THE CAPITALIST PATH AND GROWTH OF INEQUALITY BETWEEN REGIONS IN INDIA (1961 TO 1971)

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THE DEGREE OF MASTER OF PHILOSOPHY

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D E C L A R A T I O N

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We certify that the dissertation, titled "The Capitalist Path and Growth of Inequality between Regions in India, 1961 to 1971", submitted by Mr. Avaya Chandra Mohapatra for partial fulfilment of the Degree of Master of Philosophy (M.Phil.) of the University is a bonafide study to the best of our knowledge and may be placed before examiners for due evaluation.

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PREFACE

PREFACE

Essentially this study aims at a modest attempt of analysing the problem of inequality from a interregional point of view of the Indian economy. There are a number of studies dealing with problems of growth, development and distribution at various levels of aggregation. However, our study is limited to the problems of distribution of incomes, in relation to the growth achievements of Indian economy at a fairly macro level of the states, particularly in the decade of the sixties.

In Chapter I, we would try to make a brief review of studies in political economy, related to that of the emergence of capitalism as a superior mode, its benefits neither to accruing to different societies of the world. The main argument of the study would be to analyse a particular school of thought which has advocated that under the conditions of free enterprise, perfect competitions etc., the growth path of regions or nations would be of a particular shape. We would concentrate on raising methodological questions supporting various philosophers on a similar condition of production.

In Chapter II, essentially we would be concentrating on the problem of preparing a critique on the 'Divergence-Stability-Convergence' model. On studying theories of international trade, and of 'factor mobility' especially we would try to show that there are real limitations to the operation

of mobility of factors in both international and inter-regional level and thus to the theory of D-S-C model.

In Chapter III would be mainly devoted to an application of the model of Williamson (D-S-C) with slight modifications for the period of 1960-61 to 1970-71. The choice of the period of study is particularly important partly because of the post-colonial influence getting diminished and partly of our conviction that towards the end of this decade, the great surge in the agricultural sector, in the so-called Green Revolution period has much to explain the aspects of distribution of incomes among regions and between population.

In Chapter IV we have tried to build up a somewhat modified model of measuring inequalities of income and population of states in India, the stress essentially remaining with a comparison of pre- and post- green revolution period.

Chapter V is mainly devoted to explaining the growth or decline of inequalities between regions in terms of the concentration of growth of agriculture as region specific, crop specific and class specific. On the other hand, the problem of 'terms of trade' and of growing relative price differences are analysed to support an emerging hypothesis.

Lastly, in Chapter VI we have tentatively proposed a theoretical model to work out some hypothesis for a further study.

We would emphasize that this study has basically a theoretical approach, with Chapters III and IV having only small empirical studies of the income differences. On the other hand, Chapter V is based on empirical studies by different scholars, whose results are compiled to build up a hypothesis to study.

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CHAPTER I

CHAPTER I

INTRODUCTION

NOTES ON THE METHODOLOGY OF STUDYING COLONIALISM, GROWTH AND UNDER-DEVELOPMENT

1.1.1 Classical as well as modern theories of political economy has been accumulating literature on the problems of growth and development of nations. Clear distinction has been drawn between the European, Russian and Asiatic modes of transition (from feudalism to capitalism) by a number of economic historians.[1] Discussions on the theories of development from "primitive communism", the 'feudal upsurge', the 'reformations' of 13th and 14th centuries, and later the Industrial Revolution, first in England, and then in parts of Europe, has been of keen interest to classical economic philosophers.[2] Essentially, the focus of attention was on the rapid changes observed in the production processes in the western Europe, particularly Great Britain, in the middle of 18th century by a substantial change in the innovative world and human knowledge of a far superior technology. This,

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1 Karl Marx and F. Engels, (1845-46), "The German Ideology", Ed. in Progress Publishers, Moscow, 1972, On Historical Materialism, in Chapt I, pp. 14-76.
E.H. Carr (1950) A History of Soviet Russia, Vol. I and Vol. II, Pelican Books, 1966.
A.K. Dasgupta (1932), "Problems of Economic Transition".
Maurice Dobb (1946), Studies in the Development of Capitalism, Routledge, 1972.

2 E.J. Hobsbawm (1968), Industry and Empire, Pelican Books, 1969.

rather sudden, 'leap forward' in the field of technology led to a sharp 'upward swing' in labour productivity (or, in simpler terms man's ability to produce much more than what actually he can consume). Thus, the societies who were in possession of this great wealth of knowledge could produce more, and accumulated greater material wealth. Certainly, this was the greatest achievement for the whole human society (for example, invention of steam engine) through the ages of struggle for survival, next only to the primeval fits of 'producing food grains instead of collecting'.

1.1.2 But, problem arises that if one is producing substantially more than one's needs for subsistence (or even (comforts?) A Ratzelian logic would inspire a society to grow beyond the boundaries of its homeland in search of consumers and raw materials.[3] Hence, it does not seem much unnatural that the 18th century England, 19th century France and Germany, and the 20th century America (U.S.) looked for adventures in foreign lands. The British hunger for American cotton, exploration of a race of slaves in the African west coast, the invasion into the Red Indian heartlands of North Central America, the pastures of Australia and, of course, the "Conquest of Bengal"[4] were at the same time prerogative

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3 Hartshrone, Richard, (1939) The Nature of Geography (A critical survey of current thoughts in the light of the past), Pennsylvania - Reference to "Friedrich Ratzel" in pp. 120-25.

4 Ramesh Chandra Dutta (1903), The Economic History of India, Vol. II.

A.K. Dasgupta (1932), op. cit., First Indian Edition, 1960, Nasik.

as well as consequence of the British Golden Era of Take-off.[5]

1.1.3 The growth of mercantilism in western Europe in mid-15th century, the spurt of mid-oceanic adventures by Portuguese spaniards, followed by Britons and Dutch, and the host of them cannot be waved as purely search for adventure, a sort of romantic pursuit. Neither, the inspiration to discover an oceanic mercantile route to Asia (especially India!) after the crusade, and the closure of the inland routes by the Turks, Pathans, and Arab-traders seems to be more justified.

1.1.4 Towards the 12th and 13th centuries, it could easily be visualised that the rigid feudal order was gradually disintegrating in the Western Europe and a 'merchent-capitalist class' gaining substantial powers by imposing a number of reforms on the feuds and the Church, especially to liberate the bonded-labour at one hand, and to rebuff the yoke of growing feudal taxation.[6] This European model of transition, led by a merchent capitalist class in alliance with the upper hierarchies of the ruling-class succeeded in destroying the

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5 W. Rostow (1960), The Stages of Economic Growth : A non-Communist Manifesto, Cambridge (London).

6 Henery Pirenne (1958), Economic and Social History of Medieval Europe, trans. from French by F.E. Clegs, London, Routledge and Kegan Paul Ltd.
M. Dobb, Takahashi and P. Sweezy in Symposium on the Transition from Feudalism to Capitalism, Sanskrit Publication, 1969, pp. 21-64.

power of the Church and local feuds, in many parts of Europe. They were encouraged by the ruling feudal dynasties for new lands in search of gold, silver, diamonds etc. which commanded great exchange advantage in royal courts, of pioneering countries of Western Europe, and the smaller feudal courts of Germany, Australia and Russia.

1.1.5 In consequence, we can see that by the time the great surge of the Industrial Revolution was taking grip of the Western Europe, the mercantile exploration has already paved way clear for the capitalist adventure of entrepreneurship. Then, there started the merchant capitalist search for market to trade the over-productions of their industries and to bring raw materials, mainly textiles, which can be easily processed for a big margin in the finished goods. The initial trading facilities could not be stabilised without clear military and administrative hegemony, with a host of trading nations competing at the same time. Hence, to secure the colonies and the markets, colonial governments were established in the so-called "discovered nations". The Portuguese in Latin-America, the French in North Africa and Oceania, the Dutch in South East Asian Archipelago, and British for rest of the world, were the saviours of these toiling masses. But, in late 19th and early 20th century when Germany and Austria came to the industrial scene (relatively lately), only the weaker sections of Europeans Capitalism was left to be annexed.

1.1.6 What needs emphasis is what among those colonies a clear distinction has to be made between those areas of relatively space population, mainly primeval ('uncivilised'in a civilised sense of the term) with abundant land and mineral resources (natural resources), and therefore, most conducive for a White settlement. Among them fell the two Americas, Australia-New Zealand and parts of South Africa. On the other hand, there were the colonies with a higher density of population (but not 'over-crowded' in the European sense), with a rich cultural heritage and economic and socio-political legacy. These latter countries of South East Asia, North-Central Africa, China and India were thus marked for a western rule for (i) stabilisation of free trade, and (ii) institutionalisation of an administrative set up.[7]

1.1.7 Then, the question would arise that if, these nations were colonised apperently at the same historical conjecture (America discovered in 1492 A.D. and India in 1498 A.D.) and were ruled by the same advanced civilisation, that was U.K., then, why with all limitations, those gulf of differences have arisen between nations? Partially, we have sought earlier, to find an answer, that there should be a distinction between the 'black' and the 'white' colonies. Neither, explanations would be adequate that these black colonies were

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7 A.K. Bagchi (1971), "Notes Towards a Theory of Under-development" In Memorium : Michael Kalecki, EPW (AN), Vol. VI, Nos. 3,4 and 5, pp. 361-66.

too over-crowded, nor propositions of climatic limitations, or socio-cultural rigidity would be enough. The so-called Malthusian doctrine[8] with all its strength of logic, did certainly a job of limiting the population within a reasonable size during all these centuries of colonial adventure, particularly, in the time of the British Rule; for example, it was not until the first quarter of the 20th century that the population did rise appreciably in India, and even, in most of the third world nations.[9] Of course, it is of prime importance to visualise the pertinent historical conditions of the two Americas, and Australia which were first inhabited by the European destitutes, and later by the merchants and business community in search of a less competitive world. Capital and labour flowed unhindered from the crowded parts of the capitalist world in search of cheap resource and slave labour. However, these 'factors' never flowed into the black colonies like India, and other third world nations, until the necessity arose for bulk movement of raw materials (cotton and jute, especially), particularly, after the American supplies were disrupted by the civil war of 1860s. Investments were encouraged particularly, in railways to open the

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8 T.R. Malthus (1798), An Essay on the Principles of Population, Ed. Anthony Flew, Pelican Books, 1970.

9 Colin Clark (1953), "Population Growth and Living Standards" Ed. A.N. Agarwala and S.P. Singh, The Economics of Underdevelopment, Oxford, 1971, pp. 44-60.

backward hinter-lands (70% of British investment up to 1901 in India was on railways).[10] But this opening up of the hinter-lands led to the destruction of indigenous artisan industry, and the rich heritage of handicrafts and released a large labour force to an already strained traditional, agriculture. The super-imposition of a destructive civil infrastructure (the Zamindari, Mahalawari systems etc.) upon the socio-economic base, did succeed in annihilating the nuances of Indian villages.[11] The distortion in the production relations, by creating a class of middle-men and substantial increase in the taxation led to crumpling investments in agriculture (unlike it took place in the Enclosures Movement in England,[12] or during the Meiji Reformations in Japan),[13] led only to expropriation and pauperisation of the generations of Indian peasantry.[14]

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10 A.K. Bagchi (1972), Private Investment in India from 1900-1939, Cambridge (Indian Ed., 1975), pp. 34-42.

11 P. Patnaik (1973), "On the Political Economy of Underdevelopment", EPW (AN), vol. VIII, pp. 197-214. A.K. Bagchi (1972), op cit.,

12 Jacob Viner (1953), The Economics of Development, Ed. in Agarwala and Singh (1971), op. cit., pp. 9-31.

13 Takahashi (1957), Symposium on the Transition, op. cit.

14 Utsa Patnaik (1971), "Capitalist Development in Agriculture : A Note", EPW (AN), Vol. VI, No. 39, 25 September 1971. "Capitalist Development in Agriculture : A Further Comment" (1972), EPW (RA), Vol. VI, No. 52, 25 December 1971; "Capitalism in Indian Agriculture", Social Scientist, nos. 2 and 3, September and October 1972. P. Chattopadhaya (1972), "On the Question of the Mode of Production in Indian Agriculture : A Priliminary note", EPW Vol. VII, no. 13, December 1972. A detailed bibliography is given in Hamza Alavi, EPW (AN), 1976, pp. 1235-62.

1.2.1 We would particularly discuss two opposing schools of thought regarding the growth and development of nations, (i) there is the classical Marxist school, led by the thoughts of Marx and Engels, and (ii) the orthodox, neo-classists, represented by Rostow and his contemporaries. Marx-Engels propounded a theory of revolutionary transition of societies from primitive mode to a capitalist stage by 'intermittant stages of social equilibrium and dis-equilibrium', the latter represented by changes in the technological knowledge and socio-economic upheavals, leading to the emergence of a 'new mode' and a newer production relation (of different classes).[15]

1.2.2 On the contrary, Rostow has propounded a concept of somewhat 'Shakespearean stages' in his analysis of socio-economic history of nations on the basis of substantial statistical information. Now, there are particular assumptions needing attention that (i) historical conditions for different nations and societies are not specific (that there are little differences between the material conditions and social relationships between peoples of different nations, as if, the

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15 The following transitional phases were theorised by Marx;

i) The Primitive Communitarian Mode;
ii) The Slave Society;
iii) The Feudal Mode;
iv) The Semi-Feudal or Pre-Capitalist Mode;
v) The Capitalist Mode; and
vi) The Socialist Mode (The Ideal Mode).

France of Lewis XIV (18th century) and the Czarist Russia of late 19th century was less different.)

(ii) Secondly, on assumption of little distortions in the trading relations within a society or within societies, particularly between the metropolitan and the colonial enclaves in post-industrial revolution period, has limited relevance in actuality.

1.2.3 Thus, realising from analysis of levels of income per capita savings ratio, labour productivity etc., he offers a mode of 'five stages of development', through which a traditional society has to undergo before it reaches a stage of 'maturity' and 'high mass consumption'. Rostow arrives at an apparently stylish proposition that this be a 'general law', irrespective of the diversities of socio-economic conditions of different nations. The crux of this argument is that the rich nations of today were traditional because of low per capita income and still lower savings rate, and extremely limited output per head, low technological knowledge and predominantly, involvement in primary production. The 17th century England, 18th century Germany and U.S.A., early 19th century Russia, Canada and Japan, and early 20th century China and India were on the verge of breaking the traditional society.[16]

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16 A 'Traditional Society' as given by Rostow is: "One whose structure is developed within limited production functions based on Pre-Newtonian science and technology..., a ceiling existed on the level of attainable output per head.' W. Rostow, op. cit., p. 4.

into a stage of 'take off into self-sustained growth' process.[17] At different phases of history these societies have prospered, raising income per capita and saving rate by increasing labour productivity etc. Ultimately, U.S.A., and Canada by early 20th century; Britain, Australia, France and Sweden, by 1940s, and Germany and Japan by 1950s reached a stage of mass consumption.

1.2.4 There seems to be nothing particularly wrong with this type of proposition, except that Rostow looks into history, and statistical information as merely chronological recordings and not-interrelation of socio-economic forces, studied scientifically.[18] The basic difference between the Marxian and the Rostowian stage theory is that, firstly, while the former refers to a scientific dilectical transition of societies in respect to their specific historico-economic conditions, the latter only makes a mechanical representation of statistical progression of societies.[19] Secondly, while

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17 W. Rostow (1956), "Take off into self-sustained Growth", The Economic Journal, March 1956. Reprinted in Agarwala and Singh, op. cit., pp. 156-86.

18 E.H. Carr (1961), What is History?, Cambridge, MacMillan, 1961.

19 Maurice Dobb (1946), op. cit.

These points of abrupt changes in the direction of the historical flow correspond to the social revolutions which mark the transition from an old system to a new one. The view that development is characterised by periodic revolutions stands, therefore in contrast to those views of economic development, moulded exclusively in terms of continuous quantitative variation, which see change as a simple function of some increasing factors, whether it be population, or the stock of capital. (p. 12)

Marx made clear distinction between the 'class forces' of these societies and their changing role in different revolutionary transitions, Rostow never recognises existence of any such forces in the societies. Lastly, in a historical study, the nations are not to be treated vulgarly, egalitarian way, that except for statistical performances, the role of class forces and interaction of different societies never matters.

1.2.5 But, if, one has to accept a Rostowian position, it may lead to rather serious omissions and commissions in drawing inferences that a historical (statistical) pattern which has emerged in the development history of the free societies ought to be repeated over the coming generations of developing societies (or under-developed nations) in the same sequential order without any important revolutionary change.

He would rather suggest these underdeveloped nations to raise their savings rate, productivity by acquiring modern technology (that science has bestowed upon man), than to go for any meaningful change in social relationships.

1.2.6 But, here we would refer to a study by Kuznets in which he signifies the realistic differences that exist between the economic history of the present advanced nations and the under-developed nations.[20] As he mentions clearly:

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20 Simon Kuznets (1964), "Underdeveloped Countries and the Pre-Industrialised Phase in Advanced Countries", Proceedings in the World Population Conference, Paper, vol. V, in Agarwala and Singh, op. cit., pp. 135-53.

"...both the absolute and relative economic position, as well as the general cost of the immediate antecedent history of the now developed countries in their pre-industrialised phase, were cardinally different from the economic position and immediate historical heritage of the under-developed countries of today."[21] In this piece of work, he takes three crucial variables; the per capita incomes and savings rates, growth of population, and international redistribution of population (migration). His main argument is that there are enough evidences that per capita incomes and savings rates of the present advanced nations in their pre-industrial stage were never appreciably higher than the underdeveloped nations. The size and intensity of population was never anything high to be of concern and it was only in the recent history of half a century or so, that the world population has started rising at a higher rate and certainly, except for a few of the larger under-developed countries (India, Indonesia, China and Pakistan etc.) the size and density of populations cannot be said to be a hindrance to their growth process. In an interesting optimistic piece Clark points out; "...,most of the world, therefore, is populated <u>far below its potential</u> density"

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21 Ibid., op. cit., p. 151.

22 C. Clark (1953), op. cit., p. 42.

and waves at the impending terror of the Malthusian doctrine. Kutznets, in his study, is rather not explicit regarding his position[23] that is why with all the cards on their side (statistically seeing) the present under-developed countries failed to advance into a 'golden age' as has been forecast.

1.2.7 But, in some of his later work, he has fallen victim to his earlier ambiguity. In this study (1963) he analyses the movement of different income groups of people of nations and concludes that there is a tendency of higher rate of increase of distance between economic groups of people in an under-developed nation (particularly in the non-agricultural sector) compared to that of advanced nation, and by classifying them into groups at different stages of development.[24]

1.3.1 There is a distinct group of economic historians (to whom Rostow represents) who have been advocating of the merits of the Golden Era of 'laissez-faire' and unhindered 'free trade'. The class of entrepreneurs with incentive of profit maximisation (by cost minimisation and expansion of production) have led the present advanced nations into what they are now. Since, historical phenomenon are said to be

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23 Simon Kutznets (1954) remarks; "...a period in which international organisation was either distorted by political subjugation or by coexistence with the aggressive leaders of the economic civilization of the West." Op. cit., p.141.

24 Ibid (1963), "Quantitative Aspects of the Growth of Nations", VIII; "Distribution of Income by Size". Economic Development and Cultural Change (EDCC), January 1963, vol. II, No. 2, Part 2.

repeating internationally, the fair play of 'perfect competition' would lead to a similar pattern of growth and development in the backward nations of today.

1.3.2 There are works on a similar theoretical base propounded by Gunnar Myrdal (1957),[25] A.O. Hirschman (1958)[26] and Jeffery G. Williamson (1965).[27] They suggest that due to effect of "factor mobility", 'population redistribution' effect and 'changes in productivity per worker', the growth path of developing nations would follow an inverted "U" shape. To make explicit a country following the rules of 'perfect competition' and free trade at the initial stage of development would at first suffer from an increasing disparity between its regions, thus, at a certain point of time this divergence would slow down and stabilise and ultimately the levels of welfare of different regions (essentially regions representing groups of people), whether represented through level of income per capita, productivity, or other variables of social goodwills would narrow down.

1.3.3 The piece by Myrdal refers to a pure theory of underdevelopment of regions, those of Hirschman and Williamson

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25 G. Myrdal (1957), Economic Theory and Underdeveloped Regions, London.

26 A.O. Hirschman (1958), The Strategy of Economic Development, Yale University Press.

27 J.G. Williamson (1966), Regional Inequality and the Process of National Development, Ed. Needleman, Penguin Economic Readings, 1971.

to a rather stylised empirical evidence of the above model. The latter (Williamson) works out a cross sectional and then intertemporal analysis of twenty four nations (arranged on the basis of Kutznet's seven stages) and forty-nine states of U.S.A. on the basis of per capita family income (at the county level) respectively.

1.3.4 The argument put forth are that if nations are operating under rules of 'perfect competition' and 'free enterprise' and since factors of production are mobile under such assumptions from areas of factor abundance to that of scarcity the theory of 'divergence-stability-convergence' would assert a valid 'locus standi'. In the language of Myrdal, the initial differences might start because of the 'backwash effects' (or polarisation effects, a la Hirschman) of the already advanced region due to a number of exogeneous conditions. But, later because of a general reversal of the process, the same factors would flow in the opposite directions (which Myrdal calls the 'spread effect' or Hirschman, the 'tricking down effect') and a tendency of convergence of their welfare level would be visualised.

