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REGIONAL PLANNING IN DEVELOPING COUNTRIES WITH  
SPECIAL REFERENCE TO MEXICO.

A thesis submitted for the degree of

Master of Letters

in Glasgow University through the  
Department of Social and Economic Research.

by

Maurilio Garcia-Ortega.

August, 1978.



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The best laid schemes o' mice an' men

Gang aft-- a-gley,

An' lea'e nought but grief an' pain

for promis'd joy

To a Mouse Ib.39

Robert Burns, 1759.

Man does not cease to interest me,

when he ceases to be miserable,

quite the contrary

that it is important to aid him,

in the beginning goes without saying,

like plant it is essential,

to water at first,

but this is in order to get it to flower,

and I AM CONCERNED WITH THE BLOSSOM.

Reflections in a slum.

Hugh MacDiarmid, 1892.

## SUMMARY

A distinction is made between regional growth and regional development given the wider and more comprehensive scope of the latter. At the present, there is no well defined regional development theory. Those which have been attempted require to be adapted to real features of developing countries. In the Latin American context, this requires a realisation of regional development as a process of structural change where the main spatial patterns are associated with differentials of employment given by external demand and allocation of public infrastructure. The neoclassical models tend to neglect the role of space and the inter-regional diffusion of innovations and technical progress. Richardson's model of regional growth is more relevant since it includes a measure of concentration and agglomeration economies in terms of urbanisation and incorporates equity considerations. However, the model has not been empirically tested, and lacks adequate considerations of sociopolitical and income distribution aspects. The development of locational theories, combined with regional growth theories gave rise to models of spatial organisation and subsequently polarised development, which, although it has certain weaknesses related to planning implementation and time spans, represents one of the main foundations for understanding regional development. The centre-periphery model, evolving from models emphasising income inequality, is perhaps the most satisfactory approach to regional development, as it combines the theory of polarised development with income inequality and involves social and political variables such as transmission of innovations and political power relationships. Thus for developing economies, spatial organisation, polarised development and centre-periphery models are more relevant, although they require adaptation to the particular "structural features", especially income distribution, of each country. Given the economic over-concentration in the more economically dynamic Latin American countries, policies for

polarised development and decentralisation are essential. In these so called "transitional" countries (Friedmann<sup>n</sup>) it is possible to apply national and regional development policies simultaneously without interference in the development process, since the apparent goal conflict between maximisation of national growth rates (sectoral aims) and the reduction of regional income disparities may be solved through a multi-objective behavioural model with the aid of linear programming. This should be combined with a comprehensive and innovative planning approach incorporating regional planning by stages. In assessing the impact of regional policy through cost benefit analysis, equity and efficiency together should be the main consideration.

The Mexican economy has experienced one of the highest rates of growth of GNP and GNP per capita among the developing countries. However, this has resulted in a highly uneven distribution of population and income at a national and inter-regional level, and also one of the highest rates of inter-regional disequilibria following Williamson's indexes, largely due to the surprising growth of the metropolitan area, whose primacy, although stabilising after 1970, remains among the highest in the world. The evidence supports Friedman<sup>n</sup>'s core periphery model beginning second stage i.e. core and 2 peripheral subcores. All indicators point to increasing regional divergences, in contradiction to the neo-classical prediction of convergence i.e., long run tendency towards equalisation of rates of return on productive factors (assuming perfect factor mobility) with capital moving to low wage areas and a reduction of labour migration. In fact, selective migratory and investment flows have reinforced regional disparities in terms of welfare and employment. Furthermore, in spite of the falling returns on investment and high external diseconomies resulting from the inefficient size of the megalopolis, public and private investment and population continue to be concentrated in and around Mexico City. Government policies, featuring a centralistic

orientation, typified by the "stabiliser" strategy, have reinforced regional disequilibria. Until 1970, two types of regional policies may be distinguished: an industrial national policy which had little spatial impact, and a regional strategy by river basins. The river basins strategy represents the most decisive regional effort, especially in terms of administrative decentralisation through executive commissions. However, in spite of having contributed to the strengthening of national growth, its effects in reducing over-concentration and inter-regional disparities have been negligible. There is no national development planning in Mexico, though there is a close approximation to sectoral planning with regional effects but with no involvement of the private sector. After 1970, there was a reorganisation of the central planning institution (MPP) and of the public sector in general, combined with diverse legal and coordinative public measures, including the elaboration of a regional hydrological plan. The most difficult problems for regional planning are to achieve decentralisation of the decision-making process and to ensure adequate mechanisms for national, regional and local coordination in the implementation of an inter-regional development planning model.

REGIONAL PLANNING IN DEVELOPING COUNTRIES WITH SPECIAL REFERENCE TO  
MEXICO

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PREFACE

One of the basic foundations for an understanding of national economic development is provided by the more recent writings on regional development, which stress the need for future models to incorporate normative criteria and to adopt regional and income equity as a sine qua non condition for national development in order to achieve better integration of spatially organised economies based on interdependence rather than dependence (Friedmann, 1977). One can also observe the serious regional inequalities that all the countries in the world experience in their national development process, which mainly represents the well known conflict between efficiency and equity. The problem is exaggerated in developing countries, and particularly in some Latin American economies where regional development planning emerges as the only solution.

Mexico, although among the more successful developing economies has one of the highest measures of regional disequilibria, mainly due to the economic overconcentration in its metropolitan capital, which is expected to be the largest city in the world by the year 2000. Consequently, the country provides an appropriate case in which to test the feasibility of a model which considers inter-regional equity as a necessary condition for the continuation of national development within the framework of a mixed economy.

The present work is directed to these issues. It comprises 4 chapters, the first two dealing with a theoretical framework and the last 2 with a practical case study. It has as general aims, the examination of models of regional development and their policy and planning implications for developing Latin American economies. Subsequently, an evaluation of national growth and inter-regional inequalities in Mexico, in relation to

regional policy and planning attempts is undertaken. This provides the background for a discussion of the feasibility of a model of national development which incorporates the reduction of regional disparities.

In the first chapter, all the general models and theories of regional development are examined, and a strong distinction is made between regional growth and regional development. The viability and practicality of such models in the context of developing countries is discussed. In this respect models of polarised development and regional income inequality are considered more appropriate than neoclassical models of regional growth.

Incorporation of "structuralist" features of developing economies in the building of an appropriate regional development model for Latin America is emphasised.

In the second chapter, the main features of regional policies in developing economies and especially in Latin America are examined, and the process of regional development is analysed in relation to the various strategies adopted by the authorities in most Latin American countries. This leads to methods of assessing the impact of policies according to equity criteria and emphasis is given to the feasibility in some transitional Latin American economies in implementing policies which combine increases in national output with reduction of regional disparities. The main constraints for policy implementation, particularly the highly centralised public administration.

In the third chapter, a description is given of the main trends in inter and intra-regional as well as state inequalities in the Mexican economy up to 1970. A general attempt is made to apply income inequality models, particularly, the centre-periphery model, to national and regional development in Mexico, following the official regionalisation of 8 units.

The fourth and final chapter examines within Mexico's national development strategy, the evolution of regional policy. It identifies the goals and features of a national industrial policy and a physical-agricultural approach through river-basins, and also the recent innovation in regional policy concerned with economic decentralisation. The spatial impacts of these policies are assessed in terms of equity considerations and economic decentralisation involving an overall cost-benefit analysis of the river basins policy. The process of national and regional development planning in Mexico is considered in the light of the highly centralised public sector. Another aspect is related to the evolution of regional hydrological planning up until 1976. Decentralisation of decision making has led to a duplication of functions and conflicts between different regional bodies due to the lack of coordinating mechanisms. Finally, guidelines for regional development policy and planning in Mexico are proposed, which consider the need for regional equity as a basis for national growth.

The present research follows a documentary orientation incorporating field observations and information collected initially in Mexico and continued in Great Britain. It comprises statistical examination at a regional level, and a general assessment of policies, using cost-benefit analysis. This can be regarded as the necessary groundwork for a more detailed study of national and regional development requirements in Mexico.



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Glasgow, Summer of 1978.

Maurilio Garcia-Ortega.

MEXICO.

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CHAPTER IGENERAL THEORIES OF REGIONAL ECONOMIC DEVELOPMENT1. INTRODUCTION

Before embarking on practicalities, one must previously analyse a theoretical framework because it may contribute to the understanding of development problems and the way public policies are implemented to counteract them. Additionally, theories help to examine the different foundations in which developing countries have to approach the achievement of an harmonic economic development.

Particularly, Regional Development Theories represent important devices to analyse regional income inequalities in the process of economic development of all countries. In the supra-national and sub-national context, regional economic inequalities are considered to be one of the problems which must be regarded as meriting a deep analysis by developed and developing countries. (1). The economic, social and mainly political implications of this situation in connection with alternative achievement of national growth and economic development provides a difficult dilemma for the governments.

In this way it is particularly relevant to examine the tendency of regional inequalities in the economic development process and in connection with implementation of public policies which bring with it a strong sociopolitical implication to the subject.

The present theories of regional development have evolved dynamically in response to a growing need within economic science, although several obstacles to their success have intervened. Historically, these theories have been adaptable to well developed societies although at present, new models suitable to the needs of developing societies may be observed. Consequently, the available

framework has shown inadequacies for regional development purposes and obviously there is a need to devise a new theory entirely adaptable to developing economies.

On the other hand, we should emphasise the profound regional inequalities or disequilibria in developing countries which bring with them serious problems, such as deep social inequalities, economic and social marginality, internal colonialism etc. (2).

In comparison with rich countries, developing societies require a more integrated theoretical approach since achievements of a more balanced development is associated with increasing rates of national growth through improvement of balance of payments, land reform, industrialisation etc. We will try to discern the main theoretical implications in terms of regional development for the formulation of public policies of Regional Development entirely adaptable to the inherent features of the developing economies which are totally different from those conditions under which originally developed countries sustained growth. Let us note the importance of this adaptation in transitional societies such as Mexico where this is an essential aspect of national policies.

Therefore, our intention will be to work with Regional Development Theories rather than with regional growth theories considering that a distinction must be drawn between the two because of the wider scope of the former, which is similar to the distinction made between growth and development theories at national level. Furthermore, great emphasis should be laid on the difference between a theoretical framework applied solely to intra-regional problems and one applied to wider inter-regional questions. However, although we can devise two relatively distinct frameworks, we are guilty of painting only half the picture, unless we consider the obvious inter-relationships between the policies constructed for each.

## 2. DEFINITION OF REGIONAL DEVELOPMENT

In defining regional development there is a real need to make it consistent with the purposes of economic development at a national level, and also to differentiate the process of regional development from the mere achievement of economic growth, either at a national or a regional level. Additionally, it is necessary to distinguish this concept from that of regional economics or regional science, although all the concepts are inter-related. Firstly, it is helpful to examine this concept according to the criterion of regional development recently adopted by the United Nations Organisation: "Regional Development" is utilised to designate the tasks orientated towards distribution of population and organisation of its activities in a given space. (UNO, 1970).

This task:

- (a) has, as its main objective, the improvement of the standard of living of the whole population
- (b) reflects a multi-dimensional criterion for development, and
- (c) takes the region to be an essential unit of measurement to the organisation of these activities

These regional development activities represent serious efforts to exploit insufficiently utilised human and physical resources in order to break down the structural rigidities formed by the economic problems suffered by almost all the developing countries. Although information concerning the concept of regional development is not abundant, it is necessary to consider mainly one of the works of Hilhorst (1969) in which he asserts that "...By Regional Development it is understood that



there is an increase in the welfare of the region expressed through indicators such as income per capita, availability of social services and the adequacy of its legal and administrative system...". However, in the same way as in national economic development, different explanations should be made in order to adapt the concept to the developed and developing economies. Particularly, we must note the different foundations of the processes of regional economic development in both countries.

Firstly, regional development is associated with a qualitative process of socio-economic development, although it should be emphasised that it implies deep transformations and structural and institutional changes in a discontinuous and deliberate process. In the same way as economic development has been associated with "growth", regional development has these and other orientations, and it is very true, as Sunkel mentions, that the analysis of such similar concepts of economic development reflects ideological, methodological and analytical viewpoints which have determined that three different thought movements appear: those which understand development as growth, those which understand it as a state or situation, (Sunkel 1971) and those which understand development as a social change.

The first one is connected mainly with the definition of per capita income, the second with the features of the underdeveloped economies such as the existence of a generalised surplus of labour or a productive structure scarcely diversified and finally the third one with the search for a growing participation by marginal groups through social change.

Definitely, one must consider that economic development is a wide concept and that it has maintained a diverse historical focus. According to Sunkel (1971) ... "The concept of economic development is 'unsatisfactory,

imprecise and vague', having different connotations according to the country and political focus which one wishes to apply. The general theme of development was adopted from the post-war period and based on the declarations of the UNO. It was in that period that the Latin American countries considered that they required a deliberate effort towards industrialisation and income redistribution. In this way, by creating the Economic Commission for Latin America (ECLA), the economic development theme is taking shape and reinforcing the concept.

Compared with other conceptual themes of development it is noticeable that quantitative definitions are not applicable to our economies and it is maintained that development must infer: (a) the evaluation of economic activity in terms of its contribution to the increase of welfare, (b) it must consider the changes in the interpersonal distribution of income, (c) development as an increase in the economic power of the inhabitants of a region (Ramirez 1970) or finally, (d) development as a sustained increase in the national product and in the per capita product accompanied by the use of labour force at higher levels, conquest of strategic positions of power under an overseas control (Flores, 1973).

However, one must distinguish between a science of regional development and a science of regional economics or even a regional science. With this in mind, (Vinod, 1964) states that ..."Regional studies should be considered as an indivisible whole, as an interdisciplinary regional science which combines geography, economics, sociology, demography and political science". This approach does not preclude economics from being relevant to the study of regional problems and every regional study which adopts the economic viewpoint can be considered a study of Regional Economics.

In fact, regional economic development as a social science is

associated with many sciences, since the universal social problem is only one, although accepting diverse disciplinary focus; as Gunnar Myrdal asserts "...in reality, there are no economic sociological or psychological problems, but simply problems, and they are regularly complex". (Myrdal, 1970).

We can examine comparatively concepts of Regional analysis and Regional Economics. (Isard, 1969) asserted that a regional analysis is one that deals with such problems as:

- (a) The identification of those specific industries as may individually or in conjunction operate efficiently and beneficially in the region.
- (b) The improvement of the welfare of the inhabitants in the region in question, that is, the increasing of per capita income in a more even distribution.
- (c) The diversification of production.
- (d) The planning of industrial development for the region, and
- (e) The best use of scarce resources of the region.

Lefebvre considers regional economics as the economics of spatial separation, which he designates as the "spatial theory of general equilibrium", the objectives of which are the study of optimum decisions on location, the motives of the concentration of producers in certain areas, the migration of workers, the patterns of human settlements, the development of communication networks, and other such problems of "spatial differentiation". (Lefebvre, 1964). Although Meyer asserts that "...this conception is excessively restricted, given that the problem of decisions considered in regional economics have always been wider than

those purely locational problems contained in the definition". (Meyer 1970).

A definition closer to the reality of developing countries is envisaged by Dubey Vinod in his affirmation that for a complete definition of regional economics, the following elements should be taken into account: spatial separation, unequal distribution of resources and their lack of perfect mobility, and the need to 'economise'. Based on the former, Vinod suggests the following definition: "The study, from the economic viewpoint is of differentiation and inter-relation of areas in a universe with resources unequally distributed and of imperfect mobility..." (Vinod, Cited Ref.).

As we can see, these concepts are restrictive and their criticism is directed towards its formal and historic character. There is a need, for the purposes of developing economies, to consider mainly the concept of regional economic development integrated with an operational, integral, interspatial and interdisciplinary approach. (Ginestar, 1962).

### 3. REGIONAL GROWTH THEORIES

#### A. Neoclassical Theories

These theories are based on the well known neoclassical school of economic thought in both micro- and macro-economic contexts. (3). In this way, regional growth theories have adopted many of the assumptions of these theories in order to demonstrate the process of achieving a general equilibrium between regions and at the same time achieving regional convergence. In fact, there are no neoclassical regional growth theories per se, neither are there neoclassical regional development theories, since there are only attempts to explain statically, the situation of regional convergence by means of marginal productivities in productive factors. In general terms, the main assumptions of neoclassical thinking in both micro- and macro-economic approaches are as follows:

a. Full employment exists.

b. A general equilibrium analysis synthesises utility and disutility elements, in other words linking supply and demand elements to cost and utility analysis.

c. There is equalisation of factor prices to factors marginal productivities. In this way, wage (marginal-product of labour) is a direct function, and the return on capital (marginal-product of capital) an inverse function of the capital-labour ratio ( $K/L$ ).

d. Profit maximisation is the main objective of entrepreneurs and under conditions of universal perfect competition, although there is an incorporation of imperfect equilibrium (monopoly and oligopolistic situations) in the analysis. (4).

e. There is one homogeneous commodity, regularly well behaved identical production functions with constant returns to scale, fixed supply of labour and no technical progress.

In applying this to a regional context, it could be observed that given identical production functions in all regions, labour will flow from low to high-wage regions, and capital will flow in the opposite direction. These flows continue until factor returns are equalised in each region. Thus, according to this view, the process of regional growth will be associated with a convergence in marginal per capita incomes.

We can totally reject Neoclassical theories in dealing with Regional Growth and Regional Development because the role played by space in economic growth contradicts the unrealistic neoclassical assumptions. In this way, we can make the following criticisms:

a. Space and transport costs limit perfect competition and even in monopolistic or imperfect equilibrium, the concept of space frustrates the equalisation of productive factors' marginal productivity with maximisation of profits. Therefore, space is incompatible with marginal adjustments in prices, output and location.

b. Inter-regional factors mobility does not necessarily respond to differentials in inter-regional rates of return.

c. Regional Growth is a dynamic process and not a simple model of comparative statics. The theory has given too much attention to inter-regional factor mobility and little to the inter-regional diffusion of innovations and technical progress.

