06	1354.20	— 2.9	+ 13.0

* Including consumable stores and packaging materials.
** Represents wages, salaries and other benefits.
*** Manufacturer's margins.
Source : C. S. O. C. I. M.
C. S. O. A. S. I.
Pulp and paper prospects for 1975,
Economic and scientific research foundation p. 38.

FORM OF DECLARATION

FORM No. I

(See Rule 3)

I, Sri Bidyadhar Misra, declare that I am the printer and publisher of the Journal entitled 'Orissa Economic Journal' to be printed at Archana Printing Press, Cuttack-1 and published at Bhubaneswar and that particulars in respect of the said Journal given hereunder are true to the best of my knowledge and belief.

1. Title of the newspaper ... Orissa Economic Journal
2. Language (s) in which it is (to be) published. ... English
3. Periodicity of its publication (*a*) Whether a daily; tri-weekly; bi-weekly; fortnightly; or otherwise. ... Half Yearly

(*b*) In the case of a daily; please state whether it is a morning or evening newspaper. ...

(*c*) In the case of a newspaper other than daily; please state the day (s)/ date (s) on which it is to be published ...

4. Retail selling price of the newspaper per copy.

(*a*) If the newspaper is for free distribution please state. ...

(*b*) If it has only an annual subscription and no retail price please state the annual subscription. ... Rs. 10/- Annual subscription

5. Publisher's Name ... Dr. Bidyadhar Misra
   Nationality : ... Indian
   Address : ... Professor of Rural Economics, Utkal University.

6.	Place of publication (Please give the complete postal address).	... Department of Rural Economics, Sociology and Applied Economics, Utkal University.
7.	Printer's Name	... Dr. Bidyadhar Misra.
8.	Name (s) of the printing press (es) where printing is to be conducted and true and precise description of the premises on which the press (es) are installed.	... Archana Press, Cuttack-1
9.	Editor's Name	... Dr. Bidyadhar Misra
10.	Nationality	... Indian
11.	Address	... Professor of Rural Economics, Utkal University
12.	(*a*) Owner's Name (s). (Please state the particulars of individual or of the firm; joint stock company; trust; co-operative society or association which owns the newspaper).	... Honorary Secretary, Orissa Economics Association
	(*b*) Please state whether the owners own any other newspaper and if so, its name, periodicity, language and place of publication.	... No
13.	Please state whether the declaration is in respect of	
(*a*)	New newspaper	
(*b*)	An existing newspaper	... An existing journal
(*c*)	In case the declaration falls under item (b) the reason for filing the fresh declaration	

Sd/ **B. Misra**
Signature

Date—1. 2. 75

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