1.3.5 If, one stands by their assumptions, it would not be unlikely that one sees such a process actually operating within a country, or within countries. In fact, this phenomenon can operate at three levels; (i) essentially at the international level, as has been argued by the school of Rostovian neo-classists; (ii) at the inter-regional level

and as the consequence of international mobility, as such, and (iii) ultimately, at the inter-personal level. After all, a region, or a county is not just a physical reality but essentially represented by an apparently coherent group of individuals, whose integrated welfare levels axiomatically improve along with the growth of a nation. Therefore, if there is a convergence of per capita income, or of productivity at an inter-regional level, it ought to be true at an 'inter-personal level' may be at a greater length of time. But, there are reasons to believe that the 'aggregate productivity' of persons would vary because of certain scarce factors like 'human ability', 'artistic faculties', 'entrepreneurship', 'intelligence' etc. and hence the aggregate curve of personality of individuals would have contradicting shapes and therefore, would not converge and there would remain certain level of inequality between individuals in a society, may be the strictest egalitarian principles are adhered to. On the other hand, the scarce individual factors would be averaged out at a fairly aggregative level and thus the process enumerated (S-S-C) might actually operate at both regional and international level.

1.3.6 But, there are evidences that factors are not as mobile at the international level as between regions of a nation because of tariff barriers, strict restrictions on emigration and immigration, or threat of nationalisation to

foreign investments (as far capital is concerned). But, still there are indirect ways through which mobility, particularly of labour, might take place.[28]

1.4.1 A number of methodological difficulties arise while accepting a theoretical position as advocated by some of the neo-classical economic historians. Per capita income as a 'measure of welfare' has some important limitations that it fails to recognise the various income classes of people within a nation or region. Therefore, averaging incomes of all the individuals within a nation or region makes limited approximation. In two different situations, one with a higher per capita income with highly skewed distribution towards the upper income classes, would rather provide a lower level of welfare compared to that of another nation with relatively low per capita income, but with more disciplined egalitarian system of distribution.

The first attempt to measure incomes by classes was done by Lorenz (1905),[29] followed by Gini (1938)[30] by preparing an index of concentration, the ratio of the areas between the

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28 A.K. Sen, (196), "Brain Drain" - Report of U.N. Project on brain drain reprinted in Cost Benefit Analysis, Penguin Books.

29 M.O. Lorenz (1905), "Methods of Measuring Concentration of Wealth", Journal of American Statistical Association, Vol. 9.

30 C. Gini (1936), "On the Measure Concentration - with special reference to Income and Wealth", Cowles Commission.

cumulative curve of distribution with the line of egalitarian (desired) distribution and the total area in the triangle. A more detailed work was done by Kuznets (in 1963),[31] for several nations of the world to compare the relative levels of distribution also in different sectors.[32]

1.4.2 Although income per capita offers an aggregate measure of welfare, it necessarily does not take into account of all the socio-economic conditions, whether antecedent or consequent to income levels of people of a region or a nation. To solve such problems in methodology, a number of scholars (in India and abroad), both geographers and economists, have attempted to take proxy variables of a number of socio-economic conditions, i.e. agricultural and industrial productivity per worker or per unit area, fertility and mortality rates, literacy rates etc. and then, studied them cross-sectionally within a composite index of all these welfare conditions.[33]

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31 Kuznets (1963), op. cit.

32 A.K. Sen (1973), On Economic Inequality, Oxford.
Also, see "Inequality and Utilitarianism", EPW (AN), 1973.

33 R.D. Stone (1960), "Comparison of Economic Structure of Regions based on the Concept of Distances", JRS
Ashok Mitra (1967), "Levels of Regional Development in India", Census of India, 1961, Monograph No. 7.
B. Dasgupta (1972), "Economic Classification of Districts", EPW.
S.K. Rao (1973), op. cit., pp. 793-9.
M.N. Pal (1975), "Regional Disparities and Levels of Development in India", IJRS, Vol. VII, No. 1 1975, pp. 35-52.

1.5.1 We would here carry our discussion to a group of economic historians[34] who have, however, found neither the Rostovian stage theory, nor 'Myrdal-Hirschman-Williamson Model', sound enough particularly, for the third world nations. The crux of their contention is that the bulk of the neo-classical economists concerned with the problems of growth and development in underdeveloped nations have either consciously (i.e. Rostow), or unconsciously, have been evading the presence of a 'Theory of the Imperialistic hegemony'. This theory first propounded by Lenin (1913), and later, taken up by several of his contemporaries and followers, and the ideological lineage that Marx-Engels propounded, have emphasised the growing role of advanced capitalist nations in the backward traditional economies of the world, more so, after the colonial enclaves are liberated. The legacy of colonial subjugation, dependence on the metropolitan economy and the ultimate growth of the Goliath of Imperialism, has to say much for the underdevelopment of the 'black and brown' colonies of the third world.

1.5.2 Although the movements of national liberation in most of these colonies were either successful, or on the verge of fruition by mid-fifties, there still remained the

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34 A.G. Frank (1967), "Capitalism and Underdevelopment in Latin America".
A.K. Bagchi (1971), op. cit.
P. Patnaik (1972), op. cit.

"iron jaws" of imperialism and its industrial might. They would continue to demand for markets for their manufactured products and would search for 'cheap and stable source' of supply of raw-materials. History has seen Japanese aggression on China (because her goods were barred into European market) and the 'Suez Invasion' of 1956 by combined forces of U.K., France and then U.S.A. (because of nationalisation by President Nasser and problems of trade safety). On the other hand, there are the multinational corporations (MNC)[35] who have infiltrated into every nook and corner of the world and monopolised all the profit making businesses from cocoa plantations of Congo-basin to coffee plantations in Brazil, diamond and gold mines of Africa and Australia, armament factories of U.S.A. and, of course, the big business of oil exploration in the Middle East. Their interest might range from economic hegemony to political subversion and thus entrances of para-military organisations like C.I.A. to safeguard imperialist interest in almost all the nations of the world.

1.5.3 The above are some of the direct measures but there are the indirect ones which are much more effective ones. The international price differences (for commodities exported/imported by underdeveloped nations to commodities exported/imported by advanced nations) or the 'terms of trade' which

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35 Cristobal Kay (1975), "Chile, the Making of a 'Coup D'etat", Science and Society, Vol. XXXIV, No. 1, pp. 3-25.

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which has been favouring in an accentuated way the advanced nations. In the early twentieth century, Rosa Luxemburg (1913)[36] in her classic work "Accumulation of Capital", tried to emphasise the world scale accumulation by the advanced capitalist countries, mainly by an 'unequal exchange' system. She was not perfectly understood by her contemporaries until Joan Robinson wrote a similar piece (1956)[37] in which she tried to clarify and validate some of the positions of Luxemburg.

1.5.4 A much more thorough study has been done by Samir Amin (in two volumes, 1974),[38] analysing systematically the character and extent of imperialist accumulation for the last four centuries. The basic postulate is that the most important mechanism, through which the metropolitan powers or the present advanced nation generated a spiral of impoverishment was through rather a simple and effective mechanism of tilting the 'terms of trade' in their favour.

In the debate in early 1920s Russia on "Urban-Rural dualism and Industrialisation' by Preobrazhensky and

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36 Rose Luxemburg (1913), "The Accumulation of Capital", Translated from German by Schkarzschild, Agnes (1951), Routledge and Kegan Paul, 1971.

37 Joan Robinson (1956), The Accumulation of Capital, ELBS Edition, MacMillan and Co., 1973.

38 Samir Amin (1974), Accumulation on a World Scale - A Critique of the Theory of Underdevelopment, New York, Vol. I, and Vol. II.
Also, see Ranjit Sau (1975), "Capitalism, Imperialism, and Underdevelopment", EPW (Sn), pp. 1263-76.

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Plekhanov[39] basically emphasis was given on the price scissors, favouring particularly agriculture and a slow but steady governmental policy to reverse the 'terms of trade' to accumulate rural resources for purposes of industrialisation has been maintained up to now.

1.5.5 Arguments in similar line are put forth by Baran, Sweezy, Furtardo and Franke.[40] While the latter explains (independently) underdevelopment to be either cause or corollary to development, Amin provides for a theoretical completeness to the task which was advanced by Marx (about the MC in 1853), and Lenin between 1916 and 1928.

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39 Preobrazhensky, E., "New Economics", Tr. by Brian Pearce, Oxford 1967.
N. Bukharin and E. Preobrazhensky, ABC of Communism Harmondsworth, Penguin Books, 1970.

40 Paul Baran (1957), Political Economy of Growth, People's Publishing House, New Delhi.
P. Baran and P.M. Sweezy (1966), Monopoly Capital : An Essay on the American Economic and Social Order New York.
Furtardo, Celso (1967), Development and Underdevelopment Tr. by Richardo W. De Aguiar and Eric Charles Drysdale, Berkley, California.

CHAPTER II

CHAPTER II

INTERNATIONAL TRADE AND FACTOR MOBILITY : A CRITIQUE OF THE THEORY OF DIVERGENCE - STABILITY - CONVERGENCE

2.1.1 In the earlier chapter we have discussed so far, a broader outline of our study, and essentially in this chapter we would restrict ourselves to the theoretical limitations of the Divergence-Stability-Convergence model and thus, the relevance of the growth path enunciated by the group of economists. We would restrict ourselves in probing relevance of the problems of factors mobility, internationally and also, interregionally.

2.1.2 As we have referred earlier, Myrdal[1] initiated a debate basing on his cautious empirical findings (and also, in the works of Kuznets)[2] that 'ceteris paribus', there is a tendency of the regional disparities accentuating in the initial stage of development of nations because of internal factor flows and various disequilibrating conditions. Later, the debate was supplemented by two independent research works by Hirschman (1958),[3] and Williamson (1965)[4] with apparently strong empirical validity.

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1 G. Myrdal (1957), Economic Theory and Underdeveloped Regions, London.

2 S. Kuznets (1964), "Underdeveloped Countries and the Pre-Industrial Phase in the Advanced Countries", in Agarwala and Singh, The Economics of Underdevelopment, Oxford, 1971, pp. 135-53.

3 A.O. Hirschman (1958), The strategy of Economic Development, Yale University Press.

4 J.G. Williamson (1965), Regional Inequality and Process of National Development, in Friedman, Penguin Economic Readings, 1971, pp. 84-100.

2.1.3 The basic postulates of the model constitute a two region, two sector economy, with one region relatively advanced and the other underdeveloped, specialising in two different (non-substitutable) commodities, the former representing the advanced, industrial sector and the latter on the backward agricultural sector. The going argument of the supposed divergence of the two regions would be through the 'back wash effects' (a la Myrdal), or the 'polarisation effects'(a la Hirschman), of the advanced region on the backward one. Myrdal emphasises that once the mechanism of divergence starts due to effects of 'cumulative causation' (or, 'cumulative disequilibrium') the differences would continue to grow. The basic factor which would lead to such a growing inequality between the two regions are suggested to be (i) factor flows, i.e. that of labour and capital, (ii) external economies of scale (agglomeration effects etc.) and (iii) political decisions, which in a combined way would favour the advanced region. But after the passage of some time the differences being maximised, a process of slowing down and ultimately stabilisation of the trend of disequilibrium would operate and afterwards, due to a general reversal of the process, convergence of their welfare levels would take place.[5]

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5 Myrdal (1957), op. cit. "When the whole system starts moving after such a shock, the 'change' in the forces work in the same direction which is some thing different. And this is so because the variables are so interplayed in 'circular causation' that a change in any one induces the others to change in such a way that these changes support the first change, with similar terminal effects up on the variables first affected and so on. (p. 13.)

2.2.1 We would now take up each of these factors into our two sector models--Factor Flows. For convenience, let us visualise a set 'C' to represent the country, and subsets 'A' and 'B', representing the advanced, industrial and the backward agricultural regions, respectively.

Labour Migration

2.2.2 Labour migration would be 'age selective', 'sex selective', and 'skill selective', since 'B' specialises in primary commodities with little expansion in other sectors. Any growth of population would lead to excess supply of labour and thus, would result in a lowering down of 'real wages', or would create problem of a 'disguised unemployment'.[6] The younger generation which finds no alternative in the 'home sector' 'B' would like to migrate to 'A'. At the same time, because of expansion programmes, setting up of new factories, there would be increasing demand for more labour (skilled) than it could supply. Of course, at the initial stage, one has to assume the labour supply and demand in equilibrium position, indigenously (full employment).

2.2.3 Secondly, because of cultural factors, female workers in 'B' would be less inclined to go for work, particularly when it comes to emigration to a different land. The bulk of emigrants seem to be male workers, who after settling at 'A' might later consider of bringing their families also. But,

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6 A.K. Sen (1960), Choice of Techniques, oxford, Chap. I, pp. 1-18.

generally the unskilled category rarely gets opportunity to do so. In fact, the majority of the male migrants seem to be unmarried and prefer to get married at 'A' because of several socio-economic considerations. But, the most favourable outcome of this seems to be that the proportion of the 'fertility group' of population to total population increases at 'A' and thus the population growth would continue to be higher at 'A' (This is under Kaynesian "Limited Labour Supply Assumption" and thus, factor supply of labour is thought to be most important for development and growth).[7] This has been true particularly, for parts of Europe and western Russia in the 18th, 19th and the early 20th centuries, from where large-scale migration to the new world (both the Americas) led to substantial dampening of the population growth.

2.2.4 Thirdly, the migration would be skill selective, that the educated and the technocrats would find relatively low demand for their labour at 'B' and would prefer to migrate to 'A' not only because of higher wages (in real terms) but also, of the attraction of higher social overheads. Therefore, the innovative and entrepreneurial ability of 'B' would continue to slug back.

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7 D.C. North and Tiebout, C.M., "Location Theory and Regional Economic Growth", Ed. in Alonso and Friedman (1966), Regional Development and Planning, M.I.T. Mass., pp. 240-46.

Because of migration, a change in the work force structure would take place both at 'A' and 'B', the 'participation rate' favouring 'A'. This type of sectoral-regional 'redistribution of labour' would initiate a backwash.

2.2.6 In terms of income accruing to the labourers, because of skill orientation of the migration, they would like to settle at region 'A' and since the participation rate has fallen, the dependency ratio[8] has increased in 'B', the real per capita income might not actually fall but certainly it would tend to stagnate.

2.3.1 Capital Flows

(1) It has been argued that because of the 'external economies', i.e. effects of agglomeration, availability of skill etc., capital would be attracted to 'A'.

2.3.2 (2) It has been observed in several cases that even public investments are also channelised into the advanced region because of the pressures exerted by the dominant economic forces upon the central government.

2.3.3 (3) The major agency of transfer of capital has been argued to be the banking system which generally takes a higher 'deposit ratio' in 'B' to 'credit ratio' at 'A'. Therefore, most of the capital is channelled into financing projects at 'A'.[9]

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8 Non-workers/workers.

9 G. Myrdal (1957), op. cit., pp. 28-30.

2.3.4 (4) The self-sufficiency of the economy of agricultural and relatively closed economy of 'B' would be broken by the invasion of manufactured goods from 'A' and capital would be transferred in the form of profits accruing to the exports into 'B'.

2.3.5 (5) Because of the 'demonstration effect' of new consumer durables (by innovation) of 'A', the marginal propensity to consume would be much higher for the rich peasantry at 'B', on the other hand, it would be easier for an organised industrial structure to raise the relative prices ('terms of trade') of manufactured goods and thus indirect suction of capital to 'A' would operate.[10]

Internal Economies[11]

2.4.1 (1) Because of a developed infrastructure, entrepreneurial skill, developed financial agencies, skilled labour, and agglomeration benefits, the new industries would be likely to be attracted to 'A' than to 'B'.

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10 Williamson (1965), op. cit.

"In less overt but equally important fashion, the central government may manipulate the external terms of trade in favour of the industrial North". (p. 186)

11 Rosenstein-Rodan, P.N. (1943), "Problems of Industrialisation of Eastern and South-Eastern Europe" (Report of Royal Institute of International Affairs) Reprinted in Agarwala and Singh, op. cit., pp. 245-71.
J.M. Fleming (1955), Reprinted in Agarwal and Singh, op. cit., pp. 272-305.

2.4.2 (2) Due to the development of 'backward and forward linkages' the new industries would find them more competitive at 'A' as the transport cost is minimised. (For example, a factory aiming at producing 'fire bricks' would find it easier to establish near a steel mill, where its outputs are bought by the steel mill).

Political decisions

2.5.1 At the initial stages, because of many factors elaborated above, the 'capital output ratio (K/O) would tend to be much lower at 'A', in short run, and therefore, a central government aiming at maximising public investment would prefer to invest at 'A' and would encourage the private investors to come to 'A' since at the initial stage growth remains the basic preoccupation and not a welfare logic of distributive effect of growth.[12]

2.6.1 Let us now see how a reversal of this process might operate:

(1) After a certain length of time due to over crowding of 'A', the actual cost of migration would be very high and labour would be inclined to come back to 'B'.

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12 David Ricardo, Principles of Political Economy and Taxation, London, 1821.
J.S. Mill (1848), Principles of Political Economy, Ed. Donald Winch, Pelican Books, England, 1970.

(2) With the growth of industries at 'A', several dis-equilibriating factors would come into play, particularly the 'cost of land' and unskilled or semi-skilled labour cost, which would be far lower at 'B' and hence some industries would venture to move out to 'B'.

(3) Due to apparently a sectoral segregation between 'A' and 'B' a regional specialisation would take place on the principle of 'comparative advantage'.[13] And thus 'B' would start developing on the basis of its specialisation (of primary commodities) and hence would attract agricultural processing industries, i.e. flour mills or capital intensive industries like fertiliser factories (whose transportation cost seems to be much higher from A to B).

(4) The income receipts might actually go in favour of 'B', accruing net incomes from 'A' and thus the total income of the region would increase since a full employment situation at 'B' is assumed.

(5) Regional entrepreneurial leadership would come to play an important role and the financial agencies would help them to establish new industrial ventures.

(6) Because of a growing demand on agricultural commodities (mainly 'wage goods') and due to a short-run supply constraint, prices of foodgrains would rise at a faster rate and the terms of trade would start favouring

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13 F. Perroux (1959), "Economic Space: Theory and Application", Quarterly Journal of Economics, February 1950.

'B' instead of 'A' purely because of equilibrium condition.

(7) Political pressures and public discontentments might also induce the central government to take positive steps to encourage investments at 'B' by offering special subsidies, providing infrastructure, and setting up of some 'Key Industries' or 'Growth Poles' (a la Perroux)[14] to generate a 'trickling down' or 'spread effect'.

2.7.1 In arguments suggested above, it seems quite natural that the reversal of the process of divergence might take place but there are reasons to believe that the process might not be as simple as it is thought to be, particularly in respect to the underdeveloped nations.

2.7.2 In the first case, let us deal with the problem of factor mobility. "Classical trade theory always took it for granted that free mobility of factors of production between different regions would tend to equalise the relative and absolute prices of productive services in different regions. Thus migration of labour from crowded Europe to less crowded America would result, through the law of diminishing returns, in a drop in the American wage rates relative to American land rents and relative to commodities; at the same time, European land rents would fall and European real wages would rise. Migration of labour would cease only when absolute and

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14 P.A. Samuelson (1948), "International Trade and Equalisation of Factor Prices", The Economic Journal. Reprinted in J.E. Stiglitz, The Collected Scientific Papers of Paul A. Samuelson, Vol. II, Oxford (Indian Edition, 1966), pp. 847-68.

relative factor prices had been finally equalised."[15]

2.7.3 Following the Ricardian hypothesis of comparative advantage of a nation in relation to its factor abundance, leading to its ultimate specialisation in a particular industry, first Heckscher (1919),[16] and then Ohlin (1933)[17] propounded the so-called 'factor price equalisation theorem' in the pure theory of international trade, particularly the contribution of the latter is significant.

2.7.4 Ohlin's analysis is based on the assumption of a two region (A and B), two factors (land and labour), and two commodities (food and cloth) case, with common technology in the production functions and a constant returns to scale. A relative abundance of land in the region 'B' would tend to deflate its rent and hence would encourage specialisation of land intensive commodities (agricultural, i.e. food etc.), while at 'A' a relative advantage of labour abundance and scarcity of land would lead to labour intensive industry, i.e. cloth making. But these pre-trade factor prices would tend to be equalised at 'A' and 'B' partially because of specialisation and trade, and due to a rising land rent at 'B' and

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16 E. Heckscher, "The Effect of Foreign Trade on Distribution of Income", Ekonomisk Tidskrift, Vol. 21, pp. 497-521; Reprinted in Chap. 13, Ed. Ellis, H.S. and Metzler, L.A., Readings in the Theory of International Trade Blakiston.