For regional development, and particularly for developing societies

where the need of comprehensive approaches appear inevitable, neoclassical theories are characterised by their whole unrealism. Firstly, we should understand that regional development is a long-run and disequilibried process which requires the transition through dynamic stages of growth, and secondly, we could reinforce this idea by pointing out general features of these countries;

a. There is an imperfect mobility of productive factors associated with oligopolistic and monopolistic situations. Mobility of human resources is quite imperfect and normally adapts to patterns of capital allocation or availability of public and social services. If we consider flows of capital and labour, there is a tendency for both to move into the high-wage regions producing disequilibried situations.

b. Total unemployment of productive factors because of abundant supply of labour force (disguised unemployment) linked to high-capital intensive techniques used by firms.

c. Regional development comprises aspects of income distribution for improvement of standards of living, and regions which experience growth are not necessarily regions of low per capita income.

d. Clearly in developing societies, payment of factors do not represent their marginal productivities and consequently regions do not necessarily have the same rate of growth.

e. In both rich and poor regions of these societies there are deliberate efforts to apply high-capital intensive techniques in the presence of abundant and low paid labour force. Finally, we could infer that neoclassical abstractions will fail in developing societies if we consider that regional development is more importantly associated with a process of social change linked to improvements of political systems and where innovation and social organisation play an important role in their economic development.

## B. Export-Base and Economic-Base Theories

The Export-Base theory represents a non-spatial model which links location theory with Regional Economic growth, finding its application in the internal-growth of a single open region although emphasizing the dependence of its export-base on the external world. Although this theory represents an important explanation of regional growth mainly based on empirical research in North American regions, it has been the basic framework for the evaluation of the Economic-Base Theory and the Theory of Stages in regional growth. (5).

The analytical propositions are based, in the long run, on regions which respond to profit maximization, with mobility of factors of production, full employment and are without population pressures. The rate of growth of regions depends on an "export-base" (6) which determines the level of absolute and per capita income in a region and its social and political features, as well as residential<sup>1</sup>, secondary and tertiary activities. Clearly, regions specializing in a few commodities with high income elasticities will have more violent fluctuations in their income than more diversified regions, and residentiary industries, as a result of the export-base, will reinforce this one through the development of the region.

Dependence of a region on the "staple" goods is reinforced through reduction in processing and transfer costs and through investment by external suppliers of capital in the existing staple base. Although these residential<sup>1</sup> activities play an important role, it is the supply of labour and transfer costs, which are determinant of the ability of a region to produce export commodities. Transfer and distribution costs have acted as constraints to expanding exportation markets, although their combination improves competition with other regions. Capital is



originally imported into the new regions for the development of "staple" industries.

Demand for the region's exports will increase investment in the export industry and other economic activity and the growth of the region's incomes will produce indigenous savings which will spill over into local demand activities and export industry. This will also allow a diversification of export-bases in the region and hence the equilisation of per capita income. (NORTH-1955).

The Export-Base theory was reinforced by Tiebout (1955) by consideration of the impact of export-base on regional income distribution and the analysis of factor costs in the widening of the export-base. Considering the difference between regional growth and economic development the relationship between export activities and residentiary activities, measured in terms of income or employment, will depend on the size of the region. Therefore, exports in the short run, according to Tiebout, will not be the only variable determining regional income, especially in large regions. On the other hand, competition with the external market will depend on factor costs, and in particular on the nature of the region's residential activities in order to maximise per capita income and finally, a decline in export activity will be accompanied by rising regional income.

An explanation of this theory is given by a situation where an export increase will produce a surplus which at the same time will represent a propensity to import. This situation will generate inflationary pressures and import substitution of activities: the former effect will increase salaries and both effects will attract migrants. The continuance of this process will bring external economies and new industries (Hilhorst 1970).

### C. STAGES OF REGIONAL GROWTH

Based on the export-base concept, and originally attributed to Hoover and Fisher (1949) this general theory comprises of sub-national scale, non-spatial models which explain the process of regional growth through development of a typical sequence of five stages:

1. A self-sufficient subsistence economy with little investment or trade.
2. The region develops trade and local specialisation in primary goods for export through improvements in the transport system.
3. With the increase of inter-regional trade and diversification of export-base, there is a development of subsidiary activities.
4. A shift to general stages of industrialisation, considering the increasing population and diminishing returns from agriculture and extractive activities.
5. A final stage with a widely diversified regional economy exporting capital, skilled and specialized services to less developed regions.

The model has been originally applied to the development of regions in the U.S.A., although even in this context some weaknesses were found (North 1955):

1. A lack of correspondence between the stages of regional growth and the economic history of these regions.
2. The first stage of subsistence has been insignificant and it existed more because of the inexistence of means of transport, rather than a non-market orientation. However, the whole development of the region from the beginning was dependent on its success

in producing exportable commodities.

3. The prosperity of the region was based on the "staple" export and the efforts towards reduction of processing and transfer costs.
4. The shift in the staple base was due to many reasons, although the shift from primary to industrial activities base may neither be necessary nor desirable.
5. There is unlikely to be a final stage for all the regions, although a sort of balanced relationships would emerge among some, as transfer costs become less significant and income differentials tend to be ironed out by long-run factor mobility.

Many additional criticisms have been made to the evolution through stages by a region. The theory was found more applicable to closed economies (Western Europe) than open economies like the regional one. The incorporation of the regional economy to any stage depends on being opened and its relationships with other regions at other stages (Tiebout, 1956). However, this theory was found applicable to similar regions possessing clear comparative advantages - "frontier regions" - due to the endowment of national resources (Wrobel, 1975).

Although this theory provided basis for new improvements in the field, it did not fit the standards of a general regional development theory mainly because of its mechanical feature and its disregard of examination of increases in per capita income (Hilhorst 1969).

In a similar way, as Rostow type models of stages of national growth, have been strongly criticized because their deterministic character, the regional model of stages provides fixed sequences which may be questioned in the light of an understanding of the economic development process. Essentially, in regional development there is a real need to integrate

very deeply, any important variables which are suitable to the requirements of regions with different rates of growth.

In developing economies where the imperfect endowment of natural and human resources are an outstanding feature, it is irrelevant to deal with a model of stages. Possibilities of development of well-organised agricultural or extractive regions, could support alternatively industrialisation processes in other regions where there are more comparative advantages. When we incorporate planning as a way to achieve an induced regional growth, it would mean at the same time, focussed or deliberate effort towards industrialisation or other approaches, mainly depending on the particular resources of the regions, and the required multiple purpose strategies which vary with long run and resources; and we can expect jumps from one stage to another.

#### D. REGIONAL GROWTH MODELS: SIEBERT'S AND RICHARDSON'S MODEL

Nowadays there is not a great variety of regional growth models; the first models were developed as a result of the American experience of regional growth and with strong neo-classical flavour.

In spite of having been classified as spatial economic development models by some authors (see Keeble, 1967) we should agree with Richardson that such neo-classical models disregard the role of space in economic growth as well as social and political considerations (Richardson, 1970).

In this way, the original growth models have featured non-spatial and neoclassical elements, and they have been orientated towards explaining regional convergence (7). Therefore it is not necessary to re<sup>e</sup>valuate these models, having described them before, on the contrary, we are trying to compare them with new trends in regional growth, such as Siebert's model (1969) or Richardson's model (1970).

Siebert's model, although belonging to a type of regional growth models, would be classified as a regional income inequality model with the involvement of space in regional analysis. Despite its quantifiable background, the model's applicability to a developing society is doubtful in terms of policy implementation. The model considers for the first time, the quantification of regional income differentials in the process of economic growth and the role of innovations in spatial development. It also follows the "economic base" approach (discussed above) as well as production linkages and regional transmission of growth. The theoretical framework is founded upon a dual hypothesis system which outlines the growth of regional income in:

a) a closed region and b) an open region. The analysis focusses upon the internal growth determinants in both the demand and supply sides, their effect on regional product and the spatial structure of the economy, in terms of polarisation. The introduction of spatial elements cope with the problem of regional delimitation, and the spatial incidence of demand and technical knowledge. By examining inter-regional factor mobility and commodity movements, Siebert then discusses interaction between two regions. Following this he integrates these two elements and used them to explain inter-regional growth differentials in the form of 18 theorems designed to spotlight the nature of relationships between various operating factors and the inter-regional growth differentials (Siebert, 1970).

The new regional growth model elaborated by Richardson (op.cit.) provides an original attempt to integrate space and distance into the analysis of the regional growth differentials. In this way, the model explains the phenomena of concentration and agglomeration in the space economy, and their force relative to dispersion tendencies. Evolution of the space economy is explained through a substantial number of nodal points, such as pre-industrial cities or concentrations of resource-orientated industrial installations. The irregular and distorted

structure of the economy affects the number of urban centres in a region, which in turn influences the inter-regional spatial distribution of industry and population, and subsequently the total agglomeration pull.

Growth in national employment is mainly concentrated on expanding tertiary industries located in metropolitan areas. Growth in service industries may be an index of agglomeration economies in this model, and they may be related to the spatial concentration of people in urban centres, consequently agglomeration economies are a function of population and they should be measured through variations of urban centres. Additionally, a region's agglomeration economies are assumed to be a function of the size and spatial distributions of its urban population centres.

Measurement of agglomeration economies all based their division in categories:

1. Social agglomeration economies.
2. Household agglomeration economies.
3. Business agglomeration economies.

We can observe in the model non-economic variables which influence the spatial distribution of activities and regional rates of growth, and hence the emphasis in social equity is quite relevant.

The model is characterised by:-

1. Location constants imposing constraints to agglomeration economies.
2. The areas growth potential depending on its internal mobile resources and the capacity to attract others.

3. Incorporation of agglomeration economies, external economies of scale and indivisibilities.
4. Importance of non-monetary locational preferences.
5. Reduction in transport costs and flexibility of the transport system.
6. A high degree of locational inertia.
7. Investment decisions as critical forces.
8. Determination of technical progress.

In this context, efforts are made to structure the model in a testable form, while the problems of empirical verification and the policy implications of regional growth theory are also discussed.

The lack of testing so far, is based on the shortage of data and the conviction that such testing would be premature and that also some of the variables present sever difficulties and measurement problems.

In connection with regional development, this model provides one of the first attempts to consider dispersion indexes (agglomeration economies, external economies, etc.) in a consistent model of regional growth. And additionally, social equity is measured through social and political variables.

If we consider that this model explains agglomeration economies through urban population concentrations and that regional dispersion is analysed in developing countries in terms of imperfect labour mobility, the validity of this model will be reinforced.

Perhaps, from our particular point of view, the main weakness of this model, is its lack of empirical verification and the difficulties in

qualifying social and political considerations. For regional development purposes there is a disregard of appropriate measurements of social income inequalities corresponding with regional income distributions in order to achieve social equity.



#### 4. LOCATION THEORIES

Any examination of regional development must start with an understanding of the spatial elements in which the Classical locational theories represent the first attempts to treat space in the economic context. (8). Regional development represents an interregional macro-economic approach in contrast to the micro-economic classical locational theory, however let us emphasise that most of the basic assumptions of the former are based on the original ideas sustained by the latter. (9).

Nevertheless, the new models of spatial organisation (10) and other models have made important contributions in linking static locational theory with a dynamic interregional analysis, incorporating space. Consequently, a joint review of the theoretical instruments of location will be examined bearing in mind the main purposes of regional development.

Considering the evolution of location theory through a sectorial approach and in the light of regional development three stages could be distinguished: agricultural location, industrial location and Models of Spatial organisation. (11).

##### A. Agricultural Location

The genesis of the theory of agricultural location is represented by Von Thünen's descriptive Model (1826) which provides one of the most important locational foundations. (12). The assumptions of the model are: 1) a uniform plain with equal potential for agricultural production surrounding the city; 2) the central city as the only market for the surrounding field; 3) one means of transport, and transport costs proportional to weight and distance; 4) the existence of an isolated state; 5) maximisation of profits by the farmer with adjustments to the

needs of the central market.

The model considered the relationship of the following factors: distance to the market; prices received by the farmer for their goods; and finally, land rent. In this way, agricultural cultivation and their respective prices will depend on the cost of transport to the market, giving rise to five concentric rings around the city in which perishable goods will be cultivated in the one nearest to the city and a fifth zone further away will be assigned to hunting, having low transport costs. Land rent was defined as the returns from investment in land and distance to the market, assuming all factors influencing agriculture to be constant. The law of area returns determining uses of land, and as a result, the production with greater area returns will be located nearer to the market.

Von Thunen's proposals are no longer adaptable to the contemporary features of an economy subject to diversity of innovation, mobility of factors, changes in transportation, although they have the validity of considering for the first time the space factor in agricultural location and economic analysis and also providing the foundations of the marginalist theory. (13).

## B. Industrial Location

Locational principles have evolved through the partial equilibrium of the firm with the inevitable assumptions which gave rise to a theory of market areas framing a theory of general equilibrium in location. A preliminary background was sustained with regard to regularities of the least-cost industrial location (Weber 1909). The main assumptions were: 1) raw materials were to be found in a limited number of areas; 2) consumption centres are of a given location and size and the market is made up from a number of separate points. Conditions of perfect competition without possibilities of monopolistic advantages; 3) labour is in several fixed locations such that it is immobile and of unlimited supply at a given wage rate. The determinant factors of industrial location were:

- a. Transport costs as a function of weight carried and distance covered.
- b. Labour costs
- c. Agglomeration tendencies.

The analysis proposed the application of general equilibrium focus to the problem of location as a need towards a "general theory of the local distribution of the economy". It is recognised that the general problem of distribution of factors of production may be considered as a problem of substitution, and the aspect of location may then be undertaken as a specific problem of substitution. Therefore, the general theory of location is deducible from the application of the substitution principle in the utilisation of certain groupings of productive factors.

From the beginning of its development, general equilibrium theory has reduced the world of economic activity to one point, since the cost of

the transport element is generally ignored, and the factors do not possess perfect mobility, the relevant problems are then the distribution of factors between several types of production.

The locations are given by substitution points of the groupings of productive factors, in other words by the relationship between the exploitation of soil and local expenditure of capital and labour on the one hand, and by the relationship between local expenses of capital, and of transport on the other.

A new tendency is given by the elaboration of a general theory of location with demand as the major spatial variable (Losch 1939). The theory of location is transformed into a spatial economic theory which also includes a theory of the economic regions as well as the analysis of the spatial problems of the division of labour of commerce. A general equilibrium system was produced through a set of equation systems describing the interrelationships between all locations. (14). This theory rejects the least cost approach and seeks the industrial location at a point where there is a maximum profitability. In this way, the model must fulfil the following requirements:

1. Advantageous individual location
2. Multiple production locations
3. No abnormal profits
4. Small areas of supply, production or sales
5. Indifference of consumer preferences at the boundaries of market areas.

Considering these conditions and the gradual competition the model

reduces the market areas to an hexagonal system which fulfils the requirements of highest demand and minimisation of total distance. Some of the restricting assumptions in the model are relaxed in order to cover the effect of pricing policies or maximisation of the number of separate enterprise in the size market. The equilibrium of the locations is dominated by two tendencies: that of the individual economy towards "maximisation" and that of the total economy towards "maximisation of the number of producers".

One of the main weaknesses of this model is the lack of consideration of spatial cost variations, and cost factors too are represented only through transport costs and agglomeration advantages. Finally, this ideal system of location could only be brought about by the State direction and not merely by market forces in a capitalist economy (Greenhut 1956). There was a shift towards the necessity of integrating the different contributions into a general theory of location, not only of this theory with that of international commerce, but putting this general spatial theory on a basis capable of reducing the question of international commerce and location to a common denominator. This would be able to deal with issues of economic regions, land usage, urban structure and interregional traffic; and in addition, point out the importance of connecting spatial analysis with economic analysis towards a dynamic general equilibrium.

The new model joins mathematically, the Weberian theory of location with the inclusion of the Loschian hexagonal market systems and with the classical principles of agricultural location. However, the equilibrium conditions are mainly in the economic principles of substitution. (Isard, 1956). According to this model, the principle of substitution emerges as one of the best analytical tools for a general theory<sup>and</sup> two

types of substitution relationships are considered:

(1) The traditional, which is the substitution relationship between costs of production and transport and the returns expressed in terms of marginal rate of substitution.

(2) The relationship between different inputs: distance - input or transportation - input defined as the physical cost of transport of one unit of goods for a unit of distance (ton/mile); the capital - input, the land - input, etc.

These instruments permit Isard to make extensive use of 'input - output' matrices for spatial interdependence aims. The model has evolved through consideration of the interdependence of locations (15) via game theory and analysing demand situations with spatial competition and agglomeration economics. (Isard, 1969).

One of the main criticisms of the Location theory is given by its micro-economic approach to the equilibrium of the firm when regional development is associated with a general macro-economic equilibrium of regions of a country. The theory also only provides a comparative static analysis neglecting the time and historic factor which is relevant in the dynamic process of regional development.

The abstract and general assumptions of the theory: economic rationality, complete information, perfect competition (although the theory recently incorporated the imperfect analysis situation), and mobility, etc. are completely inappropriate for developing countries.

The theory does not offer an integral approach since efforts in industrial location have prevailed over agricultural location (this has been surpassed by the models of spatial organisation) and developing countries, on the other hand, face problems of integration of traditional

sectors with industrialisation towards regional development.

It has been pointed out that in developing countries there are differences in information involving uncertainties, knowledge of opportunities, technical and managerial capacity and supply and there is not a spatial distribution of information in the hinterland. The transport networks and concentrations of markets are based in the export-base of primary products which determines demand and income concentrated in coastal areas, therefore location is more concerned with externalities than transport inputs. (Alonso 1968). In the same way, transportation time and personal location preferences of managers and technicians coupled with the difficult analysis of external economies due to communication constraints mean that the theories have to be adapted to meet these features in developing countries. Public companies conversely are orientated towards national welfare purposes and thus because of their interest in balanced development, locational principles often are not applicable. (Ibid. cit.).

Additionally, classical location is more concerned with the firms profit maximisation within perfect competition whereas in developing countries there is more need to adapt location to the national political economy through adequate planning mechanisms in order to balance the development process.

### C. Models of Spatial Organisation

These models focus on the distributional order of human activity (in its totality) in geographical space, and on the influence of systematic factors which guide or direct the locational inter-relations of human activity. In contrast to the static equilibrium theories, these models emphasise historical structures and inter-temporal relationships in the evolution of new structures, (16) and they represent an attempt to link the classical location theories with regional growth through "structural characteristics of a system of point locations" in different periods of time. Additionally, one of the main alternatives for the understanding of regional development is given by the concentration of a model of spatial organisation linked with polarised development theory. In other words, the connection of growth theory with a dynamic theory of location - which in real terms does not exist - would give rise to a theory of polarised development which is related to a hierarchical system of growth centres. This in turn is linked with the theory of central places which can also be regarded as a symbiosis between the theory of spatial interaction and the theory of central places within the framework of urbanisation. The basic elements of these theories can be reduced to: the demand for space, indivisibilities and economies of scale (which result in concentration), and transport costs (which result in dispersion). It is hypothesised that economic units tend to internalise external economies and that the cost of technical dis-economies will be distributed to the entire community; human activity will thus be distributed throughout various agglomerations large and small, based on agriculture and other activities which will be determined by raw material sites, traffic ranks and historical accidents. Prices and expenditures will be due to the partial concentration of activities in cities of various sizes: and finally, urban



centres would have the advantage of greater local markets and of certain agglomeration economies of production. Conditions for equilibrium in these models are: (Hermansen, 1971)

1. Maximisation of profits and utilities by firms and households respectively.
  2. Supply must equal demand and payments must equal receipts.
- (Hermansen, 1974).

These models examine the interchangeability of regions incorporating non-economic elements, regions then, are open subsystems and the models highlight the interdependence between national development with structure and evolution of spatial subsystems, in other words, the effect of economic development on spatial evolution and vice versa. (Von Böventer, 1962 and 1964).

Additionally, there is an involvement of the decision making process with the building of spatial organisational models (based on Perroux): it is hypothesised that there is a correlation between the organisation of a country's decision making process (which refers to the power/hierarchy structure) and the size distribution of its cities. The spatial system is defined by the relationship between subsystems, one acts as the dominant subsystem whilst the others form the periphery. The dominance of the centre over the periphery will eventually, by means of trade, lead to political integration. (Dunham & Hilhorst, 1971).

The Classical Approach in these models (17) considers general assumptions related to the existence of a homogenous plain with uniform: agricultural conditions, natural resources, density of population, preference of consumers and techniques of production, also, producers and consumers minimise the costs on the basis of production and utility

functions respectively within hexagonal markets. The analysis concerns the identification of the spatial distribution of firms with differentials in transport costs, demand, and economies of scale.

Based on Von Thunen's analysis, Christaller's model examines the principles on the size, number and distribution of human settlements in the context of dependence and interdependence of spatial economic units. In this way, the model considers human activities organised in triangular networks and centrally situated within the hexagonal commercial areas outwith transportation routes serving the system. Centrality is economically given by the existence of central functions in a central place, providing central goods, services and trading functions with a complementary region which represents its hinterland. (18). Within the organisation, central places of lower category are important centres of the triangles formed by central places of immediately superior category. In a vertical way, and within a pyramidal hierarchy, the centres of superior category provide all the products that the centres of inferior category need. As a result, prices of central goods are a function of distance and changes in supply locations, although consideration of explicit (systems) patterns of distribution and income distribution is also necessary. Additionally, there are limits for central goods depending on the range of distances and the relationship between size of the region and real demand.

Lösch's Model (1939) considers the complementary assumptions of minimisation of consumer movement and limitation of a firm's profitability and also is characterised by an arrangement of central places which is based on total production of goods in a higher centre, real specialisation, concentration of centres where superior centre is larger than the others. In urban rich sectors, the size of centres increases

with the distance from the central place and finally, the distribution of size is continuous. The model consists of a general description of a system with relationships between central places and nests of hexagonal shapes of complementary regions. Each system covers derivation of demand cores over areas for goods with a uniform purchasing power distribution in the complementary region, and there is linkage of transportation routes among cities and central place.

### Comparison Between Both Models

The Christaller model has both a micro- and macro-economic character. The limitations of the model are that it does not permit further specialisation between central places nor division of labour except that which is translated in the fact that the centres of greater category, proportion products to those of inferior category. Losch's model is one of spatial specialisation, localisation and commerce of products, rather than a model of general spatial organisation.

The difference in focus rests on each model's point of commencement, Christaller starts with the products which have the greatest spatial deficit (immobile services), developing an organisation from the top; conversely, Losch begins at the lower extreme with the products which have the least spatial deficit (transportable products) and the organisation derives from the bottom. In the two models there is little importance placed in agricultural costs because of the deliveries to centres and transport of agricultural products.

On suppositions, Losch's model contributes to spatial specialisation and to commerce between centres, giving rise to a very complex system or market areas.

A new model was formulated whereby the problem could be separated into two parts, by first determining the distribution of the sizes of the centres and its industrial composition, and then localising the centres. In this model, the problem is that of minimising total transport costs although it considers the need to introduce some additional assumptions regarding the location of centres and the measurement of transport costs.

It has been pointed out that all the models are essentially static

and not historical and they do not include inter-temporal links (positive focus), and they do not mention how they operate from the point of view of total cost (normative focus). And also, that they achieve their true optimum patterns, they would have to react to a certain type of planning if in this context, Friedmann's model is distinct because it is directed to conditions of developing countries, dynamic and with verbal qualitative affirmation. (Hermansen, 1971).

A new model (Von Boventer, 1962 and 1964) analyses the economic interdependence which determines the spatial organisation of economic activities, focusing especially on the interplay of internal and external economies, transport costs and the demand for land as being the most influential economic factors.

The framework is based on an amalgam of location, foreign trade and spatial structure theories with the results of input-output studies. His theoretical grounding is a combination of certain regularities (input-output relations) and certain spatial interdependencies, and the individual flexibilities of locational choice, with additional consultation of the regularities and systematic shifts in technology and consumer preferences. The model refers to systematic variations in space of production techniques and the sizes of industrial plants, shopping centres and communities, as well as to regularities in the spatial distribution of settlements. Where a region has an even population with low mobility and the spatial distribution of production factors is irregular <sup>and also</sup> the location of primary and secondary activities. (Von Boventer, 1964).

A new model - although it has been totally developed - argues that the lack of integration of urban and regional economies is due to the disregard of intra-regional spatial differentiation, in concentrating

in the more traditional and orthodox approaches, and in an isolated treatment of cities neglecting its crucial relationship with the region. (Richardson, 1973).

This model distinguishes the following processes in economic growth:

1. Polarisation of national economic development, although there is dispersion of economic expansion into other regions promoting the integration of national growth.
2. Within each region there is concentration of activities into a limited number of urban areas.
3. Within each metropolitan area, there is a decentralisation of economic activities.

The process of economic growth in the space economy is understood as a decentralised concentrated dispersion. This is the phenomenon which an acceptable regional growth model ought to explain, and this must not be at the expense of weakening an analysis of the determinants of the non-spatial aspects of growth, i.e. the role of growth in factor inputs and the rate of technical progress.

The following assumptions are made in this approach:

1. Incorporation of the scale and absorptive capacities on urban labour markets; agglomeration economies, distance and mobility costs, housing conditions, leisure and cultural facilities.
2. There is the spatial transmission of new technical knowledge (innovations).
3. Agglomeration and external economies will attract labour,

capital and managerial talent to regions, over and above their effects in cost reductions in production.

There is a common understanding in many countries that the spatial concentration of economic activities in a region is much more efficient and has more growth than a more dispersed pattern.

The relationships between regional and national development are summarised as follows:

1. The onset of industrialisation is only in a few regions.
2. The dispersion into other regions in the national development context.
3. Growth within regions tends to be spatially concentrated.
4. Decentralisation tendencies exist within metropolitan centres.

The theory derives its assumptions from the four stages of Friedmann and from Kaldor, taking into account, political pressures to improve lagging regions, the existence of disagglomeration economies and finally the theory uses the work of Hansen to support the dispersion tendency and the reinforcement of polarisation in each region.

The model emphasises the need to consider a disequilibrium<sup>at</sup> spatial process (irregular and distorted spatial structure), explaining the evolution of the space economy in a substantial number of nodal points, such as pre-industrial cities or concentrations of resource-orientated industrial installations. This is justified by the intra-regional spatial distribution of industry and people through a base measurement of agglomeration economies. This is based on interconnection between the concentration of national employment, the expansion of tertiary

industries, the metropolitan area and on the concentration of population (taking agglomeration economies as a function of population). Therefore a region's agglomeration economies are assumed to be urban population centres. The model points out the necessity of making a division of agglomeration economies: between social household and business agglomeration, etc. (See Part 3.D of this chapter).



### Criticism of Location Theories

The importance of spatial economics has not been emphasised by contemporary economists and many theoretical models still have as a point of departure the absurd situation of an economy in which all the factors of production and producers, merchandise and consumers, are in effect congregated at one point.

With economic development, the uses of space are extended and intensified both horizontally and vertically. Locational structures are transformed, driven by the combined action of two forces which have different origins; on the one hand, innovations and on the other, a change of emphasis from activities based on extractive resources to activities based on the market and services.

Certain locational structures act principally as "areas of supply", while others operate as "areas of demand". The areas of demand play a more important role in non-agricultural location, and those of supply in agricultural location.

The setting, size, organisation and the quality of technical progress of a market determine the use of space and how it takes advantage of its physical qualities in the whole sphere of influence. (Flores, 1961).

In this way, the main theoreticians of location created and started the main branches of spatial economic science: the actual location theory and regional economic science, a very new science which is currently in a process of accelerated development.

We have observed how the classical theories of location have evolved from basic principles of spatial allocation of production, and markets, territorial division of work until complex models of spatial organisation which attempt to provide the next step towards a theory of regional

development. It is in this context where we should review the classical theory and mainly in connection with the need to assemble a regional model of development clearly appropriate for developing economies.

## 5. REGIONAL POLARISED DEVELOPMENT

The theory of polarised development presents one of the closest approximations of regional development, it is especially useful due to its integral approach, its inter-disciplinary applicability and its value in policy formulation. The adaptability of the theory to the diverse conditions found in developing countries makes it invaluable on both theoretical and functional levels.

Although the theory has its roots in the French Classical school much subsequent diverse work has been carried out which has freed it from its original limitations and given it the comprehensiveness and consistency required by the construction of a "theory".

Consequently, the main concern in this part will be the relationship between polarised development and regional development in the context of an appropriate approach for a developing society.

### A. Classical Approach

The classical theory based its theoretical relationship on the classification of mainly three types of economic space. 1) Economic space as the contents of the plan; 2) Economic space as a field of forces, and 3) Economic space as homogeneous aggregate. (19). Making a distinction between economic space and region,

the theory defines the

latter as a necessary continuous space and not related to economic space. Subsequently, the notion of "growth pole" emerges from the fact that "growth" does not arise everywhere at the same time... "It is observable in points or poles of growth of different intensity; it expands through different channels and with variable terminal effects for the economy as a whole". (Perroux, 1950).

The relationship between the 'key industry' and growth is relevant, the former is that which produces 'induced effects', that is, actions affecting other units positively (in other words, a 'key industry' is that which produces external economies). These key industries operate over "the global output of the economy" in three different ways. Firstly, a net increase in total output, would be generalised on the basis of anticipations on the building of a key industry. Secondly, if all factors employed are supplied via 'substitution' then a net increase will also be generated on the global output, and thirdly, some of the factors employed are subtracted from previous 'circuits' with loss of productivity in some sectors, but giving a good positive result. Related to the concept of the key industry is that of 'domination' which is defined as the reversible or partially reversible 'influence' which a productive unit exercises upon another. Its effectiveness is due to its size, its negotiation power, the nature of its activities or its membership of a dominant activity zone. Further, the gap between the key industry and its area of influence will tend to generate an accumulative process of increasing domination. In terms of geoeconomic space the dominant and key industries will generate agglomerations, wherever they locate themselves.

The analysis of industrial complexes is also undertaken. These are not simply agglomerations of intercommunicated industries and in a proper study it is necessary to introduce the following elements:

- 1) the key industries; 2) the non-competitive inter-relationship of the complex; 3) the factual territorial agglomerations. In general, industrial complexes have unstabilising features since they are a combination of oligopolistic firms.

The third element introduced by Perroux is that of territorial

agglomeration which is an industrial complex pole, geographically agglomerated and undergoing growth, where intensification of economic activities are observed as effects of proximity and human contacts; this agglomeration, by the very existence of these functional inter-dependences, generates "agglomeration economies". In general, these external economies are very important in the small conglomerations and they increase with the emergence of new enterprises and with the increase of population, but they may decrease and even become negative economies.

In relation to the economic and geographic aspects of the growth poles, the following points are asserted:

a. The focus is on the economic activities, concerned with the export of goods and services of its respective economic system in the geographic space.

b. The focus is also on growth activities, which represent in any system the spearhead of economic development.

Geographically, the growth poles are considered as centres for the generation and spatial diffusion of innovations. These innovations may take technical, organisational, cultural and sociopolitical shapes.

A growth pole could be quantitatively identified in the following terms: a) the volume of production of the pole should be at least 5% of the returns of the corresponding economic system in the geographic space; b) the pole would have to demonstrate a permanent growth coefficient which would be superior to the rest of the economic system in the geographic space; c) the economy of the growth pole must be geographically concentrated and have extreme internal independence.

Consideration of geographic and regional aspects of polarised

development, previously neglected in the literature, was initiated by Boudeville (1966) who distinguished three different economic spaces.

- 1) Homogeneous space, where each constituent part has relevant features as close as possible to the others.
- 2) Polarised space, as self-reinforcing heterogeneous space with exchange of goods concentrated in a pole.
- 3) Planning space, more of a planners tool in achieving policy objectives.

As the "Growth pole" notion was replaced by "growth centre", a polarised region was redefined to be a heterogeneous and continuous space localised in geographic space, with its constituent parts interdependent from complementary and interplay relations around a regional centre of gravity (Hermansen, 1970).

Despite these developments in Growth Pole theory, the main weakness of the classical approach is in its emphasis in abstract economic space and lack of consideration of geographic space, historical usage, normative criteria and location issues. At the same time, there is a superficial identification of "growth pole" with the effects of power industries, but this conception is derived from a lack of semantic clarity. (20). In addition, the theory does not satisfactorily explain; the origin of propulsive industries, the analysis of oligopolistic dominant firms, the historic inter-spatial relations and, does not give explicit criteria in regional policy. Moreover, the theory does not clarify the relationship between area and function; neither does it not differentiate between 'key' regions and the overall hierarchy nor between them and the hierarchy of economic systems in the geographical space; and finally there is a feasibility for the key industry to remain in isolation instead of

generating external economies. In a developing context there is a risk that key industries characterised by capital intensive techniques, disadvantages location in agglomeration areas, associated with distorted flows of firms profitability, would aggravate the regional welfare distribution.

## B. Polarised Development

The theory has been refined in a more dynamic, comprehensive and integral direction, with inter-spatial and inter-sectorial linkages, interdisciplinary (mainly social and political) and historical factors in development, providing a more normative content in the light of interest in policy formulation. A preliminary attempt at generalisation is made, measuring polarisation through diverse Static and dynamic effects<sup>and</sup> defining four types of polarisation: the technical, the income, the psychological and the geographical (21) and though alternatively, the interconnectivity of firms through forward and backward linkages ranking industries selectively. (Hirschman, 1958).

The theory makes a shift towards consideration of economies at certain levels of development as spatial systems with one or more growth poles (interdependent economically concentrated activity areas) exerting a decisive influence in the system's economic development -- or the subsystems referred. Therefore, the spatial structure of supply areas, market and production areas, economic decisions, and consequently the permanent economic returns are controlled by the Growth Poles. These systematically transmit impulses of economic change through their dependent economic systems in the geographic space. Consequently, a hierarchy of Growth Poles (world, national, regional, sub-regional or superior and inferior poles) is based on the dominance function of historic Growth Poles as centres of supply, production, consumption and centres of power throughout the spacial system (22). As a result, Growth Poles of the same hierarchical order necessarily share the system, although these corresponding to high level economic systems would have more greater economic change and superior Growth Poles would have more autonomy in their economic development.



A more general and integral attempt which includes socio-cultural and political variables and also has a normative criteria is achieved through the explanation of systematic inter-relations between development and space, in other words, of the development process in its spatial dimensions. This general theory of pole development is distinguished from traditional growth theory because it regards growth as a function of innovations in spatial structure systems and also because it establishes a relationship between theories of social change and spatial organisation. (Friedmann 1972). It is possible to examine it in five sections:

1) Development is distinguished from growth and is characterised as an innovative process leading to structural transformations of social systems.

2) Existence of conditions in urban systems favourable for innovations.

3) Innovations linked with power and authority in spatial social systems.

4) An analysis of authority - dependency relations in a spatial system, mainly the relationship between the centres of innovative change which are called CORE REGIONS and their dependent Periphery regions.

5) The Core Periphery relationship is generalised to an hierarchical order of spatial systems including the world, the multinational region, the nation, the sub-nation<sup>al</sup> region and the province.

In dealing with the relationship between growth poles and regional development, there is a new approach which deals with the difference between a "natural growth pole" and the "induced growth pole" focusing

on the characteristics of the geographical growth pole and the basis of growth poles and their external relations. This approach testifies the validity of Perroux's analysis for growth poles at the onset of industrialisation, but not for mature economic systems where the underlying influences creating growth poles are very complex and diffuse. The importance of an export-base approach increases for issues involving regional growth in long run and for larger regions, but incorporated within this framework there should be an explanation of internal and import substitution based growth in a region. (Parr, 1973).

The present approximation finds the foundations of growth poles in both inter- and intraregional level, regional growth with changing levels of regional economic activity in an inter-regional context, and also concentration (polarisation) within regional spatial structures in an intra-regional context. The former gives a more general explanation of regional growth identifying the influential rapid growth industries. The latter examines the underlying forces of the growth inducing sectors.

The theory has been criticized in relation to its planning implementation to stimulate area wide regional development which has resulted predominantly in "enclaves" of growth poles linked intimately with national or international economies, thus resulting in minimal and sometimes negative spatial spillovers to the region. It has been argued also that the theory fails planners in its ambiguous and confusing literature and that the planners have failed theory in not forming longer time horizons for their plans because of net spillover (spread minus backwash effects) from growth poles are not created until many years after its establishment. (Richardson, 1976).

Taking a different approach, there is a review of the theory of development poles considering the incorporation of ideology in the

analysis, and also the linkage among the theory and the functional implementation of economic policy on the basis of inter-relationships with world decision centres. Examining the process of filtering effects in combination with industrial innovations, it asserts that there is a danger for the growth poles to transform into enclaves. This leads to the replacement of the pure strategy of polarised development satisfying the required conditions to fulfil the desired effects. The analysis is based on the relationship between dominant spaces and dominated spaces in the light of the theoretical constraints given by the classical dominance notion for development purposes. (Coraggio, 1975).