17 Bertil Ohlin, Interregional International Trade Cambridge, Harvard University Press, 1933.

rising real wages at 'A'.[18]

2.7.4 In 1933, Ellsworth transformed Ohlin's analysis of ex-factory input prices to post-factory commodity prices equalisation.[19] The crux of "Ellsworth's Proof" is that 'a complete factor prices equalisation asserts a denial to inter-regional, international trade'. In his own words: "...any such price equalisation occur, it would contain the seeds of its own destruction. For, when all factor prices were everywhere the same, there would no longer be any reason for trade and with the cessation of trade and therewith the extinction of the demands which brought about the price equalisation the original disparities in factor equipment would immediately reassert themselves."[20] But Ohlin himself very often maintains that a complete factor price equalisation is not possible in reality, because of very many axiomatic limitations, but a partial factor price equalisation can be continued to be complete through the international trade.

2.7.5 On the other hand, Samuelson in 1948 and 1949 proved with assertion that such factor price equalisation 'is not only possible and probable, but also in a wide variety of circumstances it is inevitable.'[21] Samuelson in 1948 in a

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18 See, Samuelson, "Food and Cloth" in his analysis of factor price equalisation (1948), Stiglitz, vol. II, op. cit.

19 P.T. Ellsworth, Industrial Economics, New York, 1933.

20 Ibid., pp. 118-20.

21 Samuelson (1948), op. cit., p. 888.

rigorous mathematical test attempted to prove rather the inevitable.'[22] If, one rather looks through his assumptions, one would not be surprised if they lead to a successful conclusion. Let us, see some of his assumptions in a similar two regions, two factors, and two commodity models.

2.7.6 Assumptions

1. Constant return to scale.
2. Diminishing marginal productivity of inputs.
3. 'A' uses labour intensive to B's land intensive techniques without any defined real wage rate/profit rate.
4. Technological production function to be same both at A and B.
5. Free international trade, free mobility of factors and perfect competition.

2.7.7 Now, these assumptions are thought of in a neo-classical world of perfect competition and one would not be surprised if Samuelson proves to be correct. He himself has admitted in an earlier paper (1948); "Is it reasonable to set up the hypothesis that the production functions are the same world over? Is it possible to find reasonably homogenous and commensurable factors of production in diverse

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22 Samuelson (1949), "International Factor Price Equalisation once Again", Economic Journal, June 1949; Ed. in Stiglitz, op. cit., Vol. II, pp. 869-85.

parts of the world."[23] It has been argued by several 'neo-classical' or 'neo-Keynesian' theorists like Joan Robinson,[24] Maurice Dobb,[25] Garegnani,[26] and Krishna Bharadwaj[27] etc. that

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23 P.A. Samuelson (1962), op. cit., p. 255.

24 Joan Robinson (1961), "Prelude to a Critique of Economic Theory", Oxford Economic Papers, Vol. 13, pp. 7-14. Reprinted in K.K. Hunt and J.G. Schwartz, Ed., A Critique of Economic Theory, Penguin Economic Readings", 1972, pp. 197-204.
Also, "Capital Theory Upto Date", Canadian Journal of Economics, Vol. 13, 1970, pp. 309-15; Reprinted in Hunt and Swartz (1973), op. cit., pp. 238-44.
Also, "The Production Function and the Theory of Capital", Collected Economic Papers, Vol. 2, 1965, pp. 114-31; Reprinted in Harcourt, G.C. and Laing, N.F., Ed., Capital and Growth, Penguin Economic Readings, 1971, pp. 47-54.

25 Maurice Dobb (1970), "The Sraffa System and the Neo-Classical Theory of Distribution", De Economist, Vol. 118, pp. 347-62. Reprinted in Hunt and Schwartz, 1973, pp. 205-218.

26 P. Garegnani, "Heterogeneous Capital, The Production Function and the Theory of Distribution", Review of Economic Studies, Vol. 37; Reprinted in Hunt and Schwartz (1973), pp. 245-51.

27 K. Bharadwaj, "Value Through Exogenous Distribution", Economic Weekly (Bombay), 24 August 1963. Reprinted in Harcourt and Laing, op. cit., pp. 183-96.

the basis of the neo-classical theories, 'the assumption of perfect competition' has limited use in the reality and therefore, the assumptions of constant returns to scale, diminishing marginal utility, and the linearity assumption of production functions also suggest limited use. Even Samuelson himself in a paper in early sixties has admitted that a Clark-Ramsey sort of 'aggregate production function' is a limited concept.[28]

2.7.2 On the empirical plane Leontief brought out some very interesting findings[29] in the early fifties, in a study of the American economy, on the basis of his input-output table of 1939 that the bulk of American exports has a rather higher factor input of labour than of capital.[30] Following directly the Heckscher-Ohlin trade theorem which argues of a comparative cost advantage of factors, say labour and capital leading to specialisation and trade, he stated that the popular concept that U.S.A. is relatively capital abundant is a misnomer, particularly if the relative labour efficiency is taken into account, the American labour being 2/3

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28 P.A. Samuelson, "Parable and Realism in Capital Theory : The Surrogate Production Function", The Review of Economic Studies, 1962, pp. 193-206. Reprinted in Collected Scientific Papers, Vol. I, pp. 332-53.

29 W.W. Leontief, The Structure of American Economy, 1919-1939, Bombay, 1953.

30 P. Caves, "Domestic Production and Foreign Trade : The American Capital Position Reexamined", Proceedings of the American Philosophical Society, Vol. 97, 1953. Reprinted in Jagdish Bhagwati, Ed., International Trade, Penguin Modern Economic Readings, 1969, pp. 85-103.

times efficient compared to average labour of rest of the world. But there are reasons to believe that U.S. labour is not that superbly efficient as has been argued by Leontief.[31] Tatemoto and Fichimura (for Japan), Stolper and Roskamp (for West Germany), Wahl (for Canadian Economy) and Bharadwaj (for India) have tried to prove that the export component of these nations to a country of higher capital abundance is through commodities with comparetively higher capital contents and to countries of relative capital scarcity and labour abundance with commodities of higher labour contents. Implicitly they support a Heckscher-Ohlin framework although with a difference.[32]

2.7.9 But, we have earlier shown that basing on a theory of 'comparative advantage' factor mobility is a limited concept, internationally as well as regionally, although in the latter case, there is no tariff barrier as such, but there may exist mechanisms which might in fact, inhibit mobility of capital and labour, freely in either way.

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31 Kreinin (1965) has shown that U.S. labour cannot be more efficient than 1.20 to 1.25 times the average labour of the rest of the world. See M. Kreinin, "The Leontief Scarce Factor Paradox", American Economic Review, Vol. LV, March 1965, pp. 131-9; cited in Mooney, J.M., and Walker, J.M., Regional Analysis, M. Needleman, Penguin Modern Economic Readings, 1968, p. 264.

32 J.M. Mooney and J.M. Walker, "A Regional Test of Heckscher Ohlin Hypothesis", Journal of Political Economy, Vol. 74, 1966, pp. 573-84. Reprinted in L. Needleman, Regional Analysis, op. cit., pp. 266-7.

Terms of Trade

2.8.1 As we have referred, the most effective way of transfer of capital and thus accumulation has been through unequivalent exchange. Let us examine at some length how 'terms of trade' operates in a two region, two commodity model.

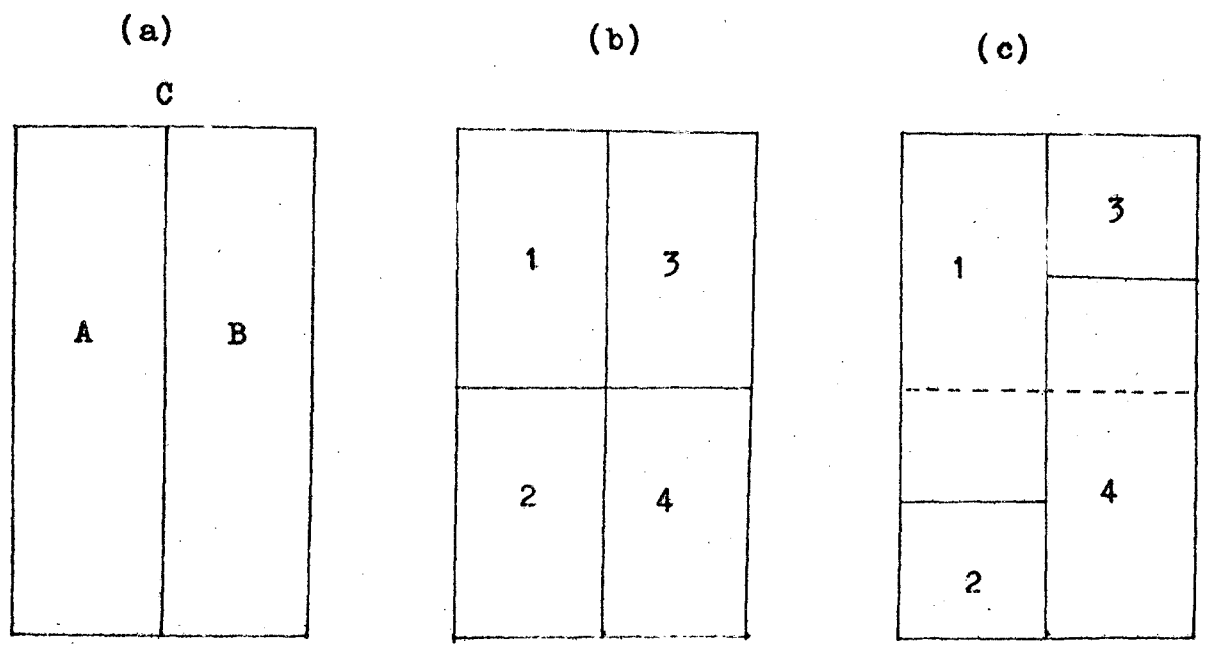
2.8.2 Let us assume that 'A', the advanced region, specialises in only capital goods and 'B' specialises in wage goods, i.e. foodgrains. Let us call them that they are the only items produced at 'A' and 'B' and nothing can be consumed directly of 'A's product, while 'B's products are totally consumed (except for whatever is kept as seeds for the next year's production). Assumed that there is no capital constraint so that expansion of production can be pursued infinitely of 'A' and since land is abundant at 'B' production can be raised depending on the equilibrium demand conditions.

2.8.3 In the Fig. 1(b) it is shown that the products of 'A' and 'B' are broken into 1, 2 and 3, 4 respectively, while 4 the part of the foodgrain surplus from 'B' traded with the capital equipment surplus 2 from 'A' and let us for the moment visualise that the prices are at the equilibrium position.

2.8.4 In the Fig. 1(c) it is being shown that while 'A' attempting to expand its accumulation has shrunk its exports

Figure 1.

Production of Wage Goods and Growth of Manufacturing Sector .



i.e. part of Z, and indeed now needs a more of foodgrains to feed an expanded labour force, 'B' has to generate a higher surplus from a limited produce, 4 and since the short turn supply of agricultural goods are relatively inelastic (if no import from abroad is assumed) prices of agricultural commodities would rise further in relation to prices of non-foodgrains and thus this would lead to a fall in the real wages at 'A'.

But the urban nature, leadership and higher bargaining power of 'A' would lead to a continuous tilting of the prices of manufactured products in the expanding stage. It has been argued that 'terms of trade' has been a very important mechanism of the accumulation process in the advanced countries in relation to the backward nations.

S.S.S Now what would happen given a situation that the terms of trade favours 'B', the agricultural sector? would this lead to a stagnation or decline at 'A'? There were problems raised in early twenties in the famous Russian debate on industrialisation which led to serious governmental measures in favour of the industrial sector.[38]

There are arguments in the divergence-stability-convergence model that the governmental policies might lead to measures favourable to the backward regions. It would be

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38 Ashok Mitra (1975), "Terms of Exchange, Accumulation and Growth : Some Comments on the Soviet Debate in the 1920s", Romesh Chandra Dutta Memorial Lectures, 3 and 4 February 1975, Calcutta (unpublished).

futile to assert the policy of the government without defining the particular position of the government vis-a-vis the ruling class and the working class. There are reasons to believe that a strong feudal background of the ruling class and the superstructure of a post-colonial enclave economy and the conspicuous alliance of the rural petty-producers' with the 'state-structure' might lead to policies in coercion with accumulation and growth.

2.8.6 However, the arguments which run on the S-S-C model lead to realisation that although divergence theoretically seems not much improbable in present underdeveloped nations, convergence seems to be less likely and at best, a stagnation after a certain period of the relative income and welfare levels of the regions might be achieved.[24]

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24 S.K. Rao (1972), "Regional Disparity in India", Doctoral Thesis, Cambridge (Unpublished), See Chap. 1.

CHAPTER III

CHAPTER III

A TEST OF DIVERGENCE-STABILITY-CONVERGENCE HYPOTHESIS : THE INDIAN CASE

3.1.1 In chapters I and II we have carved out the broader aspects on the theory of 'divergence-stability-convergence' and we have shown that under particular conditions of trade logic they are limited approximations. In the present chapter we would try to measure the D-S-C model to the Indian conditions with the tools suggested by Williamson.[1] The basic purpose is to locate the trend and movement of the data and the limitations of the study to particular condition. Essentially the study will be limited to state-level.

3.2.1 In an elaborate empirical analysis of countries and regions Williamson has 'ceteris paribus' brought out interesting conclusions in the analogy of growth and welfare in the underdeveloped as well as the developed nations. For his cross-sectional analysis he has taken the national income per capita corresponding to a period roughly falling between 1950 and 1960. At first, he classifies these nations into Kuznet's seven classes,[2] and then uses three relatively simple measures of inequality, i.e. the 'Yuv' or simple co-efficient

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1 J.G. Williamson (1965), Regional Inequality and Process of National Development, in, Needleman, Penguin Economic Readings, 1974, pp. 99-158.

2 Simon Kuznets (1963), "Quantitative Aspects of the Growth of Nations", VIII, "Distribution of Income by Size", Economic Development and Cultural Change (1956), January 1963, Vol. II, No. 2, Part 2.

of variation, the 'Vw' or weighted coefficient of variation[3] and 'Mw' or the weighted 'mean variations'[4] of the income per capita of regions of these nations.

3.2.2 Out of these three measures the most crucial one is the weighted coefficient of variation (Vw) which pays interesting insight into the problem. Among these countries Brazil shows the highest regional inequality (0.700) and Australia the lowest (0.058). The group average of the most developed countries (Group I) including U.K., U.S.A., Sweden, Canada, New Zealand is the lowest with 0.139 and the highest of the four groups (0.464) including Brazil, Italy, Spain, Columbia and Greece. Cross-sectionally the tendency of regional disparity is an increasing function inverse, to the level of development, i.e., the disparity grows from first group to the fourth and then falls towards the seventh group, except Philippines (Group VI) which shows unusually higher index of regional inequality with Vw. 0.556.[5]

3.2.3 This situation is explained that not only the divergence and convergence takes place within a nation but internationally, i.e. since countries of group V (Yugoslavia and Japan) and Group VII (India 0.275) were relatively

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3 The weight are given by the population proportions of a region to that of the nation (Pi/N).

4 For details of the statistical procedure, see J.G. Williamson (1966), Regional Inequality and Process of National Development, Ed., Needleman, Penguin Economic Readings, 1971, pp. 111 and 118.

5 See, ibid., Table 1, p. 112.

underdeveloped compared to groups III and IV, their index of regional inequality is low and therefore, a less important to the paradox of North-South. The situation would be aggravated as these countries make further stride into economic advancement.(1)

3.2.4 But the problem that Japan and Yugoslavia in mid-fifties were relatively less advanced compared to Brazil, Italy or Greece seems not much convincing, neither that their disparity did increase, compared to those of group IV. But here we would rather concern ourselves with the problem of India, the largest of the third world countries except for the People's Republic of China.

3.2.5 The most relevant for us is what Williamson deals in his intertemporal analysis of median family income[6] of forty-six states of U.S.A., between 1950 and 1960, the unit of analysis being at the country level. Out of the forty-six states only nine states show a tendency of regional (inter-county) disparity increasing and the rest a tendency of convergence. The lowest 'Vw' value is observed for the State of Connecticut (from 0.053 in 50 to 0.052 in 60) and highest for Georgia (from 0.40 in 1950 to 0.30 in 1960).[7] The regression coefficients of the index of regional disparity (Vw) and per capita income Ypc show an inverse

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6 Ibid., P. 130.

7 Ibid., Table 4(a), p. 134.

relation, the values of significance at 0.76 and 0.69 in 1950 respectively.[8]

3.3.1 This is in further evidence to Williamson's contentions that anything of such a tendency of regional convergence is not impossible. To compare this state of affair, we take the case of India, the State Net Domestic Products per capita corresponding to the decade of 1960-61 and 1970-71.[9] There are rather serious limitations on cross-sectional studies on such data because of their unworthiness for any strict comparability, but nevertheless, they offer useful insight into the problem. Secondly, there is no other source for the corresponding period which can be used for our purpose with safe comparisons. There are scanty comparable estimates given by CSO in the Report of the Sixth Finance Commission[10] but they again do not correspond to the period of our interest.[11] There are also estimates of NSDP by NCAER, individual researchers like K.N. Raj,[12] Ravi Verma,[13] M.D. Choudhury[14] etc., but again they are either outdated or inadequate for our analysis.

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8 Ibid., p. 122.

9 Estimates of total and per capita net domestic products for different states as prepared and published/cleared for publication by the respective State Governments. CSO. As on July 1978.

10 Report of the Sixth Finance Commission, New Delhi, 1969.

11 NCAER, "Estimates of State Incomes", New Delhi, 1965.

12 K.N. Raj, "Some Features of Economic Growth of the Last Decade in India", EPW, 6 February 1961.

13 Ravi Verma, "Estimation of State Income by Allocation Method", A paper submitted at Indian Conference on Research in R.I., 1961.

14 M.D. Choudhury, Regional Income Accounting in India.

Table 3.1

Crude coefficient of variations of Incomes per capita of states of India from 1960-61 to 1970-71 (Rs. in constant prices to 60-61).

(1) 1960-61 to 1965-66

		1960-61	61-62	62-63	63-64	64-65	65-66
1.	Andhra Pradesh	475	291	285	294	368	276
2.	Assam	315	"	"	"	"	339
3.	Bihar	215	232	232	222	219	221
4.	Gujarat	362	389	376	381	414	375
5.	J & K	259	258	257	259	281	238
6.	Haryana	327					319
7.	Himachal Pradesh	359	383	340	355	360	327
8.	Kerala	265	263	266	267	268	268
9.	Madhya Pradesh	283	284	270	277	291	241
10.	Maharashtra	409	399	401	407	419	386
11.	Karnataka	285	303	296	302	306	292
12.	Orissa	211	222	228	230	251	230
13.	Punjab	374	376	371	383	413	391
14.	Rajasthan	318	338	330	313	283	286
15.	Tamil Nadu	330	324	327	328	328	319
16.	Uttar Pradesh	246	247	243	256	257	245
17.	West Bengal	321	312	316	328	351	337
18.	Manipur	154	146	142	150	153	169
19.	Delhi	752	773	767	772	758	759
20.	Tripura	249	272	265	267	268	268
21.	Goa, Dm, Daman	20	15	15	15	15	20
	Mean	317	322	318	328	324	316
	S.D.	122.88	124.41	124.69	125.84	121.17	122.87
	C.V.	38.87	38.61	39.21	38.36	39.87	39.11

Table 3.1

Crude coefficient of variations of Incomes per capita of States of India from 1960-61 to 1970-71 (Rs. in constant prices to 60-61).

(i) 1966-67 to 1970-71

	1966-67	67-68	68-69	69-70	70-71
1. Andhra Pradesh	281	295	276	283	308
2. Assam	-	-	340	399	333
3. Bihar	198	208	206	206	222
4. Gujarat	378	401	366	389	425
5. J & K	265	277	279	290	291
6. Haryana	343	397	352	427	437
7. Himachal Pradesh	289	314	331	331	337
8. Kerala	275	257	262	269	279
9. Madhya Pradesh	246	292	277	287	299
10. Maharashtra	397	408	423	425	421
11. Karnataka	315	331	342	352	378
12. Orissa	247	243	250	250	265
13. Punjab	407	443	450	470	472
14. Rajasthan	334	359	345	362	411
15. Tamil Nadu	323	332	332	340	363
16. Uttar Pradesh	239	255	256	269	276
17. West Bengal	331	337	338	344	359
18. Manipur	195	186	204	196	173
19. Delhi	785	803	810	830	827
20. Tripura	251	245	259	244	-
21. Goa, Dm, Daman	19	19	20	20	19
Mean	320	336	334	345	361
S.D.	124.88	129.98	126.49	136.27	135.13
C.V.	39.02	38.68	37.87	37.75	37.43

3.3.2 To make comparisons with Williamson's analysis of U.S.A., we have used the same measures of inequality, Vw and Vuw with slight modification.[15] For analysis of simple coefficient of variations (Vuw) we have taken the per capita income estimates for nineteen states and two Union Territories, for the period 1960-61 to 1970-71 (annual estimates) in at constant prices, corresponding to 1960-61.[16] From Table 3.1

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15 Williamson's V_w .

$$\sqrt{\frac{\sum_{i=1}^{n} (Y_i - \bar{Y})^2 f_i / n}{\bar{Y}}}$$

After alteration (V_w)

$$\sqrt{\frac{\sum_{i=1}^{N} (Y_i - \bar{Y})^2 f_i / n}{N}}$$

where, f_i = Population of the i^{th} region

n = Population of the nation

N = Number of regions or states

Y_i = Income per capita of the i^{th} region, and

$\bar{Y}$ = National income per capita.

Although our modification would not change the characteristic of the measure significantly, since N is only a constant, statistically, the alteration seems useful.

16 In the released tables of C.S.O., all the constants figures are not corresponding to a particular base year, 1960-61, i.e. Assam for 1948-49, H.P. for 50-51, Karnataka for 56-57, and Rajasthan for 54-55. We have adopted a relatively simpler measure to standardise the data which is given below:

$$\frac{\dot{Y}_1 \cdot n / \dot{Y}_1 \cdot n}{Y_0 / Y_0} \times Y_1 \cdot n = \overset{o}{Y}_1 \cdot n$$

where $\dot{Y}$ = Current estimates
Y = Constant estimates of 0-n years
$\dot{Y}_0$ = Current income per capita of the base yr.
Y_0 = Constant estimates for the base year
$\overset{o}{Y}$ = Final series of standardised on the base

it can be seen that while the mean per capita income for the country improves from Rs.317 in 1960-61 to Rs.361 in 1970-71, a 10.71% increase at a rate of hardly, 1% per annum and the bulk of the total national income being eaten away by a fairly higher rate of growth of population of 24.5%. However, it looks optimistic that the Vw values have shown at first a slight increase from 38.57% in 1960-61 to 38.27% in 1964-65 and then a continuous decline to 37.42% in 1970-71. This might at first lead to conclude that there is a tendency of convergence. But then, Williamson himself has made it clear of the limitations of such a measure which does not take account of the size of the population of each of the regional units.[17] The low per capita income of Uttar Pradesh or Bihar compared to that of a higher in Punjab or Delhi are impossible. Therefore, we have again used the population weights according to the figures given by the Census of India in both 1961 and 1971 on the per capita income figures of 1960-61 and 1970-71 without making any serious limitations on the study. However, for convenience we have reduced the number of states to only sixteen, those which are rather in a more comparable stage; (States like Manipur and Tripura actually would not influence significantly the results because of smaller population size).

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17 Williamson (1965), op. cit., p. 114.

Table 3.2.

Proportion of Population of States to Total Population of India, 1961, 1965 and 1971

States	1961 Total Pop. of the State in Millions	1961 Prop. to total population	1965* Total Prop. of the states in mil.	1965* Prop. to total pop.	1971 Total pop. of states in millions	1971 Proportion to total pop.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	35.98	0.0819	38.90	0.0807	43.60	0.0794
Assam	11.11	0.0253	12.65	0.0262	14.96	0.0273
Bihar	46.45	0.1058	50.41	0.1046	56.52	0.1028
Gujarat	20.63	0.0470	23.06	0.0477	25.79	0.0467
J & K	3.55	0.0080	3.90	0.0072	4.62	0.0087
Haryana	7.59	0.0172	8.57	0.0177	10.04	0.0183
Himachal Pradesh	2.81	0.0064	-	-	3.46	0.0063
Karnataka	23.59	0.0537	25.87	0.0535	29.30	0.0535
Kerala	16.90	0.0385	18.68	0.0386	21.35	0.0390
Maharashtra	39.54	0.0900	36.07	0.0901	50.41	0.0920
Madhya Pradesh	32.36	0.0737	42.52	0.0747	41.65	0.0760
Orissa	17.55	0.0400	19.31	0.0400	21.94	0.0400
Punjab	11.13	0.0253	12.10	0.0250	13.55	0.0247
Rajasthan	20.16	0.0459	21.69	0.0447	23.77	0.0470
Tamil Nadu	33.69	0.0767	36.36	0.0752	41.20	0.0752
Tripura	-	-	-	-	1.56	0.0028
Uttar Pradesh	73.74	0.1679	79.88	0.1648	88.34	0.1612
West Bengal	34.92	0.0795	38.82	0.0801	44.21	0.0807
All India	439.24	1.0000	483.99	1.0000	547.36	1.0000

* Estimated at the arithmetic growth rate.

Table 3.3

Weighted Coefficient of Variation of Income Per Capita of India in 1960-61, 1964-65 and 1970-71

(1)	(2) 1960-61	(3) 1964-65	(4) 1970-71	(5) % change 3 to 2	(6) % change 4 to 2	(7) % change 4 to 3
V_w^*	0.472	0.0464	0.0489	-0.90	0.53	1.10
V_w	0.189	0.175	0.200			

V_w^* with our modifications.

3.4.1 The Vw measures are estimated on the basis of the respective proportions of population of each State to that of the total population of the nation, table II giving the details of them for the years 1961, 1965 and 1971. Table 3.3 gives the final estimates of Vw (and Vw*), which shows an interesting result of first a decline of the weighted coefficients of variation from 0.0472 in 1960-61 to 0.461 in 1964-65 and then a continuous increase to 0.0489 in 1970-71. To compare our estimates with that of Williamson, we have calculated Vw in similar manner and found that our values for sixties were slightly lower, compared to that of Williamson's fifties (0.189 in 1960-61 to his 0.278 in 1961-55)

but the tendency is that of increasing, further giving evidence that there is a growing regional inequality between the decade of 1961 and 1971. The implications of the above, rather limited preliminary, study is that firstly, although the growth of V_w between 1960-61 and 1970-71 looks a mere 5.6%, once 1964-65 period is taken as a break point, there is a relatively higher rate of increase in the post-64-65 period (8% approximately) during the 6 years) compared to the decline in pre 64-65 period of -2.3% in 4 years.

3.4.2 Secondly, the significance cannot be felt well unless the effect of the population re-distribution (changes in population weights) are taken into account.

The changes in relative share of population might take place either by migration or by a differential growth of population, while the former being much more relevant for the newly settled nations and regions of the world, the latter seems to be much more of significance in case of India and the third world nations.

Table 3.4

Effects of Population Redistribution, between 1960-61, 1964-65 and 1970-71

(1)	(2) V_w	(3) V_w^*	(4) % change of 3-2	(5) % change in respect to V_w of 60-61
1960-61	0.0472	0.0472	-	-
1964-65	0.0466	0.0465	0.20	Nil
1970-71	0.0499	0.0459	-7.80	-2.50

V_w^* population weights of 1960-61 has been used in rest of the two time periods to eliminate the effect of population redistribution.

3.4.3 In the measurement of the effects of the population redistribution, we have used a much simplified method of using the population weights of the base year (1960-61) to the other two years of analysis. Our analysis indicates that while the effect between 1960-61 and 1964-65 is insignificant since V_w does not change much between 1964-65 and 1970-71, it has some very important significance (0.0460 compared to 0.0499) a difference of 7.89%. This would imply, that if, population would not have grown disproportionately, disfavouring the larger states and would have remained at least constant in terms of 1960-61 weights the amount of inequality would have reduced by 2.50% over the decade (from 0.0472 to 0.0460)(i)

3.4.4 Thirdly, our results on the basis of un-weighted coefficient of variations and of weighted coefficient of variations (V_w) show tendencies, rather contrary to each other. While 'figures' show a tendency of convergence, V_w shows that of a divergence which itself validates the fact that any attempt to use unweighted per capita income in terms of the population size of the regions might actually distort the picture.

3.5.1 Here we would like to bring into view the work by O.P. Mathjan,[18] who simply uses the income per capita figures converting them in terms of index numbers and, therefore,

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18 O.P. Mathjan(1972), Doctoral Thesis, Kurukshetra, 1972.

rather, without much surprise, finds a tendency of convergence of the states, between the decade of 1950 and 1960. Similar results have also been forecast by NCAER[19] on their own estimates. Some position has also been taken by K.R.G. Nair[20] in a work in the similar empirical lineage as of Williamson.

3.6.2 In a different work Rao indicates that although there has not been any clear tendency of divergence, there is also no convincing evidence of convergence of a composition of several measures of welfare between 1950-51 and 1964-65 corresponding roughly to the three plan periods.[21]

3.6.1 Labour participation

It has been suggested by the NEW theoretical propositions that since the modern sector the manufacturing sector would lead the process of development, the labour participation would change in favour of the advanced region, that is the share of labour in manufacturing would increase in the total work force and an opposite tendency might be

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19 NCAER, Distribution of National Income by States, 1965, New Delhi.

20 K.R.G. Nair, "Inter-State Income Disparities in India", IJES, Vol. III, No. 2, 1971, p. 46.

21 S.K. Rao (1972), "Growth of Inequality of Income and Population in India : 1951 to 1965", Doctoral Thesis submitted to the University of Cambridge, London, Cambridge, 1972.

observed in the backward region.[22] This would result in a process of divergence in the relative shares of labour in manufacturing which would move along with the divergence of per capita income and other welfare variables. There are a lot many assumptions of the theory that the increase in share of industrial worker to total work force be an index of higher welfare, i.e. (i) higher productivity per labour, (ii) higher and increasing marginal productivity (because of the effect of increasing returns to scale compared to an inverse picture in the agricultural sector), (iii) higher propensity to save etc.

3.6.2 We have taken the share of labour in manufacturing (other than household) to total labour force of the states for both 1961 and 1971. Since there is a probability that size of the total workers of the state to the whole of the country might affect the welfare conditions, a weighting system is adopted, the share of total labour of a particular state

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22 Because of definitional differences the data pertaining to the work force of 1961 and 1971 are not comparable, but the workers in manufacturing (other than household) category seem to be tolerably comparable and, therefore, we have only taken this variable for our analysis. But, to remove further bias, we have only compared them in a cardinal scale, the ratio between workers in manufacturing to total workers of a region for both the time periods, which logically should cancel away any change in definition, because a change in definition in both numerator and denominator would cancel each other. But still there are limitations in the comparison of it.

to the nation being weighted on its share in labour share in manufacturing. The model of measuring the change in the level of inequality in respect to labour participation in manufacturing is given by,

$$I_w = \sqrt{\frac{\frac{\sum_{i=1}^{N} (l_i - \bar{l})^2 \times (n_i/T.100)}{N}}{\bar{l} \times \bar{n}}}$$

where, I_w = weighted inequality measure,

l_i = the percentage of labour in manufacturing of the i^{th} state to its total workers;

or, $l_i = (m_i/n_i \times 100)$

with m_i as the workers in manufacturing and

n_i the total workers of the i^{th} state.

$\bar{l}$ = Average share of labour in manufacturing in the nation.

n_i = Total workers of ith State

T = Total workers of the whole nation

$\bar{n}$ = Average share of workers of each state (100/N)

N = Total number of states.

Table 3.6

Weighted Coefficient of Variation of Workers in Manufacturing Industries in 1961 and 1971 (by states)

	States	1961		1971	
		% of total workers of the state to total of India	Man foot in the state to total workers in the state	% of total workers of the state to total of India	Man foot in the state to total workers in the state
	(1)	(2)	(3)	(4)	(5)
1.	Andhra Pradesh	9.89	2.65	9.98	4.19
2.	Assam	2.35	2.22	2.35	2.66
3.	Bihar	10.19	2.21	9.69	2.60
4.	Haryana	1.61	4.72	1.47	6.70
5.	Himachal Pradesh	0.42	1.54	0.70	1.68
6.	Gujarat	4.49	6.32	4.65	9.25
7.	J & K	0.80	2.20	0.76	2.76
8.	Karnataka	5.68	3.93	5.64	5.29
9.	Kerala	2.98	9.49	3.44	11.45
10.	Madhya Pradesh	3.97	1.99	3.47	3.04
11.	Maharashtra	10.04	6.52	10.19	9.61
12.	Manipur	0.18	0.31	0.20	1.64
13.	Meghalay	0.36	0.72	0.34	1.26
14.	Nagaland	0.11	0.25	0.14	0.82
15.	Orissa	4.06	1.12	3.79	2.30
16.	Punjab	5.01	2.75	3.16	3.13
17.	Rajasthan	3.67	1.80	4.46	3.20
18.	Tamil Nadu	8.13	5.53	8.17	3.84
19.	Tripura	0.23	2.48	0.22	2.12
20.	Uttar Pradesh	15.38	11.29	15.15	3.92
21.	West Bengal	6.13	4.72	6.85	11.37
22.	India	100.00	76.61	100.00	108.29
23.	Average	-	3.62	-	4.92
24.	I_w	-	0.2404	-	0.3118

Table 3.5 gives the results of the measure enunciated above. I_w or the weighted coefficient of variation of the share of workers in manufacturing (non-household) shows a decline from 34.04% in 1961 to 31.15% in 1971. This may imply that there has been a tendency of convergence of the modern sector. But, this may not be actually true.

3.6.3 Let us see the few problems in this respect.

Firstly, as we have already mentioned that due to definitional changes the total number of workers in 1971 has declined compared to 1961 and this might actually affect the results of our model.

Secondly, there might have been actually a movement of redistribution of labour in manufacturing towards the backward areas. There are reasons to believe that because of deliberate policy of public investments in backward states in late fifties and early sixties.

Thirdly, there are reasons suggesting that due to a relative stagnation in the manufacturing sector (because of the traditional character of the dominant industries, i.e. cotton and jute textiles) which affected adversely the advanced states with higher proportion of workers in manufacturing has gone down, resulting in a regional redistribution of labour.[23]

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23 Ratio of workers in the industry in the region to total workers of the region as percentage to the ratio of the industry of the nation to total workers of the nation.

Lastly, as our earlier data suggests that with a break point at 1964-65, the income per capita tends to converge by 64-65 and diverge at much greater a velocity in the late sixties (which also coincides to the GRP), it might suggest that an advancing agricultural sector and a stagnating industrial sector might, in fact, lead to a convergence, at least, to a stability in the level of inequality in the workers participation in the industrial sector, if the methodological problems are taken into account.

CHAPTER IV

CHAPTER IV

A MODEL OF MEASURING DISPARITIES BETWEEN REGIONS IN INDIA

4.1.1 In the earlier chapter (III) we have tried to build up a tentative hypothesis regarding the growth of inequality between states and regions in India. In the present chapter we would carry out investigation into details of the hypothesis and would try to offer an alternative measure of assessing income distances between states or regions thereof.

4.2.1 There are in fact, limited works in the particular line enunciated in case of India. The first ever cross-sectional study came out by the Registrar General, Census of India in 1961 in the form of a census monograph.[1] The study is at the district level in which thirty five variables of physical resources, economic and social conditions of welfare were taken and composited in a rather relatively limited manner (ranking method) to achieve a final index of the levels of development in India. This index has been used in identifying the backward regions of the country. A similar study was done by Biplab Dasgupta[2] in 1972 corresponding to 1961 data the basic difference with Mitra is on the methodology of compositing the index, the latter using the 'principal

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1 Asok Mitra, "Levels of Regional Development in India", Census of India, 1961, vol. I, Part I-A(i).

2 Biplab Dasgupta, "Economic Classification of Districts", E.P.W., 1972.

component and discriminant analysis'.[3] Another, a similar, study has been done by M.N. Pal in 1975 (IJRS).[4] A critique of these empirical attempts to classify the districts or regions on the basis of several variables has been given by B. Chattopadhyay and Moonis Raza in theoretical piece in the 1975 (IJRS).[5] The major limitation of these works is that their significance lies only to study at a particular point of time and hence showing no trend as such. Thus, their attempt for empiricism in a historical context of the country is relatively inadequate.

4.2.2 However, we would refer to two, rather more, thorough works (doctoral dissertations) directly connected to our problem of divergence-convergence, these are by O.P. Mahajan[6] and S.K.Rao.[7] Both the works correspond to a study in the same time period 1951 to 1964, roughly the first three plan periods on a more aggregate level of regional units, the states. But the conclusions by these two scholars are roughly

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3 R.P. Stone, "A Comparison of the Economic Structure of Regions based on the Concept of Distances", IJR, 1966.

4 M.N. Pal, "Regional Disparity in the Level of Development", IJRS, Vol. VII, No. 1, 1975, pp. 35-58.

5 B. Chattopadhyay and M. Raza, "Regional Development, Analytical Framework and Indicators", A working Paper, first presented in the First Geographical Congress, December 1972, New Delhi; Reprinted in IJRS, Vol. VII, No. 1, 1975, pp. 11-34.

6 O.P. Mahajan, Doctoral Thesis submitted to University of Kurukshetra, 1972.

7 S.K. Rao, Growth of Inequality of Income and Population in India, Doctoral Thesis submitted to the University of Cambridge, 1972.

opposite, the former arguing for a tendency of convergence of the incomes per capita, while the latter for a divergence (or at least a stagnancy) of development of the welfare levels of the people of different states of India.

4.2.3 Although for several reasons of methodology Mahajan's proposition seems less likely, the major defect seems to be the effect of the size of population of states which he has left taking into account, leaving aside the changes by the effect of 'population redistribution'.[8] In his rather simplistic way he converts the NSDP per capita to index numbers, the national income per capita being the base and observes whether the income per capita of any state jumps above or below the national income per capita.

4.2.4 On the other hand, Rao finds the per capita income data rather inadequate and somewhat limited for comparison purpose and hence takes six variables[9] of welfare as proxy to per capita income, corresponding to the time periods of 1951 and 1961. On the basis of Stone's[10] canonical correlation he composites them into indices of economic development. The fourteen states Rao has taken for his analysis,

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8 G.P. Mahajan (1972), op. cit., Chap. II.

9 S.K. Rao, "A note on measuring distances between regions in India", EPW, 26 April 1973, pp. 793-4. The variables are (i) per capita agricultural output, (ii) industrial workers percentage to total workers, (iii) per capita consumption of electric power, (iv) per capita industrial output, (v) infant death rate, and (vi) literacy rates.

10 R.D. Stone (1960), JRS, op. cit.

he classifies them into three major groups of regions, the 'most developed regions (West Bengal, Maharashtra, Gujarat); (B) 'Not so developed (Madras, Mysore, Punjab including Haryana), and (C) the 'least developed states (Kerala, Andhra Pradesh, Rajasthan, Bihar, Assam, Orissa, Madhya Pradesh and Uttar Pradesh). In a comparison between 1951 and 1961, Rao marks that while there is relative stagnation in the A and C groups, there is a marked upward revision in case of the B group and thus the bridge being removed there remains only the chasm between the rich and the poor regions.[11]

4.2.6 In Rao's analysis we must point out two characterisation of these groups which seem very important. Firstly, groups are segregated implicitly on the basis of their dominant industrial activities i.e. group 'A' representing the states most advanced in terms of industries, group 'C' in terms predominantly agricultural with traditional technology and group 'B', also predominantly agricultural but with a higher potential of increasing productivity because of a far larger area served by irrigation, particularly Punjab (including Haryana) and Tamil Nadu.[12] Secondly, the upward movement of the group 'B' signifies that the regions with predominantly agricultural background but with higher

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11 S.K. Rao (1973), op. cit., p. 738.

12 S.K. Rao, "Irrigation and the Growth of Differences in Agricultural Production", EPW, January 1971.

potentiality of improving productivity because of initial conditions of production could succeed in raising their welfare levels. But, again the problem of population proportions and redistribution effect are not directly incorporated by Rao, and hence his results somewhat undermine the reality.

4.3.1 Here, in this chapter we would use a slightly modified measure of the historical changes of the levels of development of regions in India. The methodological problems and results are analysed in greater details subsequently.

4.3.2 We have earlier remarked that we have four major problems of methodology before going into actual analysis of data i.e.

(i) Choice of time period

(ii) Choice of Regions

(iii) Choice of Data, and

(iv) Choice of tools of analysis.

Let us incorporate in greater details whatever falls within our framework of study.

Choice of Time Period

4.4.1 We have referred earlier in a summary of Rao's work that his contentions are that a set of regions predominantly agricultural have moved upward at a higher rate than even the conventionally industrialised states. This is rather somewhat contrary to the theoretical model offered by

Myrdal, Hirschman-Williamson which emphasises the occurrence of backwash effect (or polarisation) due to a higher concentration of growth by the industrialised region. Though Rao's work corresponds with a decade (1961 to 1961) in which rather much emphasis has been given for industrialisation, little headway has been achieved recognisably in the industrially advanced states. Contrary to this, the tendency shows that a little acceleration in the growth of productivity in the 'not so advanced' agricultural regions would further accelerate the difference between the states with lowest development and the highest development.

4.4.2 Earlier (in Chapter III) we have pointed out in trying some of Williamson's models that particularly in the latter part of the sixties, in the so-called Green Revolution Period (GRP) there has been actually a rapid acceleration of the differences in per capita incomes between states (regions) in the country. If these propositions are found sound then it is essential to study in more details the theoretical aspect of Myrdal-Hirschman-Williamson 'Dual Model' (we would refer this henceforward as MHW) and clearly state the limitation of the model that, it is not necessary for an underdeveloped country with predominantly agricultural background and preponderance of a semi-feudal mode and a rather, weak and traditional industrial structure to follow a path of divergence in its regional growth due to chiefly polarising

effects of the industrial enclaves, rather a set of regions of mainly agricultural background, with a clearly advanced technology might be much more effective in the process of stagnation of the industrial sector at one hand, and improvement of the rest of the agricultural sector.