It seems that the theory could be applied for either developed or developing societies considering spatially, the similarity of problem regions in both contexts, although new variables have been considered in dealing with the application to the latter. For this purpose, there is an attempt to distinguish three polarised spaces, applicable to both contexts. 1) points of growth; 2) zones of growth, and 3) axis of growth. (23). In this way, in a developing country there are mostly points of growth and very few zones or axis of growth, whereas, the opposite is true for developed countries. In under-developed countries, the polarisation process faces many social problems and diversified production structure which inhibits the establishment of complementary relationships in the economy. Additionally, the formation of axis is made impossible by the absence of a good communication system and the growth poles remain small urban centres specialising in secondary and tertiary activity in these countries. (Penovil, 1972).

### Criticism

The theory of polarised development has evolved heuristically although recently it has had more consistency in its construction, and more normative value with the comprehension of regional development. In this sense, the classical approach made its most valuable contribution, but it was void of explanatory value because of its concentration on inter-industrial (linkage) at the expense of indirect linkages, spatial distribution of development and the occurrence of external economies.

The model of centre-periphery associated with the process of innovation, represents a dynamic approximation because of its inter-spatial systems linkages, in a normative and functional way, but it requires further development and empirical testing. (Darwent 1969). The validity of this theory would be reinforced considerably outstanding through further connection with the locational theories of spatial organisation and with a deep analysis of external and agglomeration economies.

The desired attributes of a polarised development theory are seen to be its applicability in time and to the geographical space and also mainly to identify criteria for policy implementation.

The present theory maintains appropriate machinery for its adaptability to developing societies, this is obviously necessary to associate it with planning and policy implementation. However, there is a need to incorporate more social variables of these societies in the analysis because, when applying the same to reality, it is feasible that market mechanisms coupled with monopolistic or imperfect situation will foster economic concentration and therefore strengthen power structures at an intra- and inter-regional level, frustrating the theoretical hypothesis and intensifying regional divergences.

## 6. REGIONAL INCOME INEQUALITIES MODELS

### INTRODUCTION

A special distinction should be attached to these models regarding the context of regional development in developing societies. Particularly because of their emphasis on previous regional inequality as a sine qua non factor of economic development although differing in conveying regional convergence, and also the involvement of interdisciplinary elements; socio-political or cultural, in the analysis. Additionally, their unequal spatial models develop either a conceptual and or quantitative interregional focus of economic development.

The Centre-Periphery model is outstanding in that it gives a more comprehensive approach taking a normative and control focus in contrast to the rest which only transcend to the functional discipline and positive focus. Empirical testing is done by most of the models especially the cumulative causation and the centre periphery model.

### A. Cumulative Causation Models

These models differ from the neo-classical school in that they do not accept the existence of forces which always pull the economy into equilibrium. Indeed they take the opposite view that certain forces can act upon the economy which cause regional disequilibrium, taking into account the cumulative causation hypothesis which attempts to explain inter-regional income inequality. (Myrdal 1970, and Hirschman 1964).

These models are based on the realistic view that there will be inter-regional variations in resource endowments; thus some regions will have a comparative advantage over others, in terms of forces which come into play reinforcing a disequilibrium position among them. These

forces are termed "backwash effects" or "polarisation effects" which essentially, are effects originating from a developed region which reduce the per capita incomes of the poorer regions or adversely affects their economic structure. In effect, capital labour and management expertise will tend to flow from the poorer regions into the developing regions, thus starving the poorer areas of the factors of production thereby stunting its growth. Additionally, goods and services produced in the developed region will tend to flood the markets of the poorer regions which may force the local entrepreneurs out of business, and social factors e.g. will also tend to exaggerate the regional disparities.

There are, however, certain countervailing forces called "centrifugal spread effects" (24) or "trickling down effects" which act against the backwash effects and bring the system into apparent equilibrium. These may take the form of increasing the demand for the agricultural produce of the poorer region and absorbing the poorer regions surplus labour, thereby removing disguised unemployment and increasing labour productivity.

Subsequently, as a result the assessment of these opposite effects has given rise to a polemic view regarding the future regional convergence or divergence in the process of economic development in continuation with implementation of policies. On the one hand, the pessimistic view purports a worsening of the inter-regional divergence of per capita income because the backwash effects will swamp the spread effects, and because the government policies accentuate the cumulative causation (mainly in developed countries). On the other hand, the optimistic view holds that there will be inter-regional convergence in the latter stages of the development process considering the greater power of "spread effects" in restoring the system to equilibrium, and the implementation and effect of public regional policies. The analysis has been

explicated in terms of phases of the development process, considering a previous regional divergence as a basis for future achievement of regional convergence. In this way, the development process is split into three distinct stages, although there is recognition of the simultaneity of spread and backwash effects. (Parr, 1973):

1. In this phase divergency will occur as there will be a migration to the growth centre.

2. The consolidation phase which will also cause divergence as service industries etc. are established.

3. This final phase causes a convergence as stabilisation occurs and the growth areas' increasing demand on the hinterland takes effect.

This approach, however, lacks empirical testing, especially in the simultaneity of spread and backwash effects and the delimitating of time spans on the stages. However, the regional income inequality model linked to achievement of regional convergence (Hirschman hypothesis) has been empirically verified (Williamson 1965) although there are some criticisms towards its generalisations general application.

The model deals with postulations and explanations of the development process through three stages of regional inequality - increasing inequality, reaching a peak and decreasing inequality. However, in spite of the increasing regional inequalities there is a tendency towards regional convergence in mature growth.

In the early stages of development labour and capital migration, central government policy and a lack of inter-regional linkages act together to produce regional divergence in income. Labour and capital flows are likely to be selective, giving a bias to the "North"

region (25) so that regional human and physical resource endowment is very lopsided. Poor inter-regional linkages minimise the spread effect of technological change, regional growth, unification of regional markets and income multipliers. Central government policy is at this stage likely to be more amenable to the demands of the fast growing "North" and allocate investment in its favour, particularly investment of a capital intensive nature. After the peak of inequality of regional income, the exact same factors are cited as forces for reducing the inequality. Labour migration becomes less selective as migration costs and regional occupational wage differentials diminish or disappear. Inter-regional linkages will decrease perverse capital flows and increase spread effects, as the national capital market develops, and external economies and benefits assert themselves in the South as industrialisation takes place there. Central government policy may be in pursuance of equity of geographic distribution of income and consequently there may well be a transfer of income to the poor regions. This policy is arguable economically consistent with overall national development policy - as the rate of return in Southern regions rises.

Any one of these factors, or a combination may be enough to diminish regional inequality but in addition, this process is likely to be cumulative, each force reinforcing the other.

The analysis basically indicates that regional inequality is severe in relatively low levels of development, high in the middle income range but lower in higher levels of development. Additionally, the role of region size as a determinant of the degree of regional inequality indicated that it was not a significant determinant of inter-region income differential (26).



Following these analyses the model discusses the importance of having a regional inequality analysis based upon income relatives and/or growth rate differential so that it is simultaneously meaningful in both economic and political terms.

In this way, the Williamson model explains that regional population and internal labour migration did not significantly affect the historical pattern of income per capita levels in the course of national development. However, labour participation rates did appear to play a significant role in explaining regional location at all levels of development, but productivity differentials, going by his evidence, could not be classed as a causal factor of regional dualism, merely a reinforcing one. A further conclusive result was that regional dualism is unequivocally more prevalent in a traditional sector (agriculture). Finally, the model states that the persistence of high degrees of regional income disparities can be explained by (a) tremendous productivity differentials in agriculture and (b) significant regional differences in economic structure. Williamson assumed simultaneity in the occurrence of divergence (and critical points) for all the factors of production as a whole, when it can be observed that there could be only partial critical peaks of individual factors, i.e. capital migration could peak before labour migration, and so on.

The model bases its long-term analysis in the experience of developed countries and its applicability to typical conditions of underdeveloped or developing countries is still to be proved. In this respect, we should emphasise the role of social and political variables in the process of original homogenisation in these countries. Therefore the introduction of variables specific to these countries will provide the general aim required in a regional development model. Although the model has a positive characteristic, not totally normative in connection with other linkages for transition of regional development, and furthermore it is not very operational in terms of policy implementation.

### B. Centre Periphery Model

The model seems to be one of the closest approaches to regional development considering their positive, normative and control features, especially the latter because of the incorporation of spatial goals and policy implementation. Additionally, the centre periphery approach represents an attempt to join the theory of polarised development with the theory of spatial organisation and the theory of social change and this provides a general, dynamic and interdisciplinary character to the theory.

The foundations of the model are based on the theoretical principles of unequitable international trade between centres (rich countries) and peripheries (poor countries) and the 'cumulative causation hypothesis', combined with other social theories. (27).

The model of spatial equilibrium emerges as an alternative to the non-real features of neo-classical models by considering, in the light of the challenge for transitional societies to face regional development within the framework of national growth, the following features such as, failure of diminishing returns to set in at the centre, and failure to perceive periphery investment opportunities, and export demand for goods produced at the centre. (28).

The centre periphery relationship as a primary feature of the development process was drawn out as follows (Friedmann 1966):

a) There is a colonial relationship between the core and the periphery with a displacement of productive factors from the latter to the former because the marginal productivities at the centre are superior to those of the investments on the periphery.

b) A favourable inter-regional term of trade for the centre

associated with protective policies for the same, and unfavourable for the peripheries.

c) The growing regional inequalities gives rise to political pressures for equality (although the redistribution of resources in favour of the periphery could be faced with dangerous economic repercussions consisting on the retardant progress of the centre and for the country as a whole).

Consequently, the model supports the idea of future regional convergence by considering a preliminary disequilibrium<sup>at</sup> process although an adequate policy implementation of planning as a resource to counteract dynamic market forces.

As opposed to dealing with regions of fixed boundaries the model delves into the spatial incidence of economic growth taking into account of open regions and induced regional economic growth, as well as socio-political structure, local distribution of income and pattern of expenditure. Additionally, local leadership counteracting on centralised public sector is a determinant for successful adaptation to external change. Regional Economic growth is regarded as a pattern in the location of firms. Economic growth is identified with the matrix of urban regions and therefore spatial organisation of economic activity in terms of a functional hierarchy of cities and their areas of influence in the system. Consequently, there is a linkage with the central place analysis. Flows of labour tend to exert an equilibrating force on the welfare effects of economic growth. But contradictory results may also be obtained. Where economic growth is sustained over long periods, its incidence works towards a progressive integration of the space economy.

In this way, the integration of the national space economy could be explained through a typical sequence of 4 stages (Friedmann, *ibid.*) (29):

1) A stable, Pre-Industrial society which typically consists of local, independent, and self sufficient centres without any hierarchy and which are represented by small enclaves with no or only minimal connections with other such centres, sources of growth opportunities are quickly dried up and the economy becomes static.

2) An Unstable, Pre-Industrial society which is characterised (as a result of the shock of industrialisation) by a single strong centre with colonial relationships with the periphery which is supported by a very strong movement of skilled labour and entrepreneurial ability from peripheral areas and consequently the vast majority of the national economic activity is focused in the centre.

3) Transitional and Industrial Society. In the transition from pre-industrial to industrial society there emerges a single national centre with strong peripheral subcentres which causes a decrease in national peripheral areas reducing them to inter-metropolitan peripheries and in this way hypertrophy is reduced and resources of the periphery are taken into account becoming more amenable to management. Overall National Growth is strengthened but the inter-metropolitan peripheries have persistent backwardness.

4) Post-Industrial - in this stage of development there is a functionally interdependent system of cities in an organised complex and with strong interconnections, and also the inter-metropolitan peripheries will be absorbed into nearly metropolitan economies. The major goals of spatial organisation have been reached: there is complete

national economic and social integration with minimal inter-regional divergences, locations are the most efficient possible and growth potential is at a maximum.

In later developments the model links the regional interaction theory with the theory of social change. In this way, the innovation diffusion idea <sup>is</sup> associated with polarised development (Friedmann 1967 and 1972) and mainly with a conflict<sup>ive</sup> situation<sup>in</sup> the authority - dependency relationship. The Centre Periphery relationship is redefined in terms of core regions which are territorially organised subsystems of society with high capacity for innovative change, and periphery as subsystems whose development is defined by their dependency to a core area.

The model argues that non economic factors are more important than economic factors in location. The main criteria being the ability of management to gain access to the relevant centres of government power, which is also applicable to an industrialising country of moderate size with a unitary government and a culturally homogeneous population. There is a symbiotic relationship between government and commerce, which results in the capital city being favoured as an industrial location (access to markets may also be important), and even if plants are set up in the periphery the decision making power will remain at the centre.

Once spatial patterns are established they tend to perpetuate themselves, the initial distribution of government power will guide the subsequent evolution of the space economy.

The model examines the spatial diffusion of innovations in the development of urban systems which forms hierarchical structures. The diffusion tends to start from the most powerful cities and as the early innovator has the advantage over later ones, the concentration of power

in the large cities will be reinforced, the periphery being forced into quasi-permanent situations of dependency upon the centre.

The subsequent stage is related to the conditions by which the regions consolidate their dominance over the periphery through self-reinforcing feedback effects.

However, inter-regional patterns of conflict and accommodation will emerge because entrepreneurial elites of foreign nationals are present, and they tend to dominate innovations and repatriate profits from their source to the capital or their home country, although their interaction with the host government may take forms of co-option, accommodation or open hostility.

Thus the conflict arises from attempts on the part of the periphery to gain access to the benefits of innovation of core regions, which could give rise to decentralisation policies or conversely to replacement of core elites by peripheral elites in the national system.

The Core Periphery systems are framed into hierarchical nested systems, where core regions with great innovations (and with reinforcing effects) gain the dependence of peripheries through market and supply systems, patterns of administrative control.

C. Explanation of Regional Divergences: Structural Dualism, Domination and Social Institutions Theory

In developing areas, national economic development variables have been used to cover explanations about the interrelations of regional development. The theories have a strong social content, explaining by dialectic or structural methods, the conditions of underdevelopment in relation to the linkage of metropolitan and rich economies. The theories have been positive criterion although the present trend is to provide them with a more normative and operational foundation.

The reasoning is based mainly on the existence of a national and structural dualism which represents the ambivalent coexistence of backward-traditional-agricultural sectors with modern-developed industrial sectors. (Pinto 1963). This dual sector economy is structurally and behaviourally organised although it maintains a basis of trade. The dichotomies are not elaborated in any spatial context, though they certainly have spatial implications. (30).

This situation is based on the difference of productivity levels of two sectors model with one a surplus of labour sector and the other a capital surplus sector. (Lewis 1954). Consequently, a first well-founded approximation concerning the origin of regional divergences is developed in terms of productivity differentials. (Pinto, Ibid.). In handling the way productivity increments are obtained, the theory outlines and verifies why some of its regions beget development, and other beget under-development, it draws inspiration from Prebisch's argument of the retention of benefits by the developed countries because of their increasing productivities, as well as from that of Rosenstein-Rodan, that accumulation of capital and technical progress tendencies in the developed countries do not spread as a function of man-power opportunities

in the under-developed countries. The theory reproduces within the internal field of each country, the international economic relationships expressible in two sorts of "models"; the "inward type of development" and the "outward type of development", i.e. that of 'primary industry exporter economies'. This modern exporter sector model was simultaneously seen as a "model of vertical development" although an appreciable part of the economy remained at the margin of these changes. Just as the model of "outward looking development" did not generate a 'horizontalisation' of development, the productive structures become composed of three dominant strata, "primitive", "intermediary" and "modern". (31).

In Latin America, the magnitude of the contrasts in productivity resulted in what has been called "historical heterogeneity" or "structural heterogeneity", i.e. the levels of productivity in the "modern" agricultural sector can and have become fourteen times greater than those of primitive sectors. The "capitalist nuclei" could not radiate their dynamism to the marginal sector and their hopes that capital and techniques would be directed towards regions abundant in labour and natural resources, became frustrated in the face of an opposite process.

The theory puts forward an explanation of the origin of the disequilibria, the "law of unequal and combined developments" (32) which is revealed in a narrower and more complex way in the situation of backward countries. The type of relationship between the sectors is established through internal colonialism, i.e. by an "exploitation" of an internal periphery by the modern sector, by means of special mechanisms. (33). The increase in productivity can be real or virtual (monetary). In the first case, this is attributed more to technological innovations and to improvements in organisation, and in the second case,



the increase can be motivated by an increase in the process of the product which influences the payment of factors. This situation could originate from a protectionist policy which might favour a "new industry" with a captive market. All increases in productivity in the zone, although apparently endogenous to industry, are, in fact, a request for "collective saving". The unfavourable primary products are basically attributed more to the power of the concentration of progress and the endorsement of the state policies, than to the income elasticity of the products. Finally, the theory explains a "three dimensional concentration": the social, economic and regional.

To a certain extent the 'dualism' phenomenon is the dependent relationship between a centre and periphery although it has a negative trend towards regional divergence considering the existence of social classes who derive their power in the backwardness of the periphery. In this way, the "internal colonialism" process faces the stages process of Centre-periphery of regional development maintaining that the peripheries are deprived of the opportunity to encourage higher goods or to participate effectively in decision-making. (Casanova 1969).

These ideas are a refutation of the thesis of modernisation theories as being inadequate for developing societies. The theories of "internal colonialism" emerges as a denial of the existence of dual societies, and maintaining that both poles arise from a single historical process and that this process is held sway over the rest of society by 'poles of growth'. Progress takes place at the expense of peripheries and it is untrue that national capitalism rests in reform directing "development" to them.

The bourgeoisie, oligarchy and middle class support each other to preserve this advantageous situation. Therefore policies orientated to favour the middle class reinforce the ruling class,

aggravating the social inequalities in the development. Therefore, modernisation and efficiency are associated with marginalisation, proletarianisation and exodus to other areas giving rise to growing social, spatial and economic polarisation.

The structuralist approach is given by the complementarity between development and underdevelopment (Frank 1967) supporting <sup>the view</sup> that regions which are the worst underdeveloped and those which are the most closely tied to the metropolis, where the structures assumed a rigidity that prohibited all possibility of internal transformation.

Another approach explains that regional divergences stand out because of their great contemporary features, as much in the old industrialised countries as in the developing countries, and considers that these regional divergences resulted firstly from the economy of general "industrialisation" which brought about a profound revolution in the economic and spatial structure of the world. (Egner 1967). The regional homogeneity of pre-industrial epochs contrasts with the heterogeneity of the new industrial structures. The heterogeneous character originated from the fision of economic space into distinct regional types. On the one hand, the dense industrial zones (or agglomeration spaces), and on the other, the rural emigration zones (or dispersion spaces): the rich and progressive regions originating in the first, and the stationary, poorer regions in the second.

#### Domination and Social Institutions Theory

The present theories presuppose that the aspects of spatial industrial structures have been neglected, as may be observed in the emigration of dispersion zones. The theory of Domination, based on Francois Perroux, points out that in the market there always exist

elements which dominate, and others which are dominated, i.e. some have privileged position in the market and others are dependent of them. The discrepancy in the distribution of purchasing power or the above differences in the relative participation in the market, between the interested parts, condition the differentiation between active and passive zones.

Without conforming to the interpretation of the domination theory, the social institutions theory finds a deeper level of the casualities, in that the chief cause of the "backwash effects" lies in the social institutions of the stagnant zones (Lewis 1954-55 and Kapp 1956). These social institutions as retarding factors for all kinds of economic development, belong to the pre-industrial social order and remain "half paralysed" on account of their isolation from the rest of the worlds' development, nurturing the division between the traditional pre-industrial, socio-economic order on the one hand, and the modern socio-economic order appropriate to the industrial era, on the other.

This dualism in the economy, as well as in the whole society, stands out as the main retarding factor in connecting the stagnant regions to the development of progressive regions. The tenacious survival shown of these social orders is closely associated with the "vested interests" which are threatened by the pressures exerted by the traditional dependencies, and in particular with an incapacity to manoeuvre in a totally uncertain and unsafe world.

## 7. A NEW APPROACH FOR A DEVELOPING CONTEXT

There is a failure in neo-classical theories and regional growth models to build a general regional development model appropriate for any society and the new theories of regional development have some limitations in terms of the adequate incorporation of time, space, social and political parameters of development. Additionally, most of the parameters utilised in the theories lack an appropriate applicability to developing countries, because the ways they seek to achieve development are historically and totally different from those of developed contemporary societies; thus there is an urgent need for a realistic approach to these societies, especially for those whose stage of development requires correspondence between theory and policy formulation.

A regional development theory for a developing society must feature interdependence, comprehensiveness and interdisciplinary elements linked to the conception of development as process of structural transformation of society and utilising inevitable aids of policy and planning as a resource to shift the distorted development. A new approach also should involve social theories to determine the necessary factors required to achieve social change in traditional societies together with spatial economic models of growth which seek to balance human settlements with adequate use of productive factors. Therefore, a deterministic theory will fail in this particular context since it will not consider the urgent need to change traditional societies where innovations and attitudes play an important role. The new theory must also analyse the effect of international linkages of internal spaces in these economies, with developed countries because one of the main variables of regional development rests on the "external dependency" associated with foreign investment and well organised transnational firms which have aggravated

the panorama of regional divergences. Finally, if we want to build a real theory we must delve into the structural roots of regional development in these societies.

Models of spatial organisation combined with the theory of polarised development and centre-periphery relationships provide the best theoretical background to rearrange the "structural variables" (34) fulfilling the requirements of these countries.

The polarised development approach should focus on integrating traditional peripheral hinterlands with urban cores (or over-urbanised cores) within a hierarchical national strategy in order to avoid formation of developed "enclaves" which depend on their external areas of influence. In this context, the theory needs to adequately explain the phenomenon of agglomeration economies in metropolitan cores and how they can be built into traditional hinterlands. The Centre-Periphery model should be dynamic and functional for policy formulation, involving and measuring other sociopolitical variables of change, which would surpass the organic nature of the model. It lacks an account of the inherent external variables of social power in these societies, such as external dependency and the role of multinational companies and foreign investment. Other limitations are the lack of consideration of time spans of the Centre-Periphery stages and the involvement of essential internal variables e.g. income distribution and capital accumulation in regional growth and the break up of the authority-dependency relationship.

Consequently, there is a need to integrate the following structural variables into the new account:

1. The economic and external dependency associated with over-population, urban over-concentration and weak planning systems in the

public sector.

2. Foreign investment through the vehicle of the multinational corporations may have an adverse effect over concentrating regional capital within certain areas or sectors, to the detriment of the region as a whole by hindering regional capital formation. (35).

3. The role of inter-regional migration processes.

4. The need for social and political reorganisation, integrating traditional sectors where higher rates of population are located, to growing modern industrial sectors.

5. Power relationships, such as social mobility or incorporation of innovations in a traditional sector.

6. The organisation of spatial economic factors with agro-industrial processes.

7. Import-substitution processes in regional capital formation.

8. External dependency as an exogenous variable which guides all the conflicting processes of regional development.

9. The existence of over-urbanisation (metropolisation) within a dualistic economy.

FOOTNOTES

- (1) In the developed and developing economies, we can observe the same tendencies as those which Williamson (1965) point out. ... "Economists have long recognized the existence and stubborn persistence of regional dualism at all levels of national development, and throughout the historical experience of almost all presently developed economies".
- (2) As Mexico's case would be in the article called "What problem or problems are the most important in the actual development of Mexico?" by Botas, Carmona and Cecena in "Opinions and Comentararies", Journal of Development Problems No. 2. January to March, 1970, Mexico, D.F.
- (3) By Neoclassical economics we mean the economic thought which considers the functions of utility and demand, as a reaction against a classical focusing on costs and which also provided the foundations for a more symmetric, general equilibrium analysis that could synthesise both utility and disutility elements. Besides discovering how to analyse demand and utility preferences, they introduced the notions of utility, marginalism and general equilibrium (Samuelson, 1973).
- (4) By the "30's", the analysis of monopoly and imperfect competition was absorbed by the Neoclassicists through the works of Chamberlain, E.H., "The theory of Monopolistic Competition" (1933), and Robinson, J., "The Economics of Imperfect Competition" (1933).
- (5) The term "urban economic base" is referred to those activities of a metropolitan community that exports goods and services to other areas.
- (6) The term "staple" refers to the chief commodity produced by a region (mainly products of extractive industry). The term "exportable" commodities (or services) notes the individual items and the "export base" denotes collectively the exportable commodities (or services) of a region.
- (7) These Neoclassical models make assumptions based mainly on the American experience and we included among others the works of Borts, G.H. "The Equalization of Returns and Regional Economic Growth", A.E.R., 1960, or Borts and Stein J.L. "Economic Growth in a Free Market", or Olson, E. "International Trade Theory and Regional Income Differentials: USA 1880-1950" (1971).
- (8) Richardson emphasizes this aspect when he points out that "Any revision of the regional growth theory must start from the explicit introduction of space and distance into the analysis, both in the sense of distance separating regions in the inter-regional system, and of spatial differentiation within regions...

"Location Theory is an important branch of regional economics, rightly so, yet it is scarcely referred to in discussion about regional growth". Richardson, Harry. Regional Growth Theory, MacMillan Press Ltd., 1973.

- (9) By Classical Location Theory we are considering the original stage based on the works of Weber (1909), Losch (1943). New contributions have emerged, such as those from Hoover, Greenhut, Hotelling, Moses and Isard. Although it seems that the cost of transport represents the most important variable in location theory, profit maximization is, in real terms, more important than transport cost minimization. Classical locationists assume the site of least transport cost without consideration of other factors such as economies of scale, factor substitution, and elasticity of demand. (Alonso, 1968).
  
- (10) Namely, those of the Dutch School, Tinbergen (1964) and Bos (1965).
  
- (11) Apropos, the points of view about industry or farming, the efforts directed towards optimum industrial location have prevailed. Conceptualizing the theory we can define it in the following terms: "spatial economics, or the theory of location of economic activities, studies the causes and effects of the distribution of economic activities in the space and likewise the laws which determine the evolution of its use in proportion as the economy passes through different stages of development...".  
  
Based on the foregoing definition we can talk about a primary stage of development of location theory in which are notably the studies of Von Thunen, Rosche, Schaffle and Launhart.
  
- (12) The model utilised by Von Thünen is described as an "isolated abstraction" and it is based exclusively on the observation of the object, varying the data.
  
- (13) The model considered some modifications to the original assumptions by: 1) incorporating a navigable river which would make transportation speedier and reduce costs; 2) a minor market centre; 3) area differences in agricultural productivity of the plain.
  
- (14) This seems to be a more Walrasian approach to general equilibrium than its predecessors.
  
- (15) Originally formulated by Predohl (1928).
  
- (16) This is a polemical point because it has also been pointed out that they lack an historical explanation of the transformation of spatial systems (Friedmann, 1966).



- (17) The Classical approach is given by the works of Lösch (1943) and Christaller (1933) and recently by the models of Hermanssen (1971), Von Böventer (1962) and Hilhorst (1971).
- (18) The apparent circularity of the statement is based on the original work of Christaller (1933).
- (19) Hermanssen (1972) points out that Perroux maintained that there was as many economic spaces as there are structures of economic relationships.
- (20) In this way, Darwent (1969) has asserted that "growth pole discussions, have tended to be somewhat myopic, concentrating on the direct links between a hypothetical industry and a few others, in an economy assumed to be closed, to the total neglect of the enormous amount of background variation and indirect linkage taking place".
- (21) Other static effects are given by: (a) in the short term, the effect of matritial multiplier (Leontief Harmussen effect); (b) in the medium term, the "Perroux effect" which is produced by the application of a multiplier to the initial matrix and is achieved through structural change of current flows of inter-industrial relationships; (c) the Scitovsky price effect, which influences in the medium term, the development of production structures; (d) the Capet effect of regional escape.  
  
Among those of a dynamic character: (a) the feedback effect originated by the accelerator (Aftalion effect); (b) the association effect (Matilla effect); (c) the effect "dialectic of polarization", in other words that the polarization may be progressive or regressive.
- (22) In this way, countries fortunate enough to possess world growth poles will have the most solid and least vulnerable economies, and countries which have only national poles will have relatively vulnerable, dependent and peripheric economies in relation to the world economy: and countries entirely lacking in growth poles are the most vulnerable of all and no autonomy.
- (23) According to Penouil (1972) we can define; points of growth as occurring when all the leading activities are located within a limited space; complementary relationships are established in this microzone, without repercussions on the outside. Zones of growth are characterized by the existence of complementary relationships in a large geographical zone around one main nucleus. Axis of growth are a series of points of growth between which complementary relationships multiply due to the existence of an important transport axis.
- (24) A spread effect is defined as any impact which is traceable to the more developed region which increases the average real per capita

income of the poorer region and benefititally affects the economic structure of its economy.

- (25) This "North-South" concept is non-geographical, rather it refers to the dual existence of rich-core areas and poor-peripheral areas.
- (26) Nevertheless large countries showed more inequality in contrast to small countries.
- (27) The basic assumptions of Prebisch's international core-periphery were: (1) unfair terms of trade, the core produces capital goods, the peripheries raw materials and there exists an unfair price of exchange ratio; (2) the core is characterized by strong industrialization, concentration and technical progress; (3) there is a shortage of capital in the periphery resulting in outflows of investment from the centre to the periphery which leads to pockets of concentration and industrialization in them.
- (28) Additionally, other failures of neoclassical models refer to lack of recognition that national markets and quaternary services are located at the centre, that population are heterogeneous and that the periphery does not usually have the capacity to adjust appropriately to socio-economic changes in the centre.
- (29) This coincides with the four types of societies in an international level.
- (30) In this context, development and underdevelopment constitute a dichotomy and they are linked by transition.
- (31) Although this analysis is for Latin America, we could apply it to a developing nation.
- (32) Such a law establishes that under capitalism a process of uniform development is impossible and would lead to a combination of contemporary and archaic forms.
- (33) This idea was originally based on sociological works by Casanova and provided one of the bases of the centre-periphery model.
- (34) By "structural variables" we mean those which correspond to the inherent features of the structure of an underdeveloped or developing society, such as dependency, dualism and over-urbanization etc.
- (35) Foreign investment through the vehicle of the multinational corporation may have the adverse effect of over-concentrating regional capital within certain areas or sectors to the detriment of the rest of the region and thus hindering regional capital formation.

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CHAPTER IIREGIONAL POLICY AND PLANNING IN A DEVELOPING  
AND LATIN AMERICAN CONTEXTINTRODUCTION

Regional policy in developing countries is now an essential issue in considering their distorted process of spatial development; which is accentuated even more by their political and economic dependence on the power centres in developed societies. Furthermore, it is interesting to consider the enormous importance which the elaboration of such a policy plays in the commitment of national economic-growth (or development) in such countries. Latin America, a typical example of a developing area consists of countries belonging to the Preindustrial and Transitional stages of national growth (following Friedman's classification). (1).

In this particular analysis, only those "transitional countries" with mixed-type of economy such as Mexico, Brasil and Argentina, which are on the road towards the industrial stage are examined. They have been defined as those countries which have achieved a consistent internal process of industrialisation, with the primacy of a strong core and emergence of subcores, with traditional sectors which have been losing their role in national growth. They also feature a solid public-sector and have been embarking on regional programmes and attempts of indicative planning implementation. For those societies there is a possibility for regional policy implementation without the assumed conflict between regional convergence and increases in national output (in other words, efficiency versus equity are not mutually exclusive). The reduction of regional disparities emerges as one of the main aspects in maintaining increases in the national output (GNP) (2), through reinforcement of internal income distribution patterns which meet also the sociopolitical pressure for

regional equity (See Table 1). Therefore, one can justify the pursue of stipulated goals for regional policy by considering the following features in these transitional economies:

- (a) the strong, regional discrepancies, and therefore socio-economic inequalities in welfare, with strong and selective outmigration.
- (b) over-urbanisation and metropolitan concentration.
- (c) political and economic concentration.
- (d) scarce regional financial resources, the allocation of which follows the capital-return criteria.
- (e) lack of administrative and technical structures for implementation of regional policies and planning.

Increases in regional disparities are the result of the free operation of market forces which hinder the long-term process of economic development. On the one hand, the over concentrated areas result in higher social costs and diseconomies which surpass the external and agglomeration economies, and on the other hand, the depressed peripheral areas, which run alongside the former have higher rates of out-migration, lower productivity levels, lower standards of living and a slower process of urbanisation. In addition each stage of the process of economic development affects each region of an economy differently, and "changing patterns of production may cause standards of economic activities location to change" (Barkin, 1970). This refers to the unequal industrial growth which makes for the imperfect mobility of factors, and affects labour force and capital returns which may be greater in the zones which are more rapidly expanding than in others. From the above, it can be seen that one of the main reasons for implementing

strong regional policies in developing countries comes from the tendency towards economic, political and social concentration linked to the lack of spatial or regional autonomy. This leads to deformed urban metropolitan concentrations (state-metropolis) giving the appearance of modern "islands" within a vast isolated territory. Inevitably, this process brings with it the unilateral movements of human resources, affecting on one side the quasi-economic equilibrium of the centres and therefore increasing their "social costs" and diseconomies and also depleting productive forces of rural peripheries which also lack incentives for industrial investments.

However, the governments need not act impassively towards this unequal pattern of regional growth, because they can adopt a variety of policies with the aim of reducing it. Regional policy has been conceived as "the various ways in which government action can promote a more rapid economic development in the less prosperous regions of the country, on the basis of a greater equality or reinforcement of national unity" (Wilson, 1964). In a developing context, however, one should bear in mind that problem regions comprise underdeveloped, congested and less prosperous regions.

Strong conflict has existed amongst supporters of regional convergence and supporters of regional divergence as policy criteria in the process of regional economic development. It would be inadvisable to deduce from the theory of convergence any short-term practical results given the long-term orientation of economic forces. Regional policy together with planning implementation represent the only tools to delineate a more harmonic process thus they should be seen as a special method of attenuating, in the short-term, these divergences by aiming to reduce them according to the necessary process of transformation.

A regional policy in this particular context must be incorporated in, and also be suitable for the aims of national economic policy. It is the responsibility of the state to outline the right strategy of development for greater prosperity and faster rate of growth, although, sometimes it may be necessary to sacrifice higher rates of national growth in the short run in order to increase rates of spatial and regional equity in the long run. In addition, there is a need to deal with regional problems on a national level since this makes for the most useful contributions to the future of regional economies given that nations are neither homogenous nor does development affect all areas equally (Friedmann, 1966). In this way, only by manipulating the variables of national policy can the most useful contribution be made to the future of the regional economy; regional policy is thus a direct product of what the nation's basic frame of reference.

At the same time, regional policies should give greater priority to the inter-regional implementation of decisions according to regional hierarchies of development poles in order to change the focus upon favoured areas. However, it must be noted that regional policy necessarily implies a strong and coherent public intervention via legal, economic and social instruments in the problem regions in order to harmonise the spatial economic process. On the other hand, regional policy represents for developing societies a profound structural transformation where organisation of human resources must be balanced with adequate criteria of exploitation of internal natural resources, and finally with adequate use of scarce national and regional investments. All this in the context of an efficient implementation of development planning.



# 1. GOALS OF REGIONAL POLICIES

The goals of regional policies in developing societies are supposedly linked with the search for a collective and equitable welfare, balancing this with a sustained industrial growth, agricultural development and altogether towards a substantial rate of national growth. In this way, it should be clear that these policies will have to be linked to the goals of national policies viz: faster rates of growth of GNP, full employment, stability of prices, diversification of the economy, strengthening of the balance of payments, etc. Conversely, sectoral aims should be related to their regional focus pursuing the solution of the efficiency and equity conflict.

Given the above discussion, one can outline the most essential goals of regional policies as follows:

- (1) The slowing down and eventual reduction of regional inequalities in the standards of living without interfering in national output increases (efficiency versus equity).
- (2) The removal of inefficient urban over-concentration and metropolitan primacies which are associated with them rising social costs and offering the benefits stemming from agglomeration or external economies (concentration versus dispersion).
- (3) The incorporation of peripheral regions to the national and regional development through efficient use of potential, natural and human resources (national integration).
- (4) Strengthening of national political unity.
- (5) The modernisation of traditional sectors, particularly the agricultural one and their integration with industrialisation and urbanisation processes.

- (6) To both balance and widen the allocation of human resources (and opportunities) in connection with public and private investment policies, through an appropriate reorganisation of the economic system (balance versus imbalance).
- (7) A thorough exploitation of the natural resources in the depressed regions.
- (8) To reduce the dependency relationships of the peripheral areas with the core regions, in other words to reduce regional internal colonialism.