4.4.3 Therefore, it is essential on our part to study two facets of the problem: (a) what is the magnitude of the problem of divergence of per capita income in the GRP compared to the pre GRP? and (b) what are the determinants of this divergence (i.e. effect of population growth etc.)? and to identify which are the regions that have contributed in this historical process. Secondly, one has to observe the major 'dense ex machina' through which this process (D-S-C) has been taking place.

4.4.4 Keeping in view the above problems, we have chosen the decade of 1960-61 to 1970-71 as our major period of study. This choice has been further supported by facts that 1961 and 1971 were two peak years of agricultural production corresponding to the pre-GRP and post-GRP with a break point at 1964-65, which is another peak period.[13] Since we have already assumed that the movement of agricultural output has significant impact on the national income of a country, whose

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13 Patnaik, P. (1976), "Current Inflation in India", Social Scientist, January-February 1976, pp. 22-42.

more than 40% of the NNDP originates from the agricultural sector, a study from peak to peak year would roughly approximate a trend without much serious limitations. On the other hand, this period particularly from 1966-67 to 1970-71, roughly takes account of the major change in the technology and productivity that entered into a traditional agriculture of India.

Choice of Regions

4.5.1 Basically, for our analysis we have accepted the states (the major 16 states) as our regional units of study. There are a lot of literature whether it is sound to take the states of India as units in regional analysis because of the diversities in their socio-cultural dimensions,[14] and thus some of the scholars who have attempted regional analysis have resorted to accept districts and even tehsils as the units of study.[15] There is basically nothing wrong with such a proposition, but there are reasons to believe that the states as regional units at least in a 'macro scale' is apparently a sound basis. The clear linguistic distinction which has been enumerated in the report of the State Reorganisation Commission[16]

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14 Rasheeduddin Khan, "The Regional Dimensions", Seminar, No. 164, April 1973, pp. 33-45.
Also A.M. Syakov, The National Problem in India Today Nauka Publications, Moscow, 1966.

15 B. DasGupta (1972), op. cit.; M.N. Pal (1975), op. cit.; K.L. Sharma (1975), IJAS, Vol. VII, No. 1.

16 Report of the State Reorganisation Commission, Government of India, 1956, New Delhi.

in 1956 as the basis of demarcation of inter-state boundaries has some elements of unavoidable truth (except for the broader Hindustand Region of the Northern India) and it must be admitted that the language as a dominant force in development of nationalities and a mentality of cohesion has been not only recognised in India only, but also in countries of acute nationality problems, i.e. U.S.S.R., China etc.[17]

4.5.2 On the other hand, what seems of much more importance for us here is the availability and relevance of data for analysis while we are following the M-H-W, and therefore, the state income statistics are what can only be thought of. Although, a study of NCAER in 1956 gives estimates on the district incomes per capita,[18] due to lack of any comparable inter-temporal statistics and non-appropriateness to our time period we have to limit ourselves only to the states as our units of analysis.

Choice of Data

4.6.1 We, in the preceding paragraph have pointed out some problems regarding the choice of data for the measurement of σ-C of per capita income, related to the choice of regions. The fact that we are taking the state income estimates for

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17 Karat Prakash, Language and Nationality Politics in India, Orient Longman, 1973.

18 NCAER, Estimates of District Incomes, New Delhi, 1956.

our analysis might in fact undermine our conclusions because of inadequacy and limitations of comparability of our data. But, since we are only studying a trend of M-H-W the use of income statistics seems unavoidable, say for a first approximation.

Choice of the Tool of Analysis

4.7.1 There is the whole gamut of controversies, regarding the measurement of inequality, may be within persons, regions or nations, the main difference being the level of aggregation. After all, the level of regional development is only the aggregation of the individual levels of welfare. There are two basic ways which have been recognised, i.e. (i) that one should average out the welfare levels of all the individuals of a region and then see the differences of these averaged out welfare levels between regions or nations for that matter or, (ii) that one should break up the population into income classes and then incorporate any historical change, if any, in their (regions) relative differences. The latter corresponds to the theoretical works of Lorenz[19] and Atkinson,[20] the former corresponds

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19 M.O. Lorenz (1905), op. cit., JASA, Vol. 9.
Also, Kuznets (1963), op. cit., EJEG.

20 A.B. Atkinson (1970), "On the Measurement of Inequality", Journal of Economic Theory, Vol. 2.
Also, Reprinted in Wealth and Income and Inequality, by the same author, Penguin Modern Economics Readings, 1973.

to that of Pigou[21] and Dalton[22] and later followed by the M-H-W and others. Amartya K. Sen[23] suggests a marriage between these two approaches by using the Gini concentration ratios on the indices of averaged welfare variables but since data on classes of populations is virtually impossible to obtain even, in the most advanced countries, it would be futile to try in the case of India (although there are a few sample studies referring to that of the whole of the Nation).[24]

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21 A.C. Pigou (1920), The Economics of Welfare, MacMillan, London, 1920.

22 Dalton, H. (1925), Inequality of Incomes, London, 1925.

23 Amartya Sen (1973), On Economic Inequality, Oxford University Press, 1973, Indian Impression, Chapter 2, pp. 24-46.
Also ibid. (1972), "Measurement of Poverty and Inequality in India", Zakir Hussain Memorial Lectures, New Delhi, 1972.
Also ibid., "Poverty, Inequality and Employment : Some Conceptual Issues in Measurement", EPW (SM), 1973, pp. 1457-64.

24 NCAER (1975), "Report of the Panel Sample Survey of Rural Households" (ARIS) 1968-69 to 1970-71, Margin, July 1975.

It has been argued that since 1960, the Gini coefficients are declining for the incomes of rural households.

4.7.2 However, as our basic preoccupation remains with the line of analysis of M-H-W, i.e. Williamson's measure V_{ws} and V_{uws}, we must see what are the basic methodological problems that need modification or improvement, if any.

4.7.3 Statistically seeing, Williamson's 'V_{ws}' is the weighted coefficient of variation of the per capita incomes of the regions. Since weights are constants, co-efficient of variation, which remains important. In an interregional, inter-personal test this measure seems quite sound, since it satisfies the 'Pigou-Dalton condition'.[25] The most important property of the study of coefficient of variation is that it takes the variation of one observation in relation to the average (mean) of the variable, which are aggregated later. This is rather limited aspect of the story since unlike the Gini coefficient it does not account for the distance between each of the classes (or units or observations for that matter) with the other. Therefore, it is important to study the aggregate of the distances of I^{th} versus the regions and then rather compared inter-temporarily, whether the aggregate distance of i^{th} region with other regions increases indicating a divergence, or decreasing, therefore, converging.

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25 A.K. Sen (1973), op. cit., p. 27. (from 0.44 to 0.38 in 1970-71).

The Model of Analysis

4.8.1 The states are arranged into three groups according to the grouping suggested by Rao from 'advanced' to 'not so advanced' and to 'less developed' regions. This grouping is done to measure the inter-group distances (to maximise) and to minimise the intra-group differentials.[26]

4.8.2 (1) Per capita income differential between the i^{th} and the j^{th} region is estimated for all the sixteen states and arranged in symmetrical matrix form, of which the diagonal values would be zero (representing the distance of i^{th} region to the same being zero).

(2) Distance between the i^{th} and the j^{th} state,

$$d_{ij} = (\delta_{ij} \cdot f_i/N + \delta_{ji} \cdot f_j/N) \cdot 0.5 \quad \ldots \quad (I)$$

where, d_{ij} = Total distance between the i^{th} and the j^{th} state

f_i = Population of the i^{th} region,

f_j = Population of the j^{th} region,

N = Total population of the nation,

and $/\delta_{ij}/ = /\delta_{ji}/$ = Income differential between the i^{th} and j^{th} states.

(3) Let, D^{to} and D^{tm} be two symmetrical matrices of $n \times n$ dimension representing all the d_{ij}s from 1 to n states

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26 C.K. Rao (1978), op. cit., pp. 728-9.

corresponding to the base year (1960-61) and the terminal year (1970-71) respectively.

But since there is a total growth of income as well as population in tn^{th} year, the distances would be biased by both the movements. Therefore, let us introduce a normalising factor:

$$\Phi^{tn} = \frac{\bar{Y}^{tn}}{\bar{Y}^{to}} \Big/ \frac{N^{tn}}{N^{to}} \quad \ldots \quad (II)$$

Where, Φ^{tn} = the normalising factor

$\bar{Y}^{tn}$ = National income per capita in the tn^{th} year

$\bar{Y}^{to}$ = National income per capita in the base year, to

N^{tn} = Total population of the nation in the terminal year;

N^{to} = Total population in the base year

(4) $D^{*tn} = D^{tn*} / \Phi^{tn}$ ... (III)

Where, D^{*tn} = the normalised, symmetrical matrix of distances at the terminal year;++

(5) The total distance between the i^{th} region and rest of the regions (n-1):

$$\Delta_i = \sum_{j=1}^{n} d^{*}_{ij} \quad \ldots \quad (IV)$$

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* D^{tn} is the non-normalised matrix

++ Proof : $D^{*to} = D^{to}$

Since, $D^{to} / \Phi^{to} = D^{to} / 1 = D^{to}$

Where, Δ_i = the total distances between i^{th} and rest of the country.

d^*_{ij} = the normalised distances between i^{th} and j^{th} regions (d_{ij} / ϕ^{jn})

(6) The total distance between all the regions of the country can be given by

$$\theta_{ij} = \sum_{i=1}^{n} \sum_{j=1}^{m} d^*_{ij} \qquad \text{..} \qquad (V)$$

Hypothesis;

$(H-\alpha)$ - If, $\Delta_i^{tn} - \Delta_i^{to} > 0$ then, there is a divergence of welfare levels of the rest of the nation in respect to the i^{th} state. If, it is equal to zero then a trend of stability and if, < 0 then, a tendency of convergence.

$(H-\beta)$ - If, $\theta_{ij}^{tn} - \theta_{ij}^{to} > 0$ then, there is a total process of divergence and if, equal to or, < 0 then, stability or convergence respectively.

$(H-\gamma)$ - If, $\theta_{ij}^{tn} - \theta_{ij}^{tb} > \theta_{ij}^{tb} - \theta_{ij}^{to}$ then, there is a higher rate of divergence between the periods of post-break point (tb , 1964-65), and the pre-tb

Table 4.1

Per cent change of total weighted distances of a State During the Decade of 1960-61 and 1970-71

States	Total distance in 1960-61	Total distance in 1964-5	Total distance in 1970-71	% change of 3 to 2	% change of 4 to 2	% change of 4 to 3	Average annual growth rate between 1960-61 & 1970-71
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Gujarat	64.09	87.96	87.41	37.22	36.39	- 0.60	3.64
2. Maharashtra	134.88	117.11	117.19	-12.98	-12.92	0.06	- 1.29
3. W. Bengal	54.32	65.89	73.85	21.29	36.95	12.10	3.60
4. Haryana	33.42	30.76	71.78	- 7.95	114.78	132.30	11.48
5. Karnataka	41.62	41.69	65.71	0.16	57.98	57.20	5.79
6. Punjab	58.32	57.52	98.77	- 0.85	69.36	70.10	6.94
7. Tamil Nadu	57.62	53.60	63.44	- 6.97	10.10	18.30	1.01
8. Andhra Pradesh	53.74	41.25	73.44	- 23.24	36.65	77.70	3.65
9. Assam	33.76	37.35	44.93	10.63	33.32	20.60	3.33
10. Bihar	111.22	100.58	158.62	- 9.56	42.62	58.00	4.26
11. Kerala	40.08	42.29	57.37	21.96	43.14	17.30	4.31
12. Madhya Pradesh	48.55	47.50	71.79	- 2.16	47.87	45.00	4.79
13. Orissa	68.79	49.42	66.35	-28.15	- 3.55	34.30	- 0.36
14. Rajasthan	41.38	42.11	79.47	1.76	92.05	88.10	9.21
15. U. Pradesh	112.06	108.17	135.96	-3.47	21.33	25.75	2.13
16. J & K	26.52	27.37	38.32	3.20	44.49	40.00	4.45
17 0_{ij}	980.01	967.46	1304.29	-2.30	33.10	36.18	3.31

4.8.3 Primary results from our analysis shows (table 4.1) that in the decade of 1960-61 and 1970-71, the aggregate weighted distances (Δ_{ij}) has increased in case of fourteen states out of the total of sixteen states, Maharashtra and Orissa being only the two states showing minor decreases of -0.36 and -1.29 per cents per annum respectively.

4.9.1 In the year (1960-61), Maharashtra (134.55), Bihar (111.22) and Uttar Pradesh (112.06) showed higher initial difference with rest of the states, the former being much more advanced and the latter two being much more backward. In 1970-71 these three highly differentiated states have maintained a higher distance, while three other states--Punjab, Haryana and Rajasthan--have improved their distance substantially by 69.36, 114.78 and 92.06 per cents during the decade. However, all these three have improved in a positive direction in the process of development.

4.9.2 The major three industrialised states in 1960-61--Maharashtra, Gujarat and West Bengal--(falling into the advanced group of Rao) have shown a relative stagnation, the former showing a decline while the latter two showing a moderate increase during the decade.

4.9.3 Earlier, we have discussed that for reasons of import, we have made a break-point at 1964-65 to analyse the decade on methodological perspective. A comparison between the matrix of 1960-61 and 1964-65 shows a tendency of general

convergence. Out of sixteen states nine states show a decline in the aggregate distance between th, i^{th} and j^{th} regions and a net average decline of -2.30 for the period of four years.

4.9.4 On the other hand, a comparison between 1964-65 and 1970-71 shows an accentuation of the trend of divergence from a decadal average of 3.31% to 6.03%. During the six years, only except the state of Gujarat (which shows a nominal decline of -0.12%) the rest other states show net increase in the aggregate income distances. Again, except for the trio of the industrialised states, rest other states show a much higher rate of increase led by Haryana (22.06%) followed by Rajasthan (14.7%) and Punjab (11.70%). Even some of the backward states which show a relatively lower rate of increase in the average decadal distance, indicate a moderately faster rate of increase (A.P., 12.5%, Bihar, 9.6%, Orissa 5.6% etc. per annum). It might be indicative of faster rate of impoverishment and pauperisation in the backward regions (table 4.2).

4.9.5 In a cardinal comparison (table 4.2) shows that while Gujarat, Maharashtra, West Bengal and Tamil Nadu maintained a higher share of the aggregate distance of all the states (6.64, 13.73, 5.54 and 5.95 respectively), opposing to the backward group of U.P. (11.43), Bihar (11.35%), and Orissa (7.02%), the relative position in both these groups has declined or at least remained stagnant with a somewhat

Table 4.2

Percentage of total Distances of a State to total of all the States. (1960-61, 1964-65 & 1970-71).

States (1)	1960-61 (2)	1964-65 (3)	1970-71 (4)
1. Gujarat	6.54	9.18	6.70
2. Maharashtra	13.73	12.23	8.98
3. West Bengal	5.54	6.88	5.67
4. Haryana	3.41	3.21	5.50
5. Karnataka	4.25	4.35	5.04
6. Punjab	5.95	6.03	7.57
7. Tamil Nadu	5.85	5.59	4.86
8. Andhra Pradesh	6.48	4.30	5.62
9. Assam	3.44	3.90	3.44
10. Bihar	11.95	10.50	12.16
11. Kerala	4.09	5.10	4.40
12. Madhya Pradesh	4.95	4.96	5.50
13. Orissa	7.02	5.16	5.09
14. Rajasthan	4.22	4.39	6.09
15. Uttar Pradesh	11.43	11.29	10.42
16. J & K	2.71	2.85	2.94

moderate increase in 1964-65 while states like Punjab, Haryana and Rajasthan have improved substantially (from 5.96%, 3.41%, and 4.22% to 7.67%, 5.50% and 6.09% respectively).

4.10.1 To analyse in a more detailed way, we have mentioned earlier that it is felt necessary to group the regions into three groups of (i) the advanced 'A', (ii) the not so advanced 'B', and (iii) the backward 'C' groups (a la Rao). Now, blocking of these groups; three in 'A', four in 'B' and the rest nine in 'C' group would show group distances of two nature, the aggregate of the distances within a group (the diagonal submatrics) intra group distance, and the aggregate matrics as inter-group distances (table 4.3a).

4.10.2 The purpose in the present problem is that the intra-group distance has to be minimised and inter-group distance maximised, but since the sum total of the group distances in one might be much larger than the other because of the differential number in addition an average distance qualified by the aggregate, divided by number of boxes involved in summation would help in inter group comparison of group distances.

4.10.3 The basic hypotheses involved are that -

(1) if some regions are grouped on the basis of minimised welfare distances (Rao), their intra-group income distance would also be minimised.

(2) The average intra-group distance would always be less than the inter-group distances, otherwise, the

grouping are inconsistent with the first hypothesis, because of non-optimal conditions.

(3) In a historical study our groups should improve their 'off-diagonal averages', if our assumption of a divergence has to be maintained. (Table 4.3a)

4.10.4 In 1960-61, except for group 'A' the other two groups are consistent with our first and second hypotheses, that the average intra-group distances are lower than the inter-group distances. The intra-group distance for group 'A' falls in 1964-65 (from 2.93 to 2.09) and, again rises in 1970-71 indicating an intra group inconsistency. However, for group 'B' this phenomena is just the reverse, that intra group distance first rising by 1964-65 and again falling in 1970-71. In case of the backward group 'C' maintains a stand similar to that of Group 'A'. In an absolute comparison of the average intra-group distances for group 'B', it seems substantially lower than 'A' and 'C' and this position is only gets accelerated in 1970-71, when the intra-group coefficients for 'A' and 'C' improves substantially for 'B' group, it falls sharply, indicating a higher intra-group differentiation between group 'A' and group 'C' at one hand and group 'B' at the other.

4.10.5 A comparison between intra-group and inter-group coefficients shows that in general it is consistent with our third axiom, the highest off-diagonal average being observed in case of group 'C'. While the ratio between an

Table 4.3 (a)

Inter-group and Intra-group distances (Rao's Groups)

	1960-61			1964-65			1970-71		
	A (1)	B (2)	C (3)	A (4)	B (5)	C (6)	A (7)	B (8)	C (9)
Intra-group									
Total	26.40	22.64	219.64	18.84	26.12	205.42	29.36	28.00	280.58
Average	2.93	1.41	2.71	2.09	1.64	2.54	3.26	0.88	3.46
Inter-group									
Total	200.19	337.94	632.84	504.22	315.50	594.44	219.73	543.40	891.12
Average	2.56	3.52	8.50	6.46	3.29	8.11	2.82	5.49	7.07

intra-group coefficient and inter-group coefficient show a declining tendency for groups 'A' and 'C', while for group 'B' it improves from 2.5 times to 6 times during the decade.

4.10.6 Although these group comparisons have helped us to reason out some of the tendencies, our first axiom of minimising intra-group distance and maximising inter-group distance has not been achieved, significantly. This may be because of our pre-occupation of grouping the states on the basis of relative welfare levels, while the distances measured in terms of weighted income per capita.

4.10.7 For this we have adopted a far more simpler method of grouping, basing on the non-weighted income per capita of the states. Table 4.3(b) gives results of some of our simple estimates.

While the per capita income[27] grew by only 6% in four years between 1960-61 and 1964-65, it grew by 2% in 6 years between 1964-65 and 1970-71 with a slight fall in the latter period. However, the crude coefficient of variation rose from 6.15% to 25.5% (gross), indicating a point we marked in the latter part of this chapter and Chapter III.

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27 The basis of grouping is by mean income per capita and stand deviation of the same.

A group = $\bar{Y} + \frac{1}{2}\sigma$ >

B group = $\bar{y} - \frac{1}{2}\sigma$ to $\bar{y} + \frac{1}{2}\sigma$

C group = <$\bar{y}$ $-\frac{1}{2}\sigma$

$\bar{Y}$ = average of state incomes or national income/capita for a particular year.

and, σ = standard deviation of income/capita of the states for the same year.

Table 4.3 (b)

Grouping the states and their movement between 1960-61 and 1970-71

	1960-61	1964-65	1970-71
Group A	Tamil Nadu, Punjab, Maharashtra, Gujarat, Haryana	West Bengal ↑	Rajasthan, ↑ Haryana
Group B	Andhra Pradesh, Madhya Pradesh, Rajasthan, Karnataka, West Bengal, Assam	Haryana, Tamil Nadu ↓	
Group C	Bihar, Orissa, J & K, Kerala, U.P.		Andhra Pradesh, Madhya Pradesh ↓
	(Income per capita in Rs.)		
Group A	327/	348/	386/
Group B	275-326	291-347	310-379
Group C	/274	/290	/300

4.10.8 In 1960-61 by way of grouping, roughly 5 states fall into group 'A', 6 into group 'B' and 5 into group 'C'. In 1964-65 there seems to be a reinforcement by two states migrating from group 'A' to group 'B' (degraded Haryana and Tamil Nadu), while west Bengal is upgraded into group 'A'. This reflects implicitly that the internal differences between per capita income has been reduced as has been pointed out in table 4.1. A comparison with 1970-71 only consolidates our position, that group 'B' becomes depleted from 7 states to three only, while two are upgraded (Haryana and Rajasthan), two are degraded to group 'C' (Andhra Pradesh and Madhya Pradesh). This might imply what time and again we have mentioned as the growing inequality between the states/regions in India, particularly, in the later part of the sixties.