One must note, that the final objectives of regional policy are in terms of the promotion of individual welfare related to higher real incomes per capita, full employment, varieties of jobs and life styles, security in income etc. A structural approach in regional policy should be related to the attainment of social change and equity hand in hand with economic efficiency within a national dependant framework. Incorporation of marginal groups of population in congested or depressed regions also justifies strategies of higher labour-inputs and decentralisation of political decision to the peripheries. If one considers that migration represents a dynamic element in these societies, it is possible to infer the importance of this aspect in the setting up of essential goals of regional policies. However, the essential dilemma for implementation of regional policy lies in the conflicting goals of maximising national growth rates (efficiency) and reducing regional per capita income disparities (equity). The conflicting situation may be solved through a multi-objective behavioural and deterministic model using linear programming (Reiner, 1971). This approach consists of several steps:

(1) Identification of points of conflict together with arrangement of value and alternatives should be previously examined. Afterwards, the nature of values should be confronted in a structural, programmed and methodological way. Interaction of goals is given by internalised values as the dependant variables (i.e. regional disparity in per capita incomes) and valued entities as the independent variable (i.e. increases in GNP). A conflicting relationship between valued entities emerges, thus raising the level of national product might well be associated with greater disparity between levels of regional product, measured in per capita terms (see diagram 1).

(2) In contrast to single and rational goal models, this approach requires an optimal behaviour model which deals with rationalisation of plural goals. The solution of which is given by determining instrumental complementarity between goals (means) general complementarity, pre-eminence of objectives etc. (3).

(3) Finally, the identification of four basic approaches: imposition of an overriding goal, analysis of comparative impacts, specification of weights and attempts at constrained maximisation. This requires the construction of an objective function and a linear programming model which constitutes an unequivocal guide for appropriate action where weighted goals exist (4) (diagram 2). Therefore, this model makes possible to determine the "maximum GNP which a nation can generate, assess the impact of the policy which is designed to achieve this level, then test the outcome in terms of per capita income disparity between regions" (Reiner, 1971). A basic rule might be applied which does not permit the implementation of the initial GNP policy if the disparity exceeds a predetermined threshold.

## 2. REGIONALISATION

Adequate regionalisation has an important role in the optimisation of inter-regional development policies and the attainment of development goals. The process of regionalisation has clearly been open to conflicting objective and subjective approaches even within the same national governments. Because of diverse social factors throughout Latin America, one should favour the hypothesis that there is a need for planning regions which will assist national welfare standards. The notion of 'space' can be considered as both resource and obstacle and, 'economic space', the spatial application of economic variables, can be considered a resource. (Boudeville, 1966). The concept of "region" does not have to be interpreted from the economic, geographical, political, or administrative point of view but as a conjunction of all of them. Economic regions are those economic spaces formed by continuous local geographical units, which possess a collection of economic and structural characteristics giving them relative autonomy.

Planning regions emerge as the result of the conjunction of formal and functional methods of regional classification (Glasson, 1974). They provide an interdisciplinary view outside of an economic determinism and comprise all the different trends of regional schools. Boudeville defines these as areas which display some coherence or unity of economic decisions. A possible adaptation to Latin America requires their setting up within a regional classification as that provided by Sthor (Sthor, 1972). Thus planning regions are "geographical regions suitable for the designing and implementing of development plans for dealing with regional problems". This also implies a feasibility of regional administration, and an adequate appraisal of regionalism. Combining diverse criteria and concerning their objectives, regions may be classified in the following way: (1) Homogeneous, (2) Polarised and (3) Planning regions. Homogeneous regions are those which are integrated by local geographical units possessing common

characteristics, with regard to one or various economic variables. Polarised regions are spaces in which characteristic elements are determined in relation to a central nucleus on which they depend. Normally, the polarised regions are considered more functional and are often the most adequate basis for regional planning because of the way in which they determine the region. The homogeneous regions are based on the observation of one or more economic variables, while polarised regions highlight groups of economic transactions among cities, towns and villages. The polarised region is the "space in which the relationships regarding one pole or centre are more intense than for those of equal hierarchy" and it is established that two spatial components should be distinguished: the pole which is the centre of integration and unification of gravitation space, and the periphery which is the dependent zone of the pole.

Regionalisation has been understood as the process of delineating regions, and mainly depends on the available criteria. Delineation of formal regions can be undertaken through techniques such as the "weighted index number method" (Boudeville, 1966) and "factor analysis method". Functional regions may be determined by such methods as "flow analysis" or "gravitational analysis". In particular this last method is especially relevant for the determination of polarised regions. In its simplest form the gravity model assumes that the interaction between two centres is directly proportional to the "mass" of the centres and inversely proportional to the distance between the centres and may be described thus:

$$T_{ij} = K \left( \frac{P_i P_j}{d_{ij}^2} \right)$$

where,

$T_{ij}$  = gravitational force between centres  $i$  and  $j$ .

$P_i$  and  $P_j$ ; masses of two centres

$d_{ij}$  = distance between centres

K = constant

Among other important instruments one could mention the inter-regional flows matrix, and the table of inter-regional and intersectoral relationships.

### 3. TYPES OF POLICIES

There have emerged spontaneous measures to handle regional problems without forming a deliberate and integrated national strategy. (5).

However, the lack of institutional structures, such as appropriate regional legislation and public organisations, have acted as a constraint on the efficiency of these policies. Depending on the particular features of the regional economies, the policies have also sometimes supported private investment and influenced their allocation (e.g. CCS and national and spatial taxation). Although, in some cases there has even been a complete allocation of public regional investment within a growth pole approach, specifically in the traditional sectors. (6).

Therefore, delineation of regional policies and instruments should be based on the theoretical considerations discussed above and directed towards already stated goals for Latin American countries in question. (See Tables 2, 3 and 4). Specific combinations of policies should depend upon specific priorities in a hierarchical organisation of regions and upon the financial criterion of public and private resource allocation, whether in terms of equity or efficiency considerations. Consequently, the selection of locational policies rather than growth policies should depend on the particular natural and human resources of each region and on the national policy goals.

Thus it can be seen that microeconomic location theory provides a basis of fiscal and incomes policy so as to unite the individual profit maximising firm's location with that of the social optimum. The evolvement of models of spatial organisation provide policy instruments which can be used in establishing central places and growth poles, and combining traditional sectors with secondary and tertiary activities for different regions. Neo-classical regional growth models have important policy implications in a spatial macro-economic approach; particularly those models which emphasise intra and inter-regional resource allocation, i.e. factor mobility acting as the mechanism which produces inter-regional differences in economic growth rates. These policy implications assume however the need to increase factor mobility to achieve equalisation. On the other hand, the export base approach implies that the process needs a policy to stimulate the export performance of the least prosperous regions. These regional growth models, set within a national framework, focus mainly upon the level of investment and technical progress in the lagging regions - advocating direct government expenditure in these areas or measures to stimulate private investment via incentives to expand output and/or engage in factor substitution.

The policy recommendation of cumulative causation models is basically the establishment of growth poles in peripheral areas, any other result is restricted since they may take part in the cumulative causation process. Finally, center-periphery models have started appraising policy guidelines to reverse the well-known dependent process. Developing countries within the framework of a mixed economy, representing in other words, a compromise between policies favouring free market forces and the total planning of the economy. A policy which seeks for inter-regional redistribution of income through incentives or coercive measures risks the possibility of an inefficient subsidy policy at the regional or national

level. (7). However, coercive policies may cover the scope of national policies in order to achieve economic growth, full employment and social equity. (8). Nevertheless, one must consider the risk and need to pursue policies with monoregional or inter-regional goals (in the framework of regional planning and national aims) as a way to reduce the gaps between problem and rich regions. This policy is similar to the "permissive policies" (Barkin, 1970) referring to that approach which tries to induce action from private enterprises, either by tax policies which increase their profitability, or by the provision of various types of general social capital (GSC) which reduce costs. From this, two particular tendencies have been developed: the argument that creation of GSC increases effective demand and thus leads to additional private investment and to accumulative income growth. However, it seems that the importance of GSC has been exaggerated and that further away from a minimum point the GSC has diminishing returns with regards to the decreasing of the cost of investment in Directly Productive Activities (DPA), (Hirschman, 1964). This also points out that the provision of GSC in the short run will induce smaller private investment than those had the GSC been induced by a "scarcity" criterion. A second argument emphasises that the first step of the sequence should be the investment in DPA. The "permissive policies" argument (Barkin, Ibid) represents an eclectic position since on the one hand it demonstrates the benefits of investment in GSC in that it often reduces the costs for a great variety of industries rather than in a single branch of DPA. On the other hand it is eclectic also in particular branches of the DPA (Hirschman's thesis), i.e. the effects of "backward linkages" and the effects of the "forward linkages".



#### A. Growth Pole Policy

In recent years one of the most influential movements in regional policy in developing countries has been growth pole policy (for a theoretical basis see Chapter I). The movement was originally concerned with developed countries, however its ideas have been disseminated widely and the movement is now very influential in policy formulation in Latin America. (9).

The applicability of the policy in a developing society depends upon the incorporation of interdisciplinary, intersectoral and interspatial criteria on a national basis, abandoning efficiency criterion and a mono-sectoral focus. (10). In addition, the efficacy of this policy - as it has been argued - depends on the stage of national economic development. Thus, neither the pre-industrial systems nor the post-industrial ones have possibilities of benefiting very much with this approach, but only those in the transitional stage (Friedmann, 1971).

The most striking differences of growth pole policy from conventional regional policy lies in its comprehensive sectoral approach, discriminative allocation of productive factors and its local, spatial emphasis. Whereas conventional policy attempts to deal with intersectoral spatial development problems throughout the country, growth pole policy concentrates on multi-sectoral and territorial development problems in delineated areas; the rationale being that these poles once planted will lead to a continuous autonomous development in these areas. (11). Three policy elements in the policy can be distinguished (Parr, 1977):

(1) Concentration of infrastructure: this aspect of the policy is designed to make the location more attractive to industrial investment.

(2) Sectoral structure: this aspect tries to induce key industries in the location. These industries should encourage backward and forward linkages thus providing further private investment in the region.

(3) Labour mobility: this aspect differs from the two elements above in that it concentrates on increasing the labour supply in the area rather than increasing the demand for labour, typically taking the form of improvements in the transport system.

The relative importance of these elements within the policy is largely dictated by the nature of the growth pole; a natural pole for example may already attract key industries and thus the main area of need might lie in the first and last elements. Similarly, a planned pole may need all three elements. Although there is no real constraint upon the size of growth poles, there is a limitation on their number as they compete with one another for private investment, thus the policy of constructing growth poles is most efficient when there are only a few. The ramifications of growth pole policy are that it leads to an increase in inter-regional and intraregional income divergences. Thus the implementation of the policy is liable to be blocked by members of the legislature who come from regions where a growth pole is not situated, as it will be viewed as a threat to their own development funds (Parr, *ibid.*).

In a developing context, it is more appropriate to deal with a national strategy of growth poles, in order to preserve the specific goals which have been explained above and in order also to mobilize the national productive resources. Firstly, it should be noted that growth poles have a decisive influence in the structural organisation of the spatial system they dominate: (a) as centres of supply; (b) as centres of production and consumption; (c) as centres of power for economic decision

making. Growth poles may be further classified as 1st, 2nd, 3rd order poles depending on their national, regional or sub-regional importance. Historic growth poles can be recognised by the level of their inter-dependant relations with sub systems and can also be found in any country in a preliminary stage of development. The following characteristics could be observed with respect to their hierarchial organisation:

- (1) Primitive or backward areas usually lack growth poles.
- (2) The hierarchy of growth poles depends upon economic interdependence through supply and demand relationships.
- (3) The dominance of an economic system through space can be viewed as a form of interaction in which growth poles establish the parameters and conditions for economic expansion in the area.
- (4) A growth pole's domination over its own spatial economic system is only a relative one.
- (5) If a system has more than one growth pole of the hierarchial order then they share their domination.

One of the most important aspects of growth poles concerning regional planning is the phenomenon of activation. This aspect represents the realisation of the potential capacities of a growth pole, through a planned effort in investments for the development of natural and human resources, as well as manufacturing industries. For this to be successful the investment must not only be massive and continuous but also implemented on a programmed and coordinated basis. (Friedmann, 1971). However, the strategy of regional poles makes sense only in the context of a national policy of regional development, although its intersectoral combined with interspatial relationships are inevitable.

Given the important role of agricultural sectors even now, the relationship between growth poles and agricultural development in the field of regional development is quite relevant and can be appraised in the following way:

(1) At a government level, the decisions on agriculture run independent of those on growth poles, as the factors affecting their development are entirely different. But growth poles will help agriculture by attracting labour outmigration and thereby increasing the marginal product of the remaining agricultural labourers. In this case, the distance factor is important as the poles' influence decreases with distance.

(2) The gains to the agricultural sector in terms of higher productivity have to be weighted against possibility of unemployment among the flows of people moving towards urban concentrations and the subsequent high social costs on these areas. (12).

When the growth poles approach is moved to a developing context, two essential aspects may be examined: on one hand, a growth pole may give quick returns in terms of increased output and thus it may be advantageous in terms of efficiency. On the other, the policy can be related to the sociopolitical aspects of core-periphery relationships which contradict its applicability. In other words, when formulating this policy, one must guard against forming an enclave with dependant relationships and exporting profits and capital either abroad or to rich regions. If we add to this the phenomenon of dualism and the existence of neocolonialist processes, the formation of underdeveloped peripheries could emerge, conflicting with the aims of the policy and widening the regional gap.

In Latin America, there are two essential restrictions on a national

strategy of growth poles: (1) scarce resources for implementing adequate regional formation of capital, (2) existence of "vested interests" in dominant centres. In addition, the existence of natural poles are related to distorted processes of urban and economic concentration in national economies. There are also examples of spontaneous growth poles as a result of massive allocation of public and private resources, even when in real terms they do not represent a national and deliberate effort of growth poles planning (North-east Brasil with Sudene, the Venezuelan Guayana or the Mexican Syderurgic "Las Truchas").

As with alternative approaches, a policy of polarised development must consider the requirements of national growth and the country's inherent socioeconomic, political and historic features. Taking an historic point of view, one of the main constraints in the successful implementation of growth poles lies in the characteristics of industrialisation and international trade in these economies. A combined model of industrialisation based on import substitution of capital and durable goods and the basic support of a primary export sector should be examined. The former, in relation to the demographic settlements and the latter to the economic use of the territory, emerge as the main factors in growth poles policy (Pedrao, 1971). This last point presents an important limitation for such a policy because of territorial concentration and its foundations on the policies dealing with utilisation of resources. Regional development in this context is given by the capacity of productive factors to meet the external demand which represents the variable guiding the organisation of space in the economy. Therefore, to implement a growth poles policy in these countries, there is a need to integrate it within the national growth strategy. This would result in new productive capacity and a continuation of internal import substitution, with

encouragement of the export sector. The latter aspect makes evident the need for an efficient use of productive factors (mainly technology) as well as scarce capital in new sectors, in order to increase international competitiveness. On the other hand, it seems necessary to consider the intersectoral implications of this policy mainly in terms of industrial and agricultural productivity and towards increasing the internal demand. (13) Furthermore, the repercussive effects of polarisation could be constrained by agricultural protectionism which combined with the existence of monopolistic conditions of the market, could result in serious risks in implementing this policy. The existence also of multinational companies which may take unfair advantage of all the input effects of polarisation is another major issue which must be faced. Thus, a descriptive analysis concerning the sociopolitical and foreign trade relationships of this continent makes evident serious limitations to the policy. Consequently, normative efforts should be made to stop any possible domination relationships between centres and peripheries and direct positive effects towards regional convergence.

Finally, the greater increases of urbanisation rates should generally be related to the development of growth poles. The propulsive effects of overcrowded areas justifies the need to dilute and shift population flows towards new urban centres in new growth poles. In this context, an appropriate hierarchial system of urban centres should be associated with a national strategy of hierarchial growth poles which also represents a challenge for policy makers to determine optimal city size with respect to the backwash and spread effects of growth poles.

#### B. Urban Decentralisation Policy

While in the above section the object of regional policy in developing countries was related to growth poles, so too does it deal with urban

decentralisation. Inter-regional and intraregional imbalance in the core metropolitan areas are related to higher rates of national urbanisation and over-urbanisation in the large metropolitan areas, aggravated by the high rates of natural population growth. In "transitional economies" it can be observed that the participation rates of urban population is greater than the rates of agricultural population in the total population. One of the main implications of urbanisation for regional policies is in the inability of urban metropolitan cores to provide employment and better opportunities for agricultural immigrants. The problem is increased by the dilemma between efficiency and equity in national policy, although it can be observed that the former has prevailed over the latter and so the main orientation of urbanisation policies in the present is the pursuit of social equity.

Therefore the implementation of the policy must be based on realistic assumptions of the problem and take into account the following factors:

- (1) Higher rural-urban migration as a result of lower productivity levels in the agricultural areas, population pressures and the subsequently lower standards of living for the agricultural labourers who then view the metropolitan areas as offering higher wages and improvement in general living conditions.
- (2) Urban-rural price differentials of productive factors. Migration emerges as a function of the probability to obtain higher incomes in urban areas and the income themselves and a function of the price rates of exchange favouring urban areas.
- (3) Modern industrial (or large scale) and related sectors with high capital intensity techniques, contrasting with the informal tertiary sectors (marginal sector) accentuating the dualistic process. The two sectors

are interconnected, the first one constraining the absorption of labour force and encouraging unemployment, and the second acting as an escape valve though with the lowest income levels and standards of living. In the former, the over-consumption of capital is based on a low propensity to save system which results in the borrowing of foreign capital thus creating a vicious circle in the economy.

(4) Over-urbanisation in deformed metropolitan cores which is a source of social costs and diseconomies of scale, manifested as inadequate physical infrastructure, social overheads (subsistence urbanisation) and very poor social services, i.e. housing, recreational areas etc. Inflationary pressures in the urban cores aggravate the situation for the newcomers, spreading also to the potential migratory agricultural sectors.

(5) Social marginalism of the new urban immigrants (newcomers) as a result of the great difficulty in gaining employment because of the lack of adequate levels of skills and education required by the urban labour market. This process reinforces the unproductive tertiary and informal sectors where the immigrants lack political influence and public participation which also gives rise to a cultural conflict between them and economic power groups. In many cases, public policies act timidly in readdressing this process (See Quazi, 1976). This produces and reinforces elitism and widens socioeconomic differences in an intraregional metropolitan level between the immigrants and the power structure. (14).

The issue then is how to overcome these problems in terms of public policies with urbanisation and inter-regional goals in order to establish patterns of equitable and efficient use of human resources. These particular objectives should be identified in the context of a more general one that seeks a continued economic expansion together with increased equality in the distribution of the product. Briefly, this could be



stated in the following way: (see Sullivan and Friedmann, 1974).

- (1) To achieve a development process (see Chapter I) which combines maximisation of growth in GNP and maximum realisation of human potential.
- (2) Economic organisation: from a system based on inequality to one of greater equality and social justice.
- (3) Greater national autonomy and self-reliance through reduction of foreign dependence.
- (4) Industrial organisation: from import-substitution to an explicit policy of industrial dualism. (15).
- (5) Regional development: from urban primacy to balanced rural-urban development.
- (6) Stabilisation of population rates.