4.10.9 However, our basic preoccupation remains here with the regrouping of the states so that our axiom gets satisfied. We maintain the grouping of 1960-61 (5-6-5) on the basis of our method enunciated. The regrouped matrices for all the three points of time are attached in Appendix II. Table 4.3(c) gives the results of the regrouped regions.

4.10.10 Regrouping has considerably improved the difference between average intra-group distances and inter-group distances and maintaining the validity of axiom no. 1.

Table 4.3 (c)

Inter-group and Intra-group Distances (On the basis of 4.3 (b)*)

	1960-61			1964-65			1970-71		
	A (1)	B (2)	C (3)	A (4)	B (5)	C (6)	A (7)	B (8)	C (9)
Intra-group									
Total	46.30	52.14	43.92	44.46	50.08	36.20	45.14	101.16	47.54
Average	1.85	1.45	1.76	2.18	1.40	1.46	1.81	2.97	1.90
Inter-group									
Total	603.46	440.78	631.06	345.46	423.60	416.46	786.90	615.84	818.16
Average	5.49	3.67	5.74	3.14	3.53	3.79	7.15	5.13	7.44

* According to the revised groupings:

A = Tamil Nadu, Punjab, Haryana, Gujarat, and Maharashtra.

B = Andhra Pradesh, Madhya Pradesh, Assam, Karnataka, West Bengal and Rajasthan.

C = Bihar, Orissa, Jammu and Kashmir, Kerala and Uttar Pradesh.

Secondly, there seems to be quite a different tendency of comparison of the intra-distances of the groups. Contrary to the earlier grouping, group 'A' shows an increase of intra-group distance for 1964-65 and then a decline in 1970-71; group 'B' shows a slight decreased in 1964-65 and a big increase in 1970-71 and group 'C' shows a relative stability of the intra-group distances. This seems much consistent with our findings in table 4.4 that the 'not so advanced' regions 'B' have moved either way, some to group 'A' and some to group 'C' and hence it seems natural that the internal distance within group 'B' in 1970-71 increases significantly.

Thirdly, the inter-group distances grew consistently with a slight fall in 1964-65 to 1970-71 in all the three groups, particularly groups 'A' and 'C', indicating a progressive differentiation; on the other hand, group 'B' indicates a decline in the ratio of intra and inter group distance, consolidating a proposition made earlier.

4.11.1 Finally, concluding this chapter, we have through our meagre data, somewhat established tendencies closer to reality, which can be summarised into broader three points.

(1) Firstly, that the per capita income distance in the decade of 1960-61 to 1970-71 has increased in general,

with a significant acceleration of the rate in the post 1964-65 period.

(2) Secondly, a grouping of states into 'advanced', 'not so advanced' and 'backward' states show that the bridge between the advanced and backward areas have been vanishing either way, implying a progressive differentiation between the welfare conditions of these groups (between 'A' and 'C').

(3) Lastly, that while many of the states remain stagnant, particularly the earlier group of advanced states, the major task of differentiation has been borne by a group of agricultural states with a substantial changes in technology.

CHAPTER V

CHAPTER V

THE GROWTH OF AGRICULTURAL OUTPUT AND TERMS OF TRADE

5.1.1 The basic purpose of this chapter is to provide explanations for the growth of inequalities of income per capita of the regions of India. We have shown earlier that the growth of inequality between states was particularly sharp during the later part of the sixties and early seventies, coinciding to the so-called Green Revolution period, which was marked for a rapid growth in foodgrain output in India. Our analysis in Chapter III and Chapter IV has indicated that the inequalities stated, have sharpened by a group of states with a significant change in agrarian technology and production, i.e. Punjab, Haryana, Western Uttar Pradesh, Rajasthan and parts of Tamil Nadu. However, except for the three states of Punjab, Haryana and Rajasthan, the rest are difficult to isolate because of non-segregability of our data for the regional units at sub-state level.

5.1.2 The first part of this chapter would be engaged in relating the growth of inequality and divergence between the regional units of India to that of a backwash effect generated by a group of advanced agricultural states. In the second part, we would try to establish the *modus operandi* of the process relating to the changing price structure favouring the agricultural items, particularly the foodgrains.

However, our entire argument would be on the basis of published works and secondary sources.

5.2.1 As we have been doing in the last two chapters, our basic preoccupation has been to test whether a process of divergence - convergence of the income per capita of the regions takes place and rather with all limits of relevance been successful to establish, that in fact, in the decade of 1960-61--1970-71, the major trend of the growth efforts have been associated with a tendency of divergence particularly after 1964-65. We have also found that while rest of the economy rather remained stagnant, particularly trying to keep pace with the growth of population, a small number of states with predominantly agricultural background made significant progress in moving from the 'not so advanced group' to equate their welfare standards with the traditionally 'advanced' industrial states. On the other hand, a few number of states were degraded to the lowest cadre of the groups, that of the 'backward' ones.

5.2.2 It is rather of interest to know that while Haryana, Punjab and Rajasthan along with Andhra Pradesh and Madhya Pradesh were all traditionally agricultural states, why the group of the former joined the club of the privileged, industrialised states, while the latter two resorted to the neglected ones, leaving aside the fact that rest of the backward group also, being predominantly agricultural, have remained stagnant. We have discussed in Chapters II and III

that the basic logic of M.H.W. theory of 'divergence-stability-convergence' has been that in a two sector, two region model, it is because of the 'backwash effects' generated by the advanced industrial region that which would lead the process of divergence. But we have seen that the three advanced states of Maharashtra, Gujarat and West Bengal have remained stagnant, particularly, in the early sixties (during the third plan period) and even since then and rather in the pre-1964-65 period a slight tendency of convergence has been the rule. But in the post-1964-65 period the rate of increase in the process of divergence has been particularly sharp.

6.3.1 Let us observe first the nature and character of growth pattern during the decade of sixties, particularly that of the agricultural sector which accounts directly more than 40% to the national income.

There has been intense academic and official efforts in studying the pattern of productions, productivity etc. in the end of sixties and early seventies when there were authentic claims regarding a breakthrough in agrarian technology and productivity in India. There has been active controversies regarding the growth rate of crop productivity in the later sixties which was referred as the Green Revolution. However, we do not intend to go into the controversies whether there had been a Green Revolution in India or not, but we will like to make few points regarding the nature and character of crop output in the last decade.

5.3.2 In a study for last two decades of fifties and sixties particularly a periodical comparison between pre-1964-65 and post-1964-65, P.C. Bansil[1] asserts that there has been in fact, a higher growth in foodgrain output (3.5% to 3.0%) particularly contributed by the phenomenal growth of wheat output (14.0% to 4.0%). Output of pulses, cotton and jute has been declining at a rate of 1.7%, 4.6% and 3.5% respectively between 1949-50 and 1964-65, and 0.94%, 3.17% and 1.96% between 1964-65 and 1970-71.

5.3.3 This preponderance of foodgrain production has been not only through increase in yield but transfer of area under cash crop to foodgrain production and addition of increase in net and gross area. On the other hand, this significant increase in foodgrain output which reached an all time high in 1970-71 (at 111 million tonnes) was accounted for by mainly, four states of Haryana, Punjab and Utter Pradesh and Rajasthan (last was rather unusual because of weather conditions), the former three contributing as much as 56% for the whole country and more than doubled their own output.

5.3.4 Contrary to this, the rest of states of Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Bihar, Orissa and Assam sharing nearly 48% of the net cropped area had a very insignificant growth of foodgrain output by only 0.2% in six years period preceding 1970-71.[2]

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1. P.C. Bansil, "Production Pattern and Green Revolution", IJAE, No. 4, 1972, pp. 104-17.

2 Ibid., p. 115.

5.3.5 We must make a clear distinction now that the group of former states being mostly wheat producing while the latter group being rice producing. In a later study by Patanaik[3] this position is more or less supported, the compound growth rates of wheat and rice output between the decade preceding 1964-65 and up to 1970-71 been 3.0%, 3.9%, and 11.7%, 1.1% respectively. Deducting the net grains out of the growth of increase in area, the output of wheat is more than significant in the later sixties, while the rice output declined as well as all-crop output from 3.0% to 2.3%. (See table 5.1).

5.3.6 We have only discussed so far that there has been a crop-wise concentration of output in the GR period. Table 5.2 gives a statewise break up of a decadal comparison of output in fifties and sixties. Compared to fifties almost all the states of the country except for Punjab (including Haryana), Rajasthan and West Bengal (rather marginally) there has been a marked deceleration in the growth rate of agricultural output in the sixties. Compared to all crops, foodgrain output has especially suffered a setback. Roughly, one can make association between areas which are specialising in wheat observing a boom and areas with predominantly rice crop suffering from a recession. At least, in half a dozen

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3 Prabhat K Patanaik, "Current Inflation in India", Social Scientist (SI), January-February 1975, pp. 22-42.

Table 6.1

Growth Rates of crop-output and of area in the post-independence period in India (based on Index Nos. with base 1959-62 = 100)

Crop	Output		Area		Output		Area	
	1954-55 to 1964-65	'64-65 to 70-71	'64-65 to 64-65	'64-65 to 70-71	'52-55 to 59-62	'59-62 to 69-72	'52-55 to 59-62	'59-62 to 69-72
Rice	3.9	1.1	1.6	0.5	3.4	2.1	1.5	0.9
Wheat	3.0	11.7	1.8	5.2	4.2	7.7	3.3	3.0
Pulses	0.7	-0.8	0.8	-0.9	1.5	0.5	2.1	-0.8
All foodgrains	2.7	3.0	0.9	0.9	2.7	2.7	1.3	0.6
All non-foodgrains	3.9	0.8	2.0	-0.3	4.2	2.3	2.6	0.7
All crops	3.0	2.3	1.0	0.6	3.0	2.5	1.5	0.7

Source: Prabhat Patnaik, Social Scientist, Inflation Issue, 1975.

states the growth rate of foodgrains been way below that of population. This offers a picture of growing deficit situation in these states.

5.3.7 In a recent study Krishnaji has shown that the new agricultural strategy of HYV in areas of assured irrigational facility has a built in bias to increase inequality of output per capita and productivity inter-regionally and within a region.[5]

5.4.1 However, he does not show the nature of class bias of agricultural development which S.K. Rao asserts in his study of agricultural development and irrigational facilities in areas in India in post-independence period.[6] Although his analysis pertains to a period prior to that of the so-called G.R., his structure of analysis has much to say in a theoretical level. The basic logic of Rao has been that the rapid development of agriculture in few pockets of the country (mainly concentrated in the relatively sparse north western part of the country has been because of a public investment policy of extensive canal irrigation system in pre-independence

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5 M. Krishnaji, "Inter-regional Disparities in per capita Production and Productivity of Foodgrains", EPW (RF), August 1972, pp. [illegible].

6 S.K. Rao (1971), "Interregional Variation in Agricultural Growth, 1952-53 to 1964-65 : A Tentative Analysis in Relation to Irrigation", EPW, vol. VI, No. [illegible], 3 July 1971, pp. [illegible].

Table 5.2

Growth Rate of Crops from 1952-55 to 1969-72

	1952-55 to 1959-62		1959-62 to 1969-72	
	A.C.	F.G.	A.C.	F.G.
Tamil Nadu	4.9	4.7	1.8	2.8
Punjab (Haryana)	4.6	3.7	7.2	8.0
Gujarat	3.9	-0.2	3.4	7.4
Mysore	3.6	3.1	1.9	2.9
Rajasthan	3.4	2.8	6.8	3.4
Madhya Pradesh	3.2	3.2	0.7	1.6
Meharashtra	3.2	3.5	0.0	-1.2
Bihar	2.7	2.7	1.3	1.1
Kerala	2.7	4.4	1.4	1.8
Andhra Pradesh	2.2	3.1	1.4	1.1
Uttar Pradesh	1.6	1.3	2.8	2.8
Orissa	1.5	1.6	3.1	1.0
Assam	1.2	0.6	2.7	1.3
West Bengal	1.1	0.3	2.3	3.8

Source: Rao and Patnaik.

and early independent India led the foundation of a rapid change in agrarian structure of this region. There are reasons to believe that a public policy of leasing cheap land recently brought under irrigation to relatively rich farmer, many of them repatriated from West Pakistan and many of so-called gentlemen farmers had a strong basis for availability of capital to invest in a process of rapid 'capital deepening' in this region. He has also shown that the proportion of rich peasantry exhibited through larger holding to total holdings been substantially higher in this region compared to rest of the country was remarkably higher in this region compared to rest of the country. A look at the table 5.2(a) would show that the average size of holdings is much higher in the advanced and rich agricultural states (mainly of group 'A' and group 'B'), of Gujarat (11.98 acres), Maharashtra (13.06 acres), Punjab (including Haryana 11.17 acres) and Rajasthan (13.79 acres). Since, a substantial part of the state of Pubjab is under canal and well irrigation, an average size of holding of 11.17 acres would suggest a concentration of a fairly richer group of peasantry. On the other hand on assets side proportion of rich holdings (above Rs.10,000) is far higher particularly in Punjab (45.4%). Since this information pertains to 1959-1962 period, there are reasons to believe that the situation has much changed in favour of rich agricultural tracts in later part of the sixties.

Table 5.2(a)

Concentration of Holdings in Different States in sixties

States	Average size of holding in acres, 1959-60	Cultivators with assets more than Rs.10,000 percent to total households 1961-62
(1)	(2)	(3)
1. Andhra Pradesh	6.64	19.8
2. Assam	4.13	6.1
3. Bihar	3.99	17.6
4. Gujarat	11.98	27.5
5. Kerala	1.96	15.3
6. Maharashtra	13.06	20.5
7. Madhya Pradesh	10.01	10.7
8. Tamil Nadu	3.89	18.9
9. Karnataka	9.65	20.9
10. Orissa	4.61	8.4
11. Punjab	11.17	45.4
12. Rajasthan	13.79	14.9
13. Uttar Pradesh	4.60	15.5
14. West Bengal	3.28	12.8
15. All India	6.65	6.1

Source: Rao, 1971 (EPW).

5.4.2 We have been so far following the arguments of a group of economists who insist that there has been a process of concentration of economic power in agricultural sector, on the basis of wheat crop, in a geographically concentrated areas and favouring a class of rich peasantry.[7]

Marketed Surplus of Agriculture

5.5.1 We have discussed briefly the importance of the surplus from the agricultural sector of mainly foodgrains for the expansion of the advanced industrial sector. With the growth of agricultural output the benefits of the additional output may not be distributed on the same proportion as in the earlier case. It is, therefore, of importance to see that which class of farmers benefit higher with the growth of output. (Table 5.3)

55.2 In an interesting study Dharam Narain[8] on 1950-51 data established that the share of 0 to 10 acres holding to total number of holdings, marketed surplus was around 41.3% while the size holding of 10 to 50 acres only contributed 37.5% and the above 50 acres group 21.2%. One would note here that the actual number of holdings above 10 acres might be

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7 Prabhat Patnaik (1975), op. cit.
Also, Ashok Mitra, "Current Crisis, Planning and Growth", Social Scientist (SM), January-February 1975, pp. 3-21.

8 Dharm Narain, "Distribution of Marketable Surplus of the Agricultural Produce by Six levels of Holding in India : 1950-51", New Delhi, 1961.

Table 5.3

Marketed Surplus and Size of Holding
(1950-51 and 1960-61)

Size-Class	Original Estimate (D. Narain)		Revised 1950-51		Output	Marketable Surplus	Percentage of population to total holding
	Output	M.S.	Output	M.S.		1960-61	1960-61
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0 - 5	20.7	24.9	15.6	11.0	27.15	11.08	57.94
5 -10	14.1	16.4	22.0	16.2	22.76	15.31	20.32
10-15	9.7	5.1	34.8	14.6	27.93	10.63	8.93
15-20	18.2	7.5	34.1	9.9	47.57	15.46	4.24
20-25	20.4	5.0	40.0	7.4	40.12	7.04	2.56
25-30	22.9	6.1	42.6	6.3	45.66	6.26	1.68
30-40	29.9	7.5	49.4	9.5	51.44	16.65	2.88
40-50	38.0	6.3	51.9	6.3			
Above 50	44.8	21.2	56.2	18.8	61.87	17.54	1.45

Source: U Patnaik, Social Scientist, No. 2
adjusted to Bharadwaj's figures.

lease, but the share of land and share of total output would be considerably higher in this group compared to the below 10 acres holdings. It is, therefore, thought that the surplus generated in the smaller holdings is higher. The major methodological mistake in such a conclusion was pointed out by U. Patnaik[9] and others, that Dharam Narain only takes into account the sales of agricultural commodities by the group of smaller size holdings, while their actual purchases might be considerably higher than what they sell. Since majority of the smaller size holdings are either subsistence or below subsistence households, and may be leasing in some land in addition to owned by them, under rigorous tenurial conditions, and under duress might be led to sell most of the produce and then purchase from time to time at higher price with accruing income from other sources as wage payments and smaller retails etc. The curve of net surplus of the sizes might not actually slope backward.

5.5.3 On the other hand Mrs Patnaik's figures for both 1950-51 and 1960-61 (see table 5.3) gives somewhat opposite picture to what Dharam Narain thought of. The first size group up to 5 acres which has largest share (24.9%) by Dharam Narain's estimate, falls down to less than half (11.0%) while

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9 U. Patnaik, Social Scientist, No. 2, op. cit., 1972.

the contribution of 5 to 15 acres improve quite a bit. There is a relatively equitable distribution in the middle groups, and the share of the above 50 acres group falls from 21.2% to 18.8%.

5.5.4 In a study of marketed surplus of foodgrains (wheat and rice) Raj Krishna[10] argues that marketed surplus has no size bias of holdings and therefore having a direct relationship with output. He suggests that except for unusually rich or poor regions the behaviour of marketed surplus is more or less without size basis. But one must be careful regarding the debate of six classes of holdings. It would be difficult to say off-hand whether a farmer of 10 acres size holding is a rich or poor in terms of his dependence for sustenance on the holding. For this, one has to take account of the types of land he owns, whether the basic infrastructure of irrigation is available or not, and what technology he uses for production. Because it may so happen that a 10-acre holding may not be an above subsistence one in a non-irrigated region, while a below 5-acre holding in an irrigated area might actually be generating considerable surplus. In fact, the size of the household depending on a particular piece of land has to be taken into account. It so happens that with our average of middle size holdings (10-20 acres size) Haryana, Punjab and part of western Uttar Pradesh, are being able to generate a considerable part of agricultural surplus.

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10 Raj Krishna, "The Marketable Surplus Function for a Subject of Subsistence Crop", Economic Weekly (AN), February 1965.

5.6.6 There are studies which suggest that the marketed surplus of agriculture has grown at a rate of 2.9% up to 1964-65, while the same study suggests that agriculture grew at a rate of 2.71%. This is at a time when population was growing at a rate of less than 2% annually.[11] This gives a picture of the magnitude to what the local consumption in smaller household was shrunk. With a constant propensity to consume in the above subsistence class of farmers, and with a growing impoverished below subsistence holdings, and agricultural labourers in rural India and with disguised unemployment increasing at one hand, the real wage rate falling at the other (except for a limited region),[12] it is not unlikely that a marketed surplus might actually rise out of an accentuating concentration of benefits at the hands of the rich peasantry.

Prices of Agricultural Commodities

5.6.1 So far, we did discuss problems of agricultural growth in pre-1964-65 period and some explanations into the post-1964-65 period, corresponding to the so-called Green Revolution which took place in the later sixties and early seventies. We have seen a geographical concentration of output

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11 J.W. Mellor, "The Functions of Agricultural Prices in Economic Development", in Contemporary Problems of Agricultural Development in Developing Countries, M. Dantawala, Bombay, 1972.

12 A.V. Jose, "Trends in Real Wage Rates of Agricultural Labourers", Working Paper No. 20, Centre for Development Studies, Trivandrum, 1974.

of foodgrains, especially through the output of wheat, particularly favouring the rich landed classes of the peasantry.

5.6.2 But it is essential to discuss the price structure of a commodity and movement of prices through temporal aspect as well, vis-a-vis prices of other commodities. Tamarajakhi[13] in a study gives some information regarding the movement of prices of agricultural commodities, classified into final goods (consumption items of foodgrains) and intermediate goods (raw materials) in the post-independence period up to 1964-65 (Table 5.4) with the base year of 1960-61 = 100.

5.6.3 She argues that while in the early fifties prices of non-food grains with respect to foodgrains was higher in later fifties and particularly in the early sixties the movement of price indices especially favoured the foodgrain sector. While index of prices of non-foodgrain remained at 132.4 compared to 132.2 for all crops, that of foodgrain improved to a 141.6. To mention here the weightage of foodgrain in output of all crops is substantially higher than that of non-foodgrains.

5.6.4 Economic survey of 1974-75[14] gives indices of prices of agricultural commodities from 1965-66 to December

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13 R. Tamarajakhi, "Inter-sectoral Terms of Trade and Marketed Surplus of Agricultural Procedure, 1951-52 to 1965-66", EPW, 28 June 1968.