The types of policies to be implemented will have to be framed however within an integrated approach which combines policies for the economic decentralisation of overcongested urban cores with those for the rural depressed areas which represent the roots of the problem. This necessarily implies the allocation of public and private resources through fiscal instruments and public investment criteria and also providing incentives for employment of newcomers in urban concentrations. Thus, the main type of policies with this orientation can be related to the following:

- (1) Those which pursue "work to the workers" within a growth poles approach. This may include DPA or GSC policies within a context of combined public and private managerial action and the reversal of unfavourable spatial public investment criteria. Therefore, the former policy (DPA) should be directed towards creation of public agroindustrial

enterprises in the rural areas.

(2) Deliberate urbanisation of the countryside which would take the form of concentrated policies of infrastructure in the rural areas. They may be applied using a purely physical economic criterion, dealing with the implementation of plans of interconnected urban centres of small size, based also on the creation of efficient types of agroindustrial economic organisation. This also represents the adoption of a more realistic public urbanisation policy adaptable to the level of expansion of industrial development. In this context, the formulation of development policy should be related to the principles of "proportioning population to potential" which implies a close correspondence between local resources and the size of the settlements (Quazi, 1976).

(3) Educational and promotional policies in the rural areas, through programs of vocational training (16) in technical fields, and through the complementary use of psychosocial programs promoting the social change necessary to reduce the tendency of outmigration to the urban cores.

(4) Finally, to provide tax incentives for use of labour force in the industrial units of overcongested areas combined with governmental requirements for industry to provide technical training. Policies which seek to mobilise human resources outside the congested areas should be combined with industrial decentralisation and location in outmigration areas.

#### 4. THE PROCESS OF REGIONAL DEVELOPMENT IN LATIN AMERICA: A REGIONAL DILEMMA?

The success of a regional policy depends on a full understanding of the Causal factors of the process of regional development. Unfortunately,

very little research has been made on the effects of local added value activities on national growth, or on how the economic growth in one area of a nation is transmitted to another. Taking a "systems approach" into account it has been stated that regional theory must define the reordering of spatial relations which occur in economic growth and must be able to account for possible changes in the boundaries of the regional subsystem. Additionally, it must explain the variable influences of the spatial patterns in the growth of large systems in the core of a nation, "The regional theory is therefore not a theory with regards to regions with fixed limits, but a spatial incident of economic growth" (Friedmann, 1966). At the same time, regional development should be examined as a stages process which produced long run structural changes. From this regional policy emerges as a tool which attempts to meet the requirements of national and regional economies moving towards homogeneous income levels. This process should be dynamic, integrated and cover the inter-regional level rather than a static comparative analysis suggested by the neoclassical school.

Likewise it is distinct from the process of national development on the following points:

- (1) The role that inter-regional trade plays in the process of development for the region compared with the national foreign trade.
- (2) The problems concerning the way in which the growth of a region affects the growth of other parts of the economy.
- (3) The mechanisms through which the regions have to balance inter-regional payments (Barkin, 1970).

In relation with the first idea, it is considered that at a regional level external trade will represent a much greater part of regional production and consumption than that of the nation. Thus, great importance

is given to the North's export-base as one of the main foundations of regional policy, because it plays a vitally important role in determining the regional level of income and the national transmission of cyclical fluctuations to the regions. The second argument assumes that there will be prominent and unequitable concentration of economic growth in very few regions and with an imperfect mobility of factors. This situation may give rise to the predominance of an industrial export base, as opposed to an agricultural one, meaning that the growth of the agricultural exporting regions will inevitably be slower than the industrially based regions (smaller increases in demand, low price elasticity of demand for raw materials, decreasing returns in natural fixed resources, stagnant and declining world prices). There are some limitations to this argument when one considers Myrdal's "backwash" effects and the overestimations made of external economies in a process of polarisation. The third difference refers to the disadvantages for the regions because its long-term disequilibria is more difficult to correct than the national balance of payments.

Within the aims of regional policy, the export-base approach seems to be quantitatively orientated, views the process of foreign trade as a development mechanism and neglects the inherent structural characteristics of developing economies. That is it represents accentuation of economic dependence on a regional level from abroad, the reinforcement of regional power structures etc. Dependence is also framed on internal trade relationships within a country between the periphery as producer of raw materials and a main core as producer of finished and capital goods. Thus, regional policy for these societies should take into account the process of capitalisation of its traditional sectors by means of a widening of the internal market. The industrial export-base approach should be

based on the agricultural sector through the organisation of large groups of the population for a general maximisation of benefits.

A new approach in implementation of regional development policies in Latin America must take into account spatial patterns of development i.e. human settlements, income differentials etc., and individually assess the extent to which regional policy assures continuance in their national goals. Although Latin America is not a political unit, since it comprises different geographical patterns - Mexico and Central America are located on one side and South America on the other - some similar spatial patterns may be observed, bearing in mind that different sub-national features may produce different types of regional policies on a national level. (Stohr, 1976).

(a) Settlements - South American settlements are predominantly coastal with more densely populated areas and large cities situated along a comparatively narrow coastal fringe, while the greater part of the interior is still virtually unsettled, although rich in natural resources. Central America and Mexico's main population centres are in the interior with numerous coastal areas still only sparsely settled. Additionally, they have a strong economic and spatial relationship with U.S.A.

(b) Living standards. Inter-regional differences on a continental scale represent another phenomenon. The higher regional per capita income zones tends to be concentrated around the national capitals, in some peripheral areas of the southern zone of South America, and along the Mexican Border with the U.S.A.

By analysing the spatial distribution of population and income and thereby determining types of development areas in each country one can observe the following features:

(1) There are "poor" subnational units (with less than 50% of national per capita income), "rich" areas (about the national average) and an intermediate group (between 50% and 100% of national per capita income). Combining per capita income with population density, Stohr (1976) has attempted to define different types of development areas: 1. Metropolitan areas; 2. Other relatively developed areas; 3. Depressed areas; 4. Settlement areas.

(2) A high degree of concentration of political and administrative power confronted with an increasing demand for participation and decision making. Centralisation has been perpetuated by the belief that major structural transformation and an autonomous national policy can only be secured through a strong central government (ECLA 1970). In fact, only three of all the Latin American countries provide formal autonomy at both the highest, subnational and municipal levels: Argentina, Brazil and Mexico. Additionally, centralisation of public spending in the hands of the national government and dependent agencies in general is very high in Latin America. In some countries like Bolivia, Chile, Peru, it is more than 95%, in other countries like Mexico, Venezuela, this is between 80 and 95%, and in others such as Argentina and Brazil it is less than 80%.

(3) A selection of some Latin American countries, as was made above with socioeconomic and political feasibility and need of regional development according to a series of national indicators. (See Stohr, *ibid.*). These indicators have been also compiled to determine the propensity of individual countries to undertake different kinds of regional policies. However, to complement this, other socioeconomic patterns concerning these societies should be examined as follows:

#### 1. Economic Dependence

2. Maladjustment in inter-regional relations, which produces relationships of internal colonialism.
3. The adverse effects of the pattern of development on human settlements.

The process of metropolitan polarisation is faced with backward rural areas as a result of a dependent economy. The process of industrialisation has produced a regional imbalance with strong regional unemployment.

(4) Maladjustment of spatial structure and the break-up of ecological equilibrium. A normative criterion on the process of regional development in Latin America provides the background for the outline of regional policies.

Essential considerations for regional policies, given the concentration of population and the capacity of production, are the location of factors as well as income distribution, generation of employment on a regional scale, regional impacts of the national forms of savings etc. Furthermore, regional policies are generally translated into requirements of labour inputs for investments and are defined as a partial solution of the exploitation of natural resources and capital. This argument enables an analysis of structural changes in the regional combinations of factors which are the result of regional capital formation. Programmes orientated to mobilise human resources on a regional scale as an essential aspect of regional policies, are easily justified if one examines the territorial occupation patterns, the scarcity of labour, and its lack of mobility mainly in backward and isolated rural areas. This focus opens great possibilities in the analysis of regional developments policy in Latin American countries, enabling them to accompany structural changes in regional factor combinations with increasing capitalisation of a given region. Some are characteristic features of the form of occupation of

the territory in the various Latin American countries, where the mobility of labour is still small principally in less developed and isolated rural areas. These are incentives to give more importance to the orientated programmes to mobilise human resources on a regional scale. (Pedrao, 1971).

Urban aspects of development in the Latin American situation helps to observe similarities among the diverse growth models. But there is no doubt that the differences in employment rates and internal redistribution of income resulted in significant differences in the growth of regional markets. It was this regional concentration of factors and markets, which generated comparative advantages among regions, particularly where industrialisation sharpened regional inequality. The utilisation of factors of production, especially of basic social capital have not been the most suitable for development since they have constrained the exploitation of human resources, e.g. the River Basins approach in Mexico. It is possible to link some internal variables of regional development such as investment, capital formation, occupation of territory, etc. with the phenomenon of economic dependence. Thus one has the argument that in the exploitation of resources there is a tendency towards concentration of fixed capital and the most efficient techniques of production in those activities and sectors where production is geared to meet the external demand. Conversely, internal demand sustains the levels of employment in less efficient economic activities. In this way the expansion of the national capacity of production is subordinated to external foreign demand. This has resulted in a distorted process of urbanisation and industrialisation associated with an inefficient economic organisation of agriculture. This tends to aggravate an already distorted population distribution as well as the capacity for creating employment (Padrao, *Ibid.*).



One may reflect on the way in which the processes of international economic relations influence the internal processes of imbalanced development; the first settlements of basic social capital have been sustained as regional centres and follow the same patterns of export activities. This places the location of fixed social capital assets as a parameter in new investment decisions, influencing profitability levels and in general, the elaboration of regional policies. (Pedrao, *ibid.*). However, the dynamics of the regional development process are not merely concerned with parameters but more with fundamental socio-economic structural change.

One should, however, analyse the evolution of regional development policy in Latin America following the four stages of regional development proposed by Friedmann (Friedmann, 1966, see Chapter I above):

The first stage is of a stable preindustrial society and is characterised by the existence of isolated national economies. Regional policy plays an insignificant role because the main concern is in increasing national output. This is characteristic of some Latin American countries such as Bolivia, Panama, Ecuador, Peru, etc.

The second stage is stable and transitional featuring a single strong core with wide periphery. In this case, regional policy is necessary only at the maturation of this phase, due to the increasing pressures of the periphery on national policies which have been orientated towards increasing national growth and concentrating all efforts in the core, thus aggravating regional imbalances. Venezuela and Chile are examples of Latin American economies presently at this stage.

A third stage is given by a single national centre with strong peripheral subcentres. Regional policy in this case plays a crucial

role because it is based upon the requirements of both national growth and regional economy. Although it is difficult to be precise about which stage Latin American countries belong, it could be suggested that possibly only Mexico, Brazil and Argentina belong to this category. However, it is very clear that we could locate them in an intermediate point between the second and third stage, taking into account that the inter-metropolitan peripheries are not comparatively important as the cores and they do not necessarily have strong relationships between them, i.e. in Mexico, one can describe a main core (federal district) and some metropolitan peripheries (Guadalajara and Monterrey), although the increasing importance of the core has not been reduced, and there are also no linkages between the subcores. Regional policy in these countries is one of the main implications in terms of national growth, and all the different disjointed efforts should be integrated in a national regional plan for their economies as a whole.

Consequently, a dilemma in terms of policy implementation is applicable to some specific countries which could be classified as "transitional" or "intermediate" e.g. countries such as Mexico, Brazil or Argentina. This classification is given in terms of the achievement of strong industrialisation processes backed by strong agricultural policies although all may have distorted spatial patterns and deep regional inequalities. The dilemma is also seen in the danger of a national economic breakdown if those policies do not pursue alternative regional and national goals, and finally in the possibility of sociopolitical conflicts coming from the unfavoured depressed peripheries or even from developed regions.

## 5. CONSTRAINTS IN THE IMPLEMENTATION OF A REGIONAL POLICY

The urgent need for an adequate regional policy in developing countries is frustrated by the difficulties in its practical application. The principal constraints emanate from the following cultural, economic political or social conditions:

- (1) The lack of adequate regionalisation criteria. Comprehensive regionalisation towards planning is more relevant than the natural-physical or economic criteria, as was explained in Part 3.
- (2) The absence of social and political unity in developing countries that might promote an entire coordination between institutions and individuals.
- (3) The competition for political prestige and public funds between the various central government ministries. A similar conflict is carried on at a regional level as a result of the uneven balance of power between agencies of the central government and semi-autonomous regional and state bodies. For example the relationship between river basins commissions in Mexico and the Ministry of Agriculture and Water Resources. (17). This lack of effective coordination brings with it a waste of human and capital resources and impedes the application of adopted policies.
- (4) As a result of the diverse conceptions of regional policy held by the different levels of government, there are a wide range of conflicting goals. This situation can be resolved in a similar way to that explained in Part 2.

## 6. THE IMPACT OF REGIONAL POLICIES

The impact of regional policies are generally analysed in terms of their "efficiency", "equity", and "effectiveness". Equity is given by the

degree of uniformity in inter-regional per capita income distribution. Efficiency of the policy is measured by cost benefit analysis and effectiveness in transitional and mixed economies is determined by its success in simultaneously reducing regional disparities and increasing national output. There is a danger when assessing public policy of confusing "efficiency" with "effectiveness".

Regional policy has to satisfy the 3 R's, namely "Rationality", "Relevance" and "Realism". Rationality involves analysis, definition of objectives, quantification of effects, worthwhileness, etc. A relevant policy must consider the involvement of secondary and tertiary sectors together with the impact of firms attracted to the regions. Finally, Realism requires specific policies for depressed areas and an adequate consideration of migration and the time scale of regional development etc.

The approach in this paper is not concerned exclusively with the evaluation of efficiency, rather it attempts to assess alternatively the interconnected effects of policy on (core and peripheral) regions in relation to equity though with specific attention being paid to congested and depressed areas. Such an assessment could include many indicators. However, one is inclined to consider only those which highlight the most important features of developing economies. Thus the following have been selected:

#### REGIONAL INDICATORS

EXOGENOUS	ENDOGENOUS
(1) Migration	(1) Regional Income per Capita and Income Distribution
(2) Public and Private Investment	(2) Employment and Unemployment
(3) Industrial Location	(3) Economic and Social Mobility
	(4) Agroindustrial Organisation

The change in regional per capita income is perhaps the most widely used indicator in policy analysis of developed countries. However, it loses some of its relevance when applied to developing countries due to the extreme personal income disparity among different social classes. Consequently, one must include a measure of regional income distribution in order to take into account the effects on various social groups and the various political repercussions which may contradict the established goals.

The impact of regional policy is assessed within an inter-regional framework. The main difficulty is in choosing the most appropriate techniques (18) which would take into account the more important socio-political forces found in these countries. Cost benefit analysis is one of the most valuable techniques, though the quantification of socio-political factors presents a problem. The overall assessment by this method may be at 2 levels: firstly, it should take into account equity considerations in relation to core-periphery relationships although this has been very difficult to quantify. Benefits of the policy are in terms of increases in GNP, creation of employment and improvements in regional income distribution. Costs of a policy are given by the overall public investment and the opportunity costs in terms of foregone earnings for migrants seeking employment. Both costs and benefits of the policy should be also pondered in terms of their welfare functions. Secondly, and more importantly with regards to this section, the policy should be assessed in terms of its impact on certain regions within these countries. (Table 5). The assessment of the impact involves adapting the official regionalisation of every country to Stohr's criteria. Consequently, the main intention is to consider the aggravation or improvement of regional divergences as a result of the policy.

## 7. AN APPRAISAL OF INTER-REGIONAL DEVELOPMENT PLANNING

### Latin American Momentum

Most of the works of regional planning in these Latin American countries have taken a positive approach. However, a normative approach which also takes into account the socio-political and economic feasibility of a particular type of regional development planning seems more appropriate. A solution to the "efficiency-equity" conflict may be found using inter-regional public investment planning models which can also influence the private investment trends in a mixed type of economy. This sectoral-regional approach could be transferred to the centre periphery scale as an alternative solution for inter-regional balance although it has not yet been attempted. In spite of the fact that regional planning has been considered a part of national planning in all these countries, all the efforts have emphasised regionalisation, neglecting to relate regional economic aims with sectoral objectives. A realistic implementation of planning precludes the use of sophisticated econometric models, since at the implementation stage, consideration must be taken of the deficient regional administrative structure, lack of skilled personnel and weak regional financial base. Consequently, a simpler model such as linear programming or systems analysis is more appropriate.

Regional development planning has not been officially incorporated by the public sector in these countries. Lack of continuity in the national planning process is one of the main reasons for this, though pressures from international crediting and political instability are also important. Regional planning has always been utilised as a complementary device for the implementation of national-sectoral planning through spontaneous programmes or projects in isolated or poor areas. However, the concern of these economies for achieving a rapid economic growth makes

it necessary for inter-regional planning to be framed within the national planning process. An analysis carried out recently by ECLA (UNO, 1971) produced the following conclusions with regard to the present-day situation of regional planning in Latin America:

- (1) Regional planning has been an ad-hoc activity with the principal aim of promoting the development of some backward parts of a country whose inferiority in economic conditions supposedly demands the special attention of the national power.
- (2) It has been considered as an instrument of some use, complementary to national planning and parallel to the sectoral programmes of investment.
- (3) It has been confined to the achievement of limited regional objectives for the growth of national product involving in some cases slight modifications in national economic structure.
- (4) There has been a subsequent confusion between the territorial impact of an investment programme and the effects of an articulated effort towards developing a region which uses such programmes as an instrument.
- (5) Its achievements as an instrument of interactional coordination of policies have been very uncertain, and its capacity for improving the exploitation of resources on a national scale will have to be supported in future by a theoretical foundation incorporating the relationship between the available human, natural and capital resources.

Thus, there is no combined regional-sectoral efforts in building the national planning schemes or even in the formulation of national public budgets. This is a result of two main difficulties. On the one hand, there are political risks involved with incorporating national planning in the public sector. On the other, is the fear that a modification of

national income distribution may lead to lower national growth. To these one could also add many difficulties associated with the centralised features of public sectors (Brazil and Chile are the exceptions, Sthor, *ibid.*) and deficient levels of national and regional coordination.