14 Government of India, Economic Survey, 1974-75, New Delhi, March 1975.

Table 5.4

Composite Price Indices (1960-61 = 100)

Year	Intermediate Goods		Final Goods		All Goods	
	P (A)	P(NA)	P (A)	P (NA)	P (A)	P (NA)
1951-2	99.1	81.7	75.6	96.5	95.4	94.8
1952-3	74.9	85.7	87.0	82.9	82.5	83.2
1953-4	82.7	84.5	89.4	83.6	86.9	83.7
1954-5	76.5	82.6	80.3	81.1	78.9	81.3
1955-6	70.9	82.9	83.2	77.2	73.8	77.9
1956-7	83.2	87.6	87.6	83.4	86.0	83.9
1957-8	83.8	91.6	90.9	89.1	88.0	89.4
1958-9	84.0	94.2	97.9	90.8	92.7	91.2
1959-60	89.6	97.0	99.6	93.9	95.9	94.3
1960-1	100.0	100.0	100.0	100.0	100.0	100.0
1961-2	98.6	102.8	101.5	99.3	100.4	99.7
1962-3	96.4	107 .2	105.3	102.3	102.4	102.9
1963-4	101.4	111.9	112.5	111.1	108.3	111.2
1964-5	117.5	117.6	132.4	116.6	126.8	116.7
1965-6	132.4	125.4	141.6	120.1	132.2	120.7

Source: R. Tamarajakshi, "Inter-sectoral Terms of Trade and Marketed Surplus of Agricultural Procedure, 1951-52 to 1965-66", EPW, 28 June 1968.

1974 at 1961-62 prices. (1961-62 = 100). (See table 5.5). Although there are significant methodological difference between Tamarajakhi and ES, the general tendency has to be given much importance. Indices show that movement of index which favoured agricultural commodities in early sixties has been persistently favouring also in the later sixties and early seventies. It is in this period that inflationary spiral seems to have taken firm hold of the economy especially the agricultural sector. The relative movement of prices of agricultural commodities vis-a-vis manufacturing goods moved from 142, 118 in 1965-66 to 354, 256 in December 1974 respectively. The impact of the inflationary pressure on foodgrain sector seems to be much more pronounced which moved from 145 to 369, compared to finished manufactured products from 116 to 243 during the same period.

Relative Price Movement and Terms of Trade

5.7.1 In a two sector model of agriculture and industry assuming the agriculture only producing wage goods or food-grains and the industrial sector producing capital goods except for a small part which is kept within the sector for capital replacement purpose, and each sector selling its surplus to the other sector, it is of crucial importance in the subsistence, wage goods sector to generate surplus for wage payments in the capital goods sector, and their prices would be determined by their trade coefficients and production functions.

Table. 5.5

INDEX NUMBER OF WHOLE SALE PRICES
(1961-62 = 100)

INDEX NUMBER OF SELECTED COMMODITIES
(1961-62 = 100)

	Ag. Comd.	Food Articles		Manufacturing			All commodities	Rice	Wheat	Coal	Raw Cloth	Raw Jute	Mill Cloth	Iron and Steel
		Total	Foodgrains	Total	Intermediate goods	Finished goods								
Average of Weeks	33.2	41.3	14.8	29.4	5.7	23.7	100.0	(6.69)	(3.22)	(1.31)	(2.24)	(1.16)	(5.59)	(3.59)
1965-66	142	145	154	118	125	116	131.6	137	149	122	119	127	108	121
66-67	167	171	183	128	140	124	149.9	169	178	128	127	141	116	126
67-68	188	208	228	131	147	127	167.3	200	214	148	142	102	122	137
68-69	179	197	201	134	145	132	165.4	196	204	161	155	157	126	145
69-70	195	197	208	144	160	140	171.6	196	215	161	171	139	130	151
70-71	201	204	207	155	179	149	181.1	201	209	168	209	141	139	164
71-72	200	210	215	167	197	160	188.4	204	208	171	222	131	157	174
72-73	220	240	248	177	212	168	207.1	231	222	178	177	147	163	198
73-74	281	296	296	206	268	190	254.0	283	226	190	277	134	188	227
(73-74)														
April	243	257	264	186	233	175	222.9	247	216	188	211	167	171	204
May	256	272	270	187	231	176	231.6	254	213	190	224	165	172	204
June	264	283	276	188	233	177	238.6	262	211	190	238	154	176	206
July	281	295	289	192	242	180	248.4	272	212	190	271	121	178	206
August	282	299	294	195	245	183	251.0	287	212	190	272	131	180	212
September	275	296	289	200	259	185	250.3	285	212	190	272	131	183	215
October	281	300	293	207	277	190	255.2	289	212	190	306	131	188	226
November	288	301	308	214	290	196	260.0	295	237	190	307	126	196	241
December	288	301	305	216	299	199	262.1	286	245	190	294	123	199	248
Jan 74	297	313	313	222	300	203	271.2	293	245	190	299	148	200	250
February	303	316	320	227	307	208	275.0	302	248	190	315	120	201	256
March	308	321	331	233	311	214	283.3	318	250	190	335	117	211	256
(74-75)														
April	316	326	350	242	317	223	289.9	337	295	263	346	113	229	256
May	332	341	371	246	336	224	299.1	347	356	263	354	114	237	257
June	342	351	376	249	339	228	306.0	358	347	263	356	121	239	257
July	358	367	392	254	337	233	315.1	370	363	263	382	135	246	267
August	368	376	412	261	339	242	323.4	389	380	263	397	147	253	280
September	378	386	437	262	333	244	328.9	404	407	263	411	176	253	295
October	366	382	431	262	325	246	324.8	402	400	263	349	169	255	283
November	357	376	417	257	305	245	320.0	376	392	263	297	155	254	282
December *	354	369	409	255	303	243	316.9	343	402	263	295	149	247	282

* Provisional

5.7.2 Since real wages in the industrial sector would depend on the prices of wage goods, any 'unequivalent exchange' in the trade between the two sectors would affect the other,[15] especially if the prices of foodgrains move rapidly, higher demand for money wage rates (to stabilise real wages) in the industrial sector would dampen the profit rate for investment and expansion purpose. On the other hand, this would lead to monopsonistic attitude in industrial sector to keep up a profit rate.

5.7.3 However, it is of importance to see the movement of relative prices of agricultural and industrial goods to generalise their effect on the economy. R. Tamarajaskhi[16] (see table 5.6) in a study of post-independence India up to 1964-65, enumerates the following tendencies:

(i) Throughout this period, corresponding to the first three five year plans except for a brief period in late fifties and early sixties, terms of trade (barter terms) favoured agricultural sector (all crops).

(ii) With a break up of final and intermediate goods, Terms of Trade favoured the intermediate goods of manufacturing sector, and consumption goods in agricultural sector more sharply.

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15 E. Preobrazhensky, "New Economics, Oxford, 1967.

16 R. Tamarajaskhi (1968), op. cit.,

Table 6.6

Terms of Trade

Net Barter [P (A) P (NA)]

Year	Inputs	Outputs	Income All	
1951-2	212.4	96.6	100.7	67.1
1952-3	87.5	105.0	99.1	72.4
1953-4	97.9	106.9	103.7	88.4
1954-5	92.7	98.9	97.0	86.0
1955-6	85.6	97.8	94.8	88.2
1956-7	95.0	105.1	102.5	100.7
1957-8	91.2	102.1	98.5	92.2
1958-9	89.1	107.9	101.7	98.0
1959-60	92.4	106.1	101.7	94.4
1960-1	100.0	100.0	100.0	100.0
1961-2	95.9	102.2	100.7	107.0
1962-3	90.0	102.9	99.1	104.7
1963-4	90.4	101.2	97.4	105.0
1964-5	100.9	113.6	108.7	124.3

Source: R. Tamarajakshi, 1969.

P (A) = Prices received by agricultural from non-agricultural sector on account of sales to latter.

P (NA) = Prices received by non-agricultural from agricultural sector on account of sales to the latter.

(iii) Export prices of agriculture grew at a rate of 3.14%, while import prices at 2.62%, leaving a margin of trade equivalence of 0.51%. This coupled with a rate of 2.9% increase in the marketed surplus, gives a net benefit of 'income terms of trade' increasing at a rate of 3.41%.

5.7.4 In a recent study Sukhomoy Chakravarty[17] with apparently less methodological differences gives useful information regarding the movement of terms of trade in the post 1964-65 period (Table 5.7). His figures indicate that without any annual fluctuation the barter terms of trade has stabilised at much higher level from 108.7 in 1964-65 to all time high of 125.7 in 1969-70 and settled at 119.6 in 1972-73. Since no break up of commodity wise income from Terms of Trade is available the magnitude of benefits accruing to the foodgrain sector vis-a-vis rest of the economy remains improbable.

5.7.5 In the agricultural sector prices have been rapidly changing in favour of selected commodities especially of foodgrains, and that of wheat has been sharper than rice in early 1974 (see table 5.5) although in later sixties price of rice did move at a faster rate than that of wheat, but the marketed surplus generated in this sector has been comparatively much lower. The relative scarcity in international grain

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17 Sukhomoy Chakravarty, "Reflections on the Growth Process in the Indian Economy", Indian Left Review, June 1974, pp. 24-44.

Table 5.7

(1960-61 = 100)

Years	Terms of Trade
1964-65	108.7
1965-66	114.5
1966-67	123.1
1967-68	125.0
1968-69	116.3
1969-70	126.7
1970-71	127.3
1971-72	119.4
1972-73	119.6

Source: Sukhomoy Chakroverty, "Reflections on the Growth Process in the Indian Economy", Indian Left Review, June 1974.

markets, and rapid rise in wheat prices from ₹140 to ₹550 in 1974 has adversely affected the internal price structure. But the essence of the problem lies in the public policy of grain procurement of setting a higher 'floor price' for foodgrains especially wheat. This has generated a process of 'ratcheting' by which the market mechanism of equilibrium price is broken and a monopsonic practice by the rich peasantry is supported.[18]

5.7.6 What one observes in this discussion is that especially in the later sixties and early seventies there has been a crop-wise, region-wise and class-wise concentration of output.[19] On the other hand, this rich peasantry in a geographically localised area whether through monopsonic practices or through a higher bargaining power in the political structure has been able to maintain a price line to their advantage.[20] Further, this regionally consentrated rich

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18 This line of explanation on the recent controversy of inflation has been given by a group of economist, See P. Patnaik, op. cit., Social Scientist (SN). Also Ashok Mitra (in the same issue).

19 Interestingly enough, production data given in the Economic Survey (1974-75), 1970-71 the peak year of wheat production was one of the worst years of rice production and since import in that year was only a marginal, 0.45 million tonnes, the cross regional movement with a price advantage might,in fact, adversely affect the poorer regions.

20 Ashok Mitra, "Terms of Exchange, Accumulation and Growth: Some Comments on the Soviet Debate in the 1920s", Romesh Chandra Datta Memorial Lectures, 3 and 4 February 1975, Calcutta (Unpublished).

peasantry generating continuously a higher marketed surplus in agriculture not only has benefited in net trade with other deficit agricultural regions, but also a relatively stagnating industrial sector through price scissor which has been widening continuously favouring the former.

5.8.1 The debate on capital accumulation and industrialisation in 1920s Russia has been of great theoretical importance in literature on political economy. The urban proletariat which suffered a great lot because of shortage of foodgrains and astronomically higher price demanded by the landed kuleks, was attributed to a 'setback' in the problem of industrialisation by Preobrazhensky, Bukharin, and later supported by Trotsky. The hard line taken on the peasantry to reverse the tendency was successful towards 1925, when the scissors started narrowing and by early thirties the benefits could be easily visualised. The main objective, what Lenin pointed out was a transition from an 'individual, petty commodity production to a large scale socialist production'.

5.8.2 In the late sixties and early seventies the terms of trade which was persistently favouring agricultural goods (especially foodgrains) has been largely because of a strong, organised rich peasantry, manipulating the political habits of the leadership and since the working class (both rural and urban) are week enough and ubiquitous, the kulaks have

commanded the prices. It is rather difficult to imagine a way out of this spiral of concentration and accumulation, both horizontal (geographical) and vertical except, for any adequate structural alternatives.

CHAPTER - VI

CHAPTER VI

CONCLUSION

PRELUDE TO A WORKING HYPOTHESIS

6.1.1 In the earlier chapters, particularly in chapters III and IV, we have tried to put forth some arguments that essentially the process of growth of inequality between regions in India has been because of a group of rapidly advancing agricultural states (group 'B) who stand vis-a-vis groups of stagnating, traditional industrial states and the predominantly backward agricultural states.

6.1.2 This situation is somewhat opposite to the position of M-H-W 'Dual Model', where the development (or underdevelopment which occurs as a corollary) is led by the advanced industrial sector and region seem to be having limited relevance. But in our study in Chapter IV we have tried to emphasise that it is not necessary that in a post-colonial economy like that of India, predominantly traditional, both in agriculture and industry, would follow the growth path enunciated by MHW. On the other hand, the importance of the changing role of technology in both the sectors has to be properly understood.

6.1.3 In Chapter V we have tried to incorporate some aspects of growth in the agricultural sector and the changing price structure of commodities relative to one another and their implication on the problem of accumulation and growth

especially in the context of several regions. In essence it remains that since two sector, two region model of growth is not of universal application, some alternative way of approximating truth has to be sought for.

6.1.4 In alliance with the Latin American School, Chattopadhyay and Raza (C-R) worked on a theoretical model for both pre-independent and post-independent India, in which the basic preoccupation remains with the 'metropolises which are suggested to have maintained to grow unhindered and thus responsible for the increasing differences between the rural and the urban and the rich and the poor. Of course, it is admitted that in the post-independence period a group of package areas have come up in the hinterlands of the development but they seem to have not been treated adequately.[1]

6.1.5 The traditional nature of the industrial structure has not been discussed properly and the character of the package areas and their extent of influence on the economy has not been substantiated.

6.1.6 It must be emphasized that these package areas are 'region and class specific'. In spite of the public policy of decentralising the scientific knowledge to the poorest individual (thanks to the efforts of the Government of India) it has gone to people who have some initial means of using them, especially to areas where these groups are stronger and coherent.

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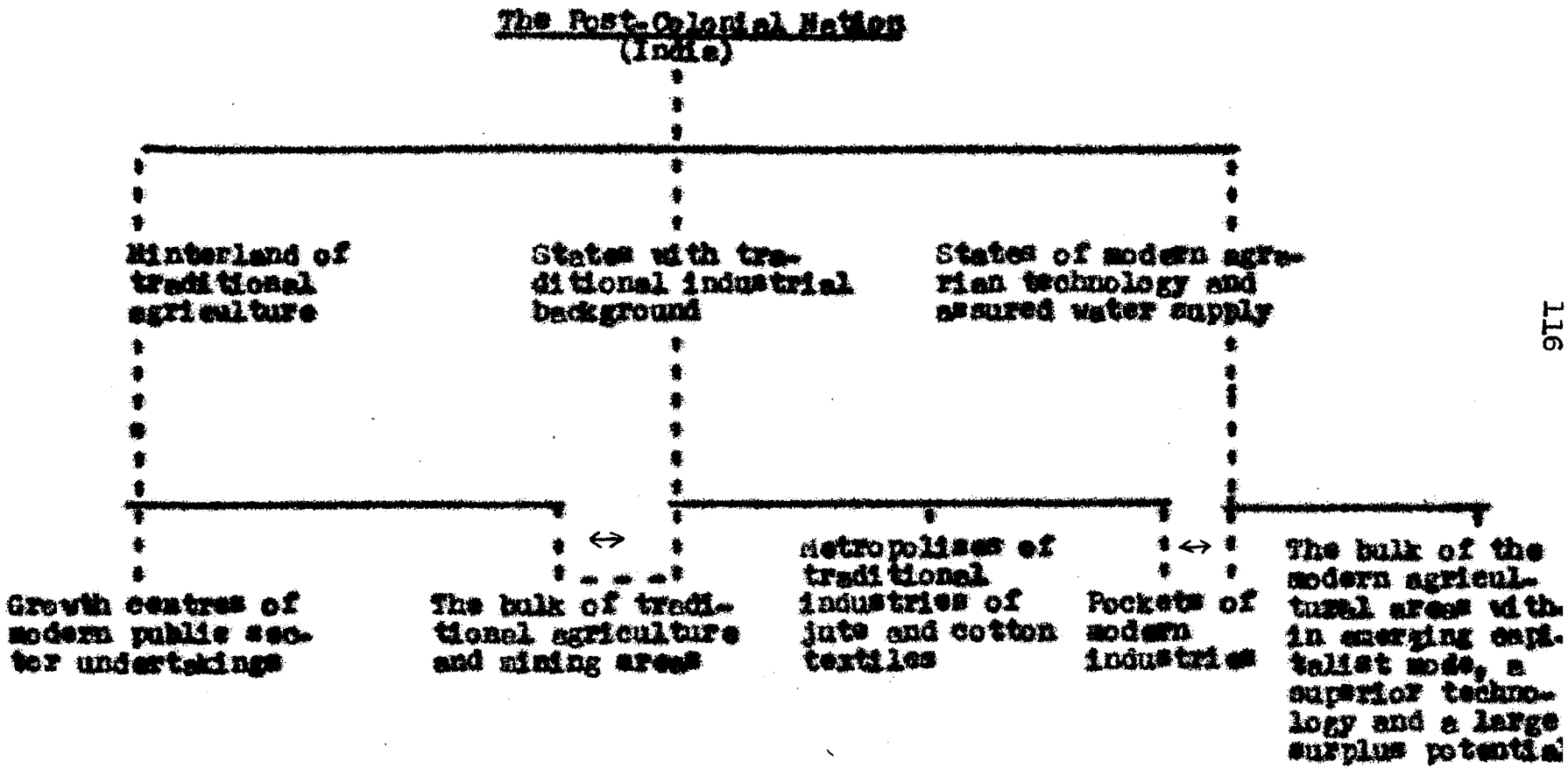
1 S. Chattopadhyay and Moonis Raza (1972), "Regional Development : Analytical Framework and Indicators", IJRS, 1975, p. 23.

6.1.7 The contradictions in the models of MHW and C-R are not all that serious but certainly important if the tendency of movement of incomes in the GRP is accounted for. We would propose a theoretical framework to study spatial growth and distribution of income (on p. 116).

6.2.1 In the model, in contrast to the C-R 'Dualist-Structural' framework (the C-R proposition is a compromise between the dualist--the metropolis and the hinterland--and the structural *due to the methodological proposition). We have changed substantially the emphasis on the colonial legacies of the hinterland enclave to the emergence of a new mode in an extremely concentrated area (region 'B') and the large differences in the level of technology.

6.2.2 Here we have tried to approximate our proposition in rather simpler terms. Earlier we have identified the three sets of regions, and our model is generally based on this 'tri-regional' proposition.

1. Region 'A' constitutes the States of Maharashtra, West Bengal, and Gujarat with three major characteristics, their significance in the traditional nature of their industrial base, mainly on jute and cotton textiles and with a general competition from synthetics and due to a slump of demand in the world market these industries are hard pressed and have turned less remunerative.


The Post-Colonial Nation
(India)
Hinterland of traditional agriculture
States with traditional industrial background
States of modern agrarian technology and assured water supply
Growth centres of modern public sector undertakings
The bulk of traditional agriculture and mining areas
Metropolises of traditional industries of jute and cotton textiles
Pockets of modern industries
The bulk of the modern agricultural areas within emerging capitalist mode, a superior technology and a large surplus potential

2. Regions 'A' and 'C' combinedly have a large agricultural base, a large part traditionally devoted to cash-crops of jute and cotton and particularly, due to the slumps of the sixties and the persisting continuance of a downward trend in the world market, has suffered beyond any probable recovery. On the other hand, the bulk of subsistence agriculture has been continued through a primodial technology under uncertain water supply conditions. To further the limitation, a preponderance of a capitalist mode, following legacies of stark feudalism and other forms of landed exploitations have been persisting in the rural and semi-urban areas and usury capital plays still a vital role because of inadequate or absence of public financing agencies.

3. Region 'C' has some pockets of new public sector units, particularly based on the cheap local resources, the steel factories of East-Central India, fertiliser factories etc. But, there are reasons to believe that due to inadequate infra-structural and managerial abilities and absences of 'backward and forward linkages' these industries have remained stagnant, despite all the speculations regarding their emitting impulses of growth into the backward areas.

4. Regions 'A' and 'B' contain a few pockets of private investments in 'modern industries' with higher

technology, especially synthetic textiles (Bombay), scientific and electrical and precision instruments (in Punjab-Haryana-Delhi regions), the latter industries are generally based on higher skill and K/L ratios.

5. Region 'B' mainly bases on a highly capital oriented, technology based agriculture, with an emerging new mode of capitalism with a sharp upward trend of capital deepening in respect to unit area and labour. This has been possible partially because of the assured supply of water and due to the higher composition of rich landed class of people. This has resulted in sharp changes in the K/O in the vertical direction and of the value added per worker.

6.2.3 We have discussed earlier the extent of price advantage enjoyed by the landed classes of this area. But, the resources funnelled into this area have not been adequately used because of a rising propensity to consume (especially the characteristics of the nevo-rich peasantry) and also due to the 'international demonstration effects'. Therefore, although the rate of real investment in this area has been much higher, particularly in the allied sectors to agriculture and consumer durables has affected the private investment in rest of the economy.

6.3.1 It is essential here to discuss the public policies regarding the growing inequality between regions and population in India; because it is categorically mentioned in

"Approach to the Fifth Plan : 1974-1979", that "it holds a potential threat to the unity, integrity and independence of the country".[2]

6.3.2 Although there were speculations on the distributive effects of growth, both regions and class wise, by the third plan, it was not until the Fourth Plan (1969-1974) that any public policy was mentioned in this regard. It has been clearly stated in the Fourth Plan that "growth with stability is the main aim of the Fourth Five Year Plan".[3] Regional development was viewed in terms of lack of infra-structural facilities and education in the plan.

6.3.3 It was only in the Fifth Plan that a special chapter was dealt with the problems of 'balanced regional development'. Two important policy measures---(i) encouraging new industries to be set up in backward regions by a favourable licensing policy, and (ii) adequate development of inter-industry linkages---were mentioned.[4] The basic postulates behind these policies have been that industries are necessarily coterminous with development of an area and thus in raising the standard of living. However, the changing role

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2 "Approach to the Fifth Five Year Plan", Government of India, Planning Commission, New Delhi, January 1973, P. 1.

3 "Approach to the Fourth Five Year Plan, 1969-1974", Government of India, Planning Commission, New Delhi, P. 3.

4 "Approach to the Fifth Plan", op. cit., Chap. I.

of the advancing agricultural sector and the rate of returns from this sector has never been of any concern to the policy makers.

6.3.4 The growing concentration of resources in a particular locality and in the hands of a few but strong capitalist farmers has adversely affected the programmes of investments etc. Unfortunately, uptil now, there has not been any clear policy for taxation and other financial measures to acquire a part of their riches for the sake of nation-building. Since, independence through various public policies (essentially voluntary and thus erratic in nature) land reforms have been implemented and its benefits have been so far of marginal in nature in respect to the landless and rural-urban destitutes as well. This is because of lack of initial level of information, administrative help and the overall threat of the rich landlords remains. It has been observed in many places (especially in Andhra Pradesh, Tamil Nadu, West Bengal, Bihar and Orissa) that the tenancy acts have resulted in large-scale eviction and thus further deterioration of their condition.

6.3.5 Essentially the problem remains that the extra-economic position of the Kulaks in the Indian polity, particularly for their growing role in regional politics has led to public policies less rigorous to their disadvantage. The frequent democratic rituals like general elections etc. have led to further the bargaining position of the rich peasantry

vis-a-vis the 'weaker sections' of the rural as well as the urban areas. At an inter-regional level the situation becomes slightly more complicated because of the conflicts between the consolidated, coherent Kulaks of the rich agricultural region versus the mass of impoverished rural poors, lesser rich and the urban working class (because of a fall in the real wages) of the rest of the nation, the former group not only commanding a stronger position because of its economic but also of its political say hitherto. However, it seems much unlikely for the moment to visualise any apparent change of relative economic positions between peoples of different regions of the nation unless adequate public policies are formulated to change the pattern of public investment in agricultural infra-structure, especially in irrigation and crediting (rural) and tapping resources from the rich dividends of the Kulaks to mobilise to poorer regions and population of the country. Certainly, the task seems not an easier one and it remains to be seen that what thurst economic and extra-economic the Government takes to maintain a balanced regional development in India.

APPENDIX I

Appendix I (1)

Weighted Distances Between States
(1960-61)

States	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Gujarat		3.22	2.60	[illegible]	[illegible]	0.43	1.23	5.61	1.70	11.23	4.15	4.47	6.57	2.05	12.47	2.50
2. Maharashtra	3.22	-	7.40	[illegible]	8.13	2.02	6.69	11.52	5.42	18.99	9.26	9.91	12.87	6.19	21.03	6.78
3. West Bengal	2.60	7.40	-	[illegible]	2.49	2.73	0.70	3.77	0.31	9.83	3.30	2.58	6.58	0.19	9.28	2.25
4. Haryana	1.13	4.40	0.87		1.49	1.00	0.14	2.58	0.26	6.90	1.73	1.77	3.33	0.28	7.42	0.70
5. Karnataka	3.88	8.92	2.49	[illegible]	-	3.02	2.93	0.68	1.19	5.59	0.92	0.19	3.47	1.64	4.32	0.48
6. Punjab	0.43	2.02	2.73	[illegible]	3.02	-	2.24	5.30	1.49	10.43	3.48	4.26	5.33	1.99	12.36	1.69
7. Tamil Nadu	1.93	6.69	0.70	0.[illegible]	2.93	2.24	-	4.36	0.77	10.50	3.74	3.16	6.95	0.74	10.27	2.55
8. Andhra Pradesh	5.61	11.52	3.77	[illegible]	0.68	5.30	4.36	-	2.14	5.63	0.60	1.01	3.90	2.75	3.62	0.27
9. Assam	1.70	5.42	0.31	[illegible]	1.19	1.49	0.77	2.14	-	6.56	1.60	1.34	3.40	0.11	6.67	0.74
10. Bihar	11.23	18.99	9.82	[illegible]	5.59	10.43	10.50	5.63	6.56	-	3.61	6.56	0.29	2.82	4.24	3.04
11. Kerala	4.25	9.26	3.30	[illegible]	0.92	3.48	3.74	0.60	1.60	3.61	-	1.29	2.12	2.24	1.96	0.09
12. Madhya Pradesh	4.47	9.91	2.58	[illegible]	0.19	4.26	3.16	1.01	1.34	6.56	1.29	-	4.38	1.79	5.07	0.77
13. Orissa	6.57	12.81	6.58	[illegible]	3.47	5.33	6.95	3.90	3.40	0.29	2.12	4.38	-	4.60	3.64	1.36
14. Rajasthan	2.05	6.19	0.11	[illegible]	1.64	1.99	0.74	2.75	0.11	7.82	2.24	1.79	4.60	-	7.70	1.29
15. Uttar Pradesh	12.47	21.03	9.28	[illegible]	4.32	12.36	10.27	3.62	6.67	4.24	1.96	5.07	3.64	7.70	-	2.01
16. Jammu & Kashmir	2.50	6.78	2.25	[illegible]	0.48	1.69	2.55	0.27	0.74	3.04	0.09	0.77	1.36	1.29	2.01	-

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Appendix I (ii)

Weighted Distances between states (1964-65)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Gujarat	-	0.28	4.07	3.14	5.52	0.04	5.22	6.81	2.69	14.98	6.36	7.60	6.78	3.92	16.85	3.69
2. Maharashtra	0.28	-	5.07	4.95	7.54	9.17	6.68	4.58	3.99	18.76	9.23	9.90	9.79	5.45	19.70	6.34
3. West Bengal	4.07	5.07	-	1.48	3.04	3.29	1.65	3.41	0.48	12.23	4.93	4.69	5.46	1.32	11.63	3.09
4. Haryana	3.14	4.95	1.48	-	0.54	2.03	0.52	0.50	0.51	6.17	1.45	1.31	1.69	0.28	5.71	0.48
5. Karnataka	5.52	7.54	3.04	0.59	-	4.24	1.56	0.20	0.04	6.78	1.77	0.97	2.13	1.19	5.40	0.77
6. Punjab	0.04	0.17	3.20	2.03	4.24	-	4.20	5.55	1.84	12.68	4.66	6.14	4.99	2.92	4.95	2.15
7. Tamil Nadu	5.22	6.68	1.68	0.52	1.56	4.20	-	1.65	0.62	10.07	3.57	2.95	4.02	-	8.85	2.04
8. Andhra Pradesh	6.81	4.58	3.41	0.50	0.20	5.55	1.65	-	1.78	0.94	2.47	1.41	2.93	1.33	6.45	1.24
9. Assam	2.69	3.99	0.48	0.51	0.04	1.84	0.62	1.78	-	8.11	2.42	2.60	2.71	0.43	8.20	1.03
10. Bihar	14.98	18.76	12.23	6.17	6.78	12.68	10.07	0.94	8.11	-	3.54	6.51	3.06	8.36	5.17	1.98
11. Kerala	6.36	9.23	4.93	1.45	1.77	4.66	3.57	2.47	2.42	3.54	-	1.32	0.28	2.61	0.93	0.30
12. Madhya Pradesh	7.60	9.90	4.69	1.21	0.97	6.14	2.95	1.41	2.60	6.51	1.32	-	1.74	2.35	4.11	0.41
13. Orissa	6.78	9.79	5.46	1.69	2.13	4.99	4.02	2.93	2.71	3.06	0.28	1.74	-	2.95	0.41	0.48
14. Rajasthan	3.92	5.45	1.32	0.28	1.19	2.92	-	1.33	0.43	8.36	2.61	2.35	2.95	-	7.72	1.28
15. Uttar Pradesh	16.85	19.70	11.63	5.71	5.40	4.95	8.85	6.45	8.20	5.17	0.93	4.11	0.41	7.72	-	2.09
16. J & K	3.69	6.34	3.09	0.48	0.77	2.15	2.04	1.24	1.03	1.98	0.30	0.41	0.48	1.28	2.09	-
Total	87.95	117.11	60.[illegible]	[illegible].76	41.69	57.82	53.6	41.25	37.35	100.58	48.89	47.50	49.42	42.11	108.17	27.37
Percentage of total distance of a state to total of all states	9.18	12.23	6.8[illegible]	3.21	4.35	6.03	5.59	4.30	3.90	10.50	5.10	4.96	5.16	4.39	11.29	2.85

Appendix I (iii)

Weighted Distances between states
(1970-71)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Gujarat	-	0.30	5.90	0.42	2.71	1.82	3.99	8.34	3.71	16.29	6.77	8.32	7.52	0.71	16.57	4.04
2. Maharashtra	0.30	-	8.48	0.93	3.56	3.19	5.10	10.81	5.55	20.54	9.78	10.87	10.92	0.74	19.53	6.89
3. West Bengal	5.90	8.48	-	5.15	2.60	7.47	2.23	3.15	0.52	11.38	3.82	3.39	4.71	4.89	7.87	2.29
4. Haryana	0.42	0.93	5.15	-	2.36	0.80	3.58	6.99	2.51	13.79	4.79	6.89	5.31	0.90	15.31	2.05
5. Karnataka	2.71	3.56	2.60	2.36	-	4.01	0.81	5.14	1.80	12.67	4.71	4.55	5.48	1.95	11.27	2.09
6. Punjab	1.82	3.19	7.47	0.80	4.01	-	2.44	9.37	4.13	21.13	6.44	9.36	7.14	2.07	16.25	3.15
7. Tamil Nadu	3.99	5.10	2.23	3.58	0.81	2.44	-	4.93	1.60	5.79	4.98	5.09	5.93	3.05	10.79	3.13
8. Andhra Pradesh	8.34	10.81	3.15	6.99	5.14	9.37	4.93	-	1.75	7.73	1.44	0.24	2.34	7.30	3.32	0.48
9. Assam	3.71	5.55	0.52	2.51	1.80	4.13	1.60	1.75	-	7.65	1.90	1.86	2.42	3.06	5.69	0.78
10. Bihar	16.29	20.54	11.38	13.79	12.67	21.13	5.79	7.73	7.65	-	4.28	7.29	3.25	15.11	7.66	4.06
11. Kerala	6.77	9.78	3.82	4.79	4.71	6.44	4.98	1.44	1.90	4.28	-	1.22	0.59	6.02	0.32	0.31
12. Madhya Pradesh	8.32	10.87	3.39	6.89	4.55	9.36	5.09	0.24	1.86	7.29	1.22	-	2.09	7.36	2.90	0.36
13. Orissa	7.52	10.92	4.71	5.31	5.48	7.14	5.93	2.34	2.42	3.25	0.59	2.09	-	6.81	1.18	0.66
14. Rajasthan	0.71	0.74	4.89	0.90	1.95	2.07	3.05	7.30	3.06	15.11	6.02	7.36	6.81	-	15.94	3.56
15. Uttar Pradesh	16.57	19.53	7.87	15.31	11.27	16.25	10.79	3.32	5.69	7.66	0.32	2.90	1.18	15.94	-	1.36
16. J & K	4.04	6.89	2.29	2.05	2.09	3.15	3.13	0.48	0.78	4.06	0.31	0.36	0.66	3.56	1.36	-

Appendix I (iv)

Weighted Distances between states (1961)
(Regrouped)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Gujarat	-	1.13	3.22	0.43	1.98	5.61	1.70	3.88	4.47	2.05	2.60	11.23	2.50	4.15	6.57	12.47
2. Haryana	1.13	-	4.40	1.00	0.14	2.58	0.26	1.49	1.77	0.28	0.29	6.90	0.70	1.73	3.33	7.42
3. Maharashtra	3.22	4.40	-	2.02	6.59	11.52	5.42	8.92	9.91	6.19	7.46	18.99	6.78	9.26	12.87	21.03
4. Punjab	0.43	1.00	2.02	-	2.24	5.30	1.49	3.52	4.26	1.99	2.78	10.43	1.69	3.48	5.33	12.36
5. Tamil Nadu	1.98	0.14	6.59	2.24	-	4.36	0.77	2.93	3.16	0.74	0.70	10.50	2.55	3.74	6.95	10.27
6. Andhra Pradesh	5.61	2.58	11.52	5.30	4.36	-	2.14	0.68	1.01	2.75	3.77	5.63	0.27	0.60	3.90	3.62
7. Assam	1.70	0.26	5.42	1.49	0.77	2.14	-	1.19	1.34	0.11	0.31	6.56	0.74	1.60	3.40	6.67
8. Karnataka	3.88	1.49	8.92	3.52	2.93	0.68	1.19	-	0.19	1.64	2.40	5.59	0.78	0.92	3.47	4.32
9. Madhya Pradesh	4.47	1.77	9.91	4.26	3.16	1.01	1.34	0.19	-	1.79	2.58	6.56	0.77	1.29	4.38	5.07
10. Rajasthan	2.05	0.28	6.19	1.99	0.74	2.75	0.11	1.64	1.79	-	0.19	7.82	1.29	2.24	4.60	7.70
11. West Bengal	2.60	0.29	7.46	2.78	0.70	3.77	0.31	2.40	2.56	0.19	-	9.83	2.25	3.20	6.58	9.25
12. Bihar	11.23	6.90	18.99	10.43	10.50	5.63	6.56	5.59	6.56	7.82	9.83	-	3.04	3.61	0.29	4.24
13. J & K	2.50	0.70	6.78	1.69	2.55	0.27	0.74	0.48	0.77	1.29	2.25	3.04	-	0.09	1.36	2.01
14. Kerala	4.15	1.73	9.26	3.48	3.74	0.60	1.60	0.92	1.29	2.24	3.30	3.21	0.09	-	2.12	1.96
15. Orissa	6.57	3.33	12.87	5.33	6.95	3.90	3.40	3.47	4.38	4.60	6.58	0.29	1.36	2.12	-	3.64
16. Uttar Pradesh	12.47	7.42	21.03	12.36	10.27	3.62	6.67	4.32	5.07	7.70	9.28	4.24	2.01	1.96	3.64	-

* Groupings A = Tamil Nadu, Punjab, Haryana, Gujarat and Maharashtra
B = Andhra Pradesh, Madhya Pradesh, Assam, Karnataka, West Bengal and Rajasthan
C = Bihar, Orissa, Kerala and Uttar Pradesh.

Appendix I (v)

Weighted Income Distances between States (1964-65)
(Regrouped)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Gujarat	-	3.14	0.28	0.04	5.22	6.81	2.69	5.52	7.60	3.92	4.07	14.98	3.69	6.36	6.78	16.85
2. Haryana	3.14	-	4.95	0.54	0.52	0.50	0.51	0.54	1.31	0.28	1.48	6.17	0.48	1.45	1.69	5.71
3. Maharashtra	0.28	4.95	-	7.54	6.68	4.58	3.99	7.54	9.90	5.45	5.07	18.76	6.34	9.23	9.39	19.70
4. Punjab	0.04	2.03	0.17	-	4.20	5.55	1.84	4.24	6.14	2.92	3.29	12.68	2.15	4.66	4.99	4.95
5. Tamil Nadu	5.22	0.52	6.68	4.20	-	1.65	0.62	1.56	2.95	-	1.65	10.07	2.04	3.57	4.02	8.85
6. Andhra Pradesh	6.81	0.50	4.58	5.55	1.65	-	1.78	0.20	1.41	1.33	3.41	0.94	1.24	2.47	2.93	6.45
7. Assam	2.69	0.51	3.99	1.24	0.62	1.78	-	0.04	2.60	0.43	0.48	8.11	1.03	2.42	2.71	8.20
8. Karnataka	5.52	0.54	7.44	4.24	1.56	0.20	0.04	-	0.97	1.19	3.04	6.78	0.77	1.77	2.13	5.40
9. Madhya Pradesh	7.60	1.31	9.90	6.14	2.95	1.41	2.60	0.97	-	2.35	4.69	6.51	0.41	1.32	1.74	4.11
10. Rajasthan	3.92	0.28	5.45	2.92	-	1.33	0.43	1.19	2.35	-	1.32	8.36	1.28	2.61	2.95	7.72
11. West Bengal	4.07	1.98	5.07	3.04	1.65	3.41	0.48	3.04	4.69	1.32	-	12.23	3.09	4.98	5.46	11.63
12. Bihar	14.98	6.17	18.76	12.68	10.07	0.94	8.11	6.78	6.51	8.36	12.23	-	1.98	3.54	3.06	5.17
13. J & K	3.69	0.48	6.34	2.15	2.04	1.24	1.03	0.77	0.41	1.28	3.09	1.98	-	0. 30	0.48	2.05
14. Kerala	6.36	1.45	9.23	4.66	3.57	2.47	2.42	1.77	1.32	2.61	4.98	3.53	0.30	-	0.28	0.98
15. Orissa	6.78	1.69	9.79	4.99	4.02	2.93	2.71	2.13	1.74	2.95	5.46	3.06	0.48	0.28	-	0.41
16. Uttar Pradesh	16.85	5.71	19.70	4.95	8.85	6.45	8.20	5.40	4.11	7.72	11.63	5.17	2.05	0.93	0.41	-

Appendix I (vi)

Weighted Income Distances between states (1970-71)
(Regrouped)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Gujarat	-	0.42	0.30	1.82	3.99	8.34	3.71	2.71	8.32	0.71	5.90	16.29	4.04	6.77	7.52	16.57
2. Haryana	0.42	-	0.43	0.80	3.58	6.99	2.51	2.36	6.89	0.90	5.15	13.79	2.05	4.79	5.31	15.31
3. Maharashtra	0.30	0.93	-	3.19	5.10	10.81	5.55	3.56	10.87	0.74	8.48	20.54	6.89	9.78	10.92	19.53
4. Punjab	1.82	0.80	3.19	-	2.44	9.37	4.13	4.01	9.36	2.07	7.47	21.13	3.15	6.44	7.14	16.25
5. Tamil Nadu	3.99	3.58	5.10	2.44	-	4.93	1.60	0.81	5.09	3.05	2.23	5.79	3.13	4.98	5.93	10.79
6. Andhra Pradesh	8.34	6.99	10.81	9.37	4.93	-	1.75	5.14	0.24	7.30	3.15	7.73	0.48	1.44	2.34	3.32
7. Assam	3.71	2.51	5.55	4.13	1.60	1.75	-	1.80	1.86	3.06	0.52	7.65	0.78	1.90	2.42	5.69
8. Karnataka	2.71	2.36	3.56	4.01	0.81	5.14	1.80	-	4.55	1.95	2.60	12.67	2.09	4.71	5.48	11.27
9. Madhya Pradesh	8.32	6.89	10.87	9.36	5.09	0.24	1.86	4.55	-	7.36	3.39	7.29	0.36	1.22	2.09	2.90
10. Rajasthan	0.71	0.90	0.74	2.07	3.05	7.30	3.06	1.95	7.36	-	4.89	15.11	39.56	6.02	6.81	15.94
11. West Bengal	5.90	5.15	8.48	2.07	2.23	3.15	0.52	2.60	3.39	4.89	-	11.38	2.29	3.82	4.71	7.87
12. Bihar	16.29	13.79	20.54	21.13	5.79	7.73	7.65	12.67	7.29	15.11	11.38	-	4.06	4.28	3.25	7.66
13. J & K	4.04	2.05	6.89	3.15	3.13	0.48	0.78	2.09	0.36	3.56	2.29	4.06	-	0.31	0.66	1.36
14. Kerala	6.77	4.79	9.78	6.44	4.98	1.44	1.90	4.71	1.22	6.02	3.82	4.28	0.31	-	0.59	0.32
15. Orissa	7.52	5.31	10.92	7.14	5.93	2.34	2.42	5.48	2.09	6.81	4.71	3.25	0.66	0.59	-	1.18
16. Uttar Pradesh	16.57	15.31	19.53	16.25	10.79	3.32	5.69	11.27	2.90	15.94	7.87	7.66	1.36	0.32	1.18	-

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