#### A Proposal

At an international level, one can find different appraisals of the regional planning process depending whether the national economy can be described as industrial, centralised or mixed. The theoretical background of the regional planning process makes this evident. (19). However, the general requirements of transitional types of economies are mainly linked to the practical incorporation of comprehensive, advocative and innovative methods in the national-regional process. Comprehensive planning, which has been defined as "the strategy of maximising bounded rationality" works within the rational ideal through seeking integration and coordination between policies developed for different situations. Advocacy planning involves allegiance and responsibility towards particular social groups in the planning process, especially poor, marginal or disadvantaged groups. Finally, innovative planning attempts to mobilize and channel resources to some single new or neglected use, achieving in the process the legitimisation of new social objectives or a major realignment of existing objectives. It seeks to do this by creating a new institutional arrangement (Morgan and Alden, 1974).

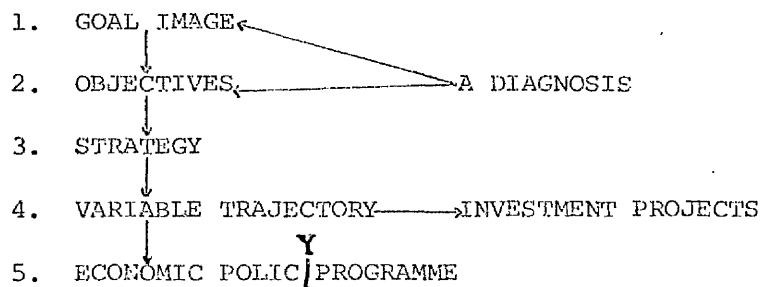
The need for these economies to achieve a faster and more balanced economic development justifies the support of a comprehensive view such as that of the regional development planning approach - as different from that of adaptive planning - in the framework of mixed economies. (20). An additional advantage for this approach is its association with the



evolution of regional planning as a long-range "stages" process involving socio-political constraints.

A general approach of planning in "choice theory" is as a "process of determining appropriate future action through a sequence of choices" (Davidoff and Reiner, 1962). In adapting this idea to the developing context, "choice" may be associated with regional combination of activities, coordination of diverse policy instruments and setting up of national and regional aims. "Future action" may be related to economic, social and institutional change to achieve a more appropriate pattern of income distribution. In relation to the centre-periphery model, regional planning emerges as "an instrument to rationalise and integrate the adopted decisions towards achieving the reversal of dominant-dependant relationships which link the central region to the peripheral ones" (Mattos, 1975).

The overall regional planning process involves construction of the following steps as is shown in this diagram:



As one can observe, a diagnosis is necessary to evaluate the present situation and also its historic evolution.

(1) The setting up of a "goal image" or "development style" may be relevant to establish the different regional strategies (Mattos, 1975). This would reflect the dominant ideology in the type of economic and social models.

- (2) The general, sectoral and spatial aims within a time planning horizon.
- (3) Strategies: four basic types have been found relevant: (a) Dispersed expansion; (b) Concentrated expansion; (c) Dispersed consolidation; (d) Concentrated consolidation. These should be compatible with an overall development model based on the goal-image.
- (4) Trends of the main macro-economic variables during the planning period.
- (5) The setting up of policy instruments to guide economic policy in the framework of the adopted strategies.

Given the characteristics of present day mixed economies, "the stages approach" is more important than the "integral planning" one. (21). There is also a practical justification for this choice, namely a lack of planning experience and adequate technical expertise, i.e. in some developing countries the project by project stage is more practical than the integrated public investment planning before passing to a comprehensive planning (as with the Mexican case). The division of the planning process into stages represents "the need to review previous stages on the evidence of the outcome of later stages", (Hilhorst, 1971). In terms of decision-making process the Hilhorst approach considering 6 stages in national-regional development planning seems quite relevant: 1) Macro-stage, 2) Sector stage, 3) Inter-regional, 4) Regional, 5) Local, 6) Project stage. (Hilhorst, 1971). In the macro-economic stage, the rate of investment is chosen for desired rate of growth, in the sector stage, the more relevant sectors are selected and the same for the regions and projects. Depending on the features of the institutional system, all decision making powers may be reserved for the central authorities. However, if decentralisation is possible, a division of tasks could be applied to this classification as follows:

- (1) The macro-sector-inter-regional stage is the responsibility of the national level control sub-system (policy preparation, policy making and policy execution).
- (2) The regional stage is carried out by the regional authorities; the local stages by local authorities.
- (3) Projects related to national and international activities would rest with national authorities and those concerning regional and local authorities would be given to regional and local authorities.

#### Alternative Models in Implementation of Sectoral and Regional Planning

One of the points of conflict in regional planning in these Latin American countries arises from the incorporation of regional disaggregation in sectoral investment allocation models. This stems from government fears of a reduction in the national economic growth. However, it seems that national expansion and a reduction of regional income disparities are compatible although this might not be the case in terms of national growth and personal income distribution. (Mattos, 1975). This is a question which requires empirical testing and Mattos's proposition may be more relevant to the short term, since better regional personal income distribution patterns undoubtedly allows the strengthening of the internal market which is favourable to long run national development.

Linear programming models represent one of the most powerful tools for dealing with the efficiency-equity conflict and are particularly appropriate for Latin American public investment schemes where sophisticated models are not practicable. They can be adapted to take international trade into consideration (Reiner, 1974). (See appendix). Reiner's model requires to be extended to include migration and national population change in the context of regional development, so that opportunity costs of regional

policies in terms of foregone national achievement, can be anticipated. The study and evaluation of the way in which regional allocation criteria are being made and might be made should be a crucial element of regional planning analysis. This model has nevertheless been criticised for not explicitly considering the possibility of disaggregation by sectors which may lead to different multiplier values (Stilwell, 1972). Inter-regional input-output models and inter-regional development models constitute a different and more applicable approach for the countries in question. The former have developed sectoral and regional output considerations, depending on final demand changes. The latter have focussed on optimal regional-sectoral distributions for achieving specific regional income targets (Tinbergen, 1968) (see Appendix). Tinbergen adopts a programming model to deal with 3 levels of disaggregation: sectors, regions and time periods, and comprising the main aspects as follows:

(1) A dynamic projection over a specific period of time.

(2) Planning process, divided into 3 phases (planning by stages):

(a) Macrophase (i.e. setting overall targets for GNP, investment, government spending, etc.); (b) the Middle phase (i.e. sectoral-regional allocation); (c) Microphase (selection of individual projects).

(3) A minimum of homogenous regions and sectors.

(4) Depending on their factor mobility, sectors are classified as regional, national and international sectors which implies two assumptions: (a) no transport costs and (b) output of regional sectors are a function of regional income and the output of national sectors is a function of national investment. The regional planning problem is solved by allocating the given outputs of national and international sectors among regions.

The choice of the "optimum" sectors is associated with international ones, the expansion of which is linked to capacity expansion in the national and regional sectors. The model assumes one overall policy aim - increasing national income with capital as the scarce factors. There is a ranking of international sectors and the optimum one is that with the lowest capital cost per unit increase in national income which leads towards its specialisation. The linear programming solution leads then to a target increase in national income and the most efficient allocation in terms of international sectors to achieve it. Regional goals are established in terms of target increases in regional income, where the sum of regional income targets adds up to the predetermined national income. The target may also include regional equity criteria. The objective function is to minimise the capital costs of achieving the target regional income levels, depending on internal consistency constraints. Finally, the optimal solution features regional specialisation in national and international sectors. (Richardson, 1973).

The model has had some preliminary empirical testing in the Mexican case (Carrillo 1970) and some weaknesses have been pointed out as follows:

- (1) The apparent applicability to a centrally planned economy. Mixed economies on the other hand represent an interplay of different decision making units.
- (2) A broad range of regional policy goals which cannot be comprised in a set of regional income targets.
- (3) Arbitrary classification of sectors and regions.
- (4) The constancy of main coefficients is doubtful.

(5) Superficial interdependencies without considerations of both spatial effects among investment.

(6) It does not overcome other regional-national conflicts, i.e. goals, public and private sectors, levels of government.

(7) Inherent difficulties in optimising regional distribution of each industry in a mixed economy. It seems that the public investment criteria allocation is more useful for these purposes. "It is likely that in such a case the regional income targets would be set and that policy makers would rely on a sequential planning approach." (Richardson, 1973).

CHAPTER IIFOOTNOTES

1. This is based on the classification of national economies in different stages of development: Preindustrial, Transitional and Post-Industrial, (Friedmann, 1966).
2. On this aspect, Sthor W., op. cit. based on specific criteria selects some Latin American Countries, i.e. Mexico, Brazil, Chile Venezuela or Argentina with a greater possibility for undertaking Regional Policies.

Additionally, Rein/er in "A Multiple Goals framework for Regional Planning (1971) and "Sub-National and National Planning" (1964) (See bibliography) solves the conflicting situation of using rates of GNP with reduction of regional disparities using a Linear Programming Model for regional planning.

3. It would be useful to repeat this step: to do the same with regards to a second, and possibly yet another objective. Where more than one objective is maximised seriatim, one can approach the plural objective problem as an opportunity cost study, i.e. in terms of the failure to reach peak achievement of one or more objectives.

Further development of formal models and on empirical studies in order to assess the manner in which individuals and institutions behave in a multi-objective context. (Rein/er, 1971).

4. Constrained Optimization. This final category of formal solutions, requires the construction of an objective function: a statement of what is to be sought. The second part of a linear programming model is the identification of a set of constraints expressed in a number of dimensions. These delimit the set of possible or feasible solutions. Together with the objective function, and given the transformation parameters, the constraints provide enough information to identify one point as optimal. Specifically, there will be a second set of dimensions: an objective function, a known number of constraints, and a sub-set of solution variables, and thus of value propositions. Constraints, one at a time, can be translated explicitly into objectives. (Rein/er, ibid.).
5. Sometimes there are policies with a physical approach, such as the river basins approach, hydroelectric programmes, colonisation in sub-populated areas, etc.
6. This could be observed in developing economies like Mexico where there is a trend towards more full intervention in a regional scale through organisation of public enterprises in some poles of growth, i.e. the case of the regional public enterprise "Syderurgic Lazaro-Cardenas-Las Truchas".

7. Kuklinsky (1972) makes a distinction between interregional or multiregional policies, and monoregional or intraregional policies, characterising the former as those that define the scope of the national policies, resting on the key problem in the dissociation in the regional plan of policies, programmes or national plans to achieve economic growth, full employment and social equality. Meanwhile the monoregional policies are elaborated within the framework of an autonomous process or semiautonomous, and they are conceived for one region taking into account the exterior relations of the region and its internal differentiation, the goals of regional policies, according to this author, are in relation to the ideas about the future of a given society and in accordance with the foresights, projections and predictions which are realised. The goals of monoregional policies come to be the same as in the interregional policies, although the interpretation of the goals will be different in the strong regions than in the weak regions.
8. Egner (1964) and Barkin (1970) distinguish three types of policies: Imperative, Consultative and Incentive. The first one pleads for the total planning of a regional economic structure and for the authoritarian determination of sites of production in the space. The second one corresponds to the neoliterary concept of the theory of flexibility. It does not only consist in the judgement of special measures to influence the location of enterprises, but by measures of economic policy orientated to promote competition. The last one applies its measures in accordance with the theory of social costs with an end to achieving a certain equilibrium among the possibilities of regions.
9. As Kuklinsky points out, this has resulted in the creation of small islands of industrialisation (cathedrals in the desert) with no relation and no osmosis with the environment, and on the other hand, with the spectacular distension of huge urban agglomeration characterised by generalised unemployment and underemployment. (Kuklinsky, 1972).
10. Kuklinsky (1972) stresses the need to abandon exclusive economic or investment effectiveness criteria, and in its place, to consider political, institutional, social and cultural variables as conditioned and determinant elements of the process of polarisation.
11. A conflict of sectoral and regional approaches on developing countries has to be faced. This conflict can be only reduced by a policy of territorial specialisation of industries, Kuklinsky (1972).
12. While it may be possible to offer genuine economic opportunities in rural areas and while the marginal productivity of the rural labour force may be greater than zero, it can be cheaper to counterbalance migration towards the urban centres by means of a programme of urbanisation in the countryside (Friedman 1971).



13. Agricultural modernisation runs along their role of raw materials suppliers and deterioration of the terms of exchange. Therefore, the national-intersectoral approach (industrial-agricultural) is inevitable.
14. This income imbalance represents also a constraint for a healthy economic expansion by concentration of wealth, and conspicuous consumption on the side of the economic power groups which also acts as a powerful disincentive to public participation in development on the other. (Quazi, 1976).
15. A policy of industrial dualism represents the expansion of small scale industries, while restricting corporate production to capital equipment, commodities for export, and items not conveniently produced elsewhere. Additionally, this means the protection of production from foreign competence and adoption of more appropriate technologies. (Sullivan and Friedmann, 1974).
16. In developing Latin American countries, it could be observed the kind of elitist education and non-adaptable to the technical requirements of the economic sectors (see Quazi, 1976). This is one of the main explanations of the lack of absorption of labour force in industries, or also the low levels of productivity as a result of a lack of planning between supply and demand of human resources of the regions, e.g. provision of humanist professions, when there is a great need of technical specialisations to meet the requirements of agricultural sectors.
17. One of the main constraints for the efficient development of the River Basins Commission's works is given by the lack of financial autonomy in relation to the central government, which also obstructs the allocation of investment in terms of regional or local priorities. This aspect will be covered in the third chapter.
18. There are a variety of techniques such as: Input-output, cost-benefit analysis, P.B.C.P. etc.
19. The Planner's Journals and also the Journals of the R.T.P.I. and Chapter 6. The Regional Planning Process, E. Morgan and Alden (1974), provides a complete description for all the tendencies.
20. The definition could be derived from the works of Hilhorst (1971), Tinbergen (1965), Waterston (1970) and Friedmann. The former definition features systems analysis application meanwhile Tinbergen's is more economical and Waterston provides a very general and obvious definition.

21. It has been found that the Tinbergen's stages approach is more practical in terms of planning implementation than the more theoretical Frisch's integral planning approach. Hilhorst, Regional Planning: A systems view (1971). This approach has been supported also by Waterston (1970), and Friedmann (1973) (see Bibliography). Furthermore, Tinbergen's model is more simple, and in addition possesses a number of characteristics, which allow the valuation to some extent, to problems inherent in the planning process. It has also a satisfactory proof of its correction.

APPENDIX IReiner's model of Regional Investment allocation

Firstly, the regional allocation criteria is established as follows: (see Table A).

1. Equalise regional per capita incomes: the national plan declares as one of the main aims or perhaps as a secondary one, the equality in per capita income. Politically, the disparity can be gradually lessened period by period.
2. Allocations in proportion to wealth. Allocations in direct proportion to existing income levels (current welfare).
3. Allocation in proportion to population.
4. Allocation in proportion to space linked to high opportunity costs.

The multi-goal task might be approached setting up a programme,

TABLE A.

REGIONAL ALLOCATION CRITERIA

<u>Definitions</u>	<u>Criteria</u>
$t_{\alpha}$ = set of system variables at time t e.g. population (P) productivity (N) . . . per capita income (Q)=PN	1. $t+1 Q^A = K^{Et} + i Q^B \dots = K^{St} + i Q^S$ where $t+i Q^A = f(t_{\alpha}; \beta; Y)$ $t+i Q^B = f'(t_{\alpha}; \beta; Y)$ $t+i Q^S = f'''(t_{\alpha}; \beta; Y)$
$\beta$ = set of structural parameters e.g. technological coefficient trade coefficients . . . multipliers	
Y = set of instrumental variables e.g. allocations to regions (y)	If $K=1$ , the criterion calls for income equalisation in future time period $t + i$ .
$K'$ = factor of proportionality $t Q^S$ = per capita income, region S at time t	2.a. $Y^A/Y^B = t_{QW}^{B,B}/t_{QW}^{A,A}$ 2.b. $Y^A/Y^B = t_{QW}^{A,A}/t_{QW}^{B,B}$
$W^S$ = an index of regional size	
$Y^S$ = allocation made to region S.	
$N^S$ = population in region S.	3. $Y^A/Y^B = N^A/N^B$
$N^{\bullet S}$ = subset of population in region S.	
$L^S$ = area of region S.	4. $Y^A/Y^B = L^A/L^B$

SOURCE: Reiner, T. Subnational and National Planning.

Regional Science Association Papers.

XIV European Congress. 1964.

which maximise one then the other objective without constraints relative to the other objective. A simple regional allocation model considers two distinct regions. This first model denies any significant inter-regional flows or impacts. Allocation depends on the criterion employed, and opportunity costs of policy are related to national criteria, e.g. maximum national income product:

$$\begin{aligned} t+1_P^A &= t_P^A + m_Y^A A & t+1_P^B &= t_P^B + m_Y^B B \\ & & &= t_P^B + m^B (Y - Y^A) \end{aligned}$$

Where  $Q$  is per capita income

$$\begin{aligned} t+1_Q^A &= t+1_P^A / N^A & t+1_Q^B &= t+1_P^B / N^B \\ &= (t_P^A + m_Y^A A) / N^A & &= [t_P^B + m^B (Y - Y^A)] / N^B \end{aligned}$$

These can be written as functions of regional data as these are given in Table . The result is a set of equations (1), (2), (3) where the dependent variable  $Y_{(K)}^S$  designating allocation to region  $S$  pursuant to allocation criterion  $K$ , is a function of the economic and demographic data:

$$(1) \quad Y_{(1)}^A = \frac{(P^B + m^B Y) / N^B - P^A / N^A}{m^A / N^A + m^B / N^B}$$

$$(2) \quad Y_{(2a)}^A = \frac{Q^A}{Q^A + Q^B} Y$$

$$(3) \quad Y_{(3)}^A = \frac{N^A}{N^A + N^B} Y$$

The analysis of variables can be studied as a function of population or income in one region, or as a function of a more complicated relationship such as per capita income disparity existing between regions.

- 2) To consider the relative merit of each of the criteria.
- 3) To consider the cost of applying regional criteria in terms of foregone national income-product.

Let  $C_{(K)}$  stand for the cost of applying such a criterion (K).

Also let  ${}^{t+1}P_{(K)}$  represent total national product in the year  $t+1$  when criterion (K) is used to allocate the available investment pool  $Y$  among regions:

$$C_{(K)} = \max {}^{t+1}P - {}^{t+1}P_{(K)}$$

Where  $\max P$  is the largest national income-product attainable with  $Y$ . We can rewrite  ${}^{t+1}P$  as a function  $Y^A(K)$  and a set of known data (such as  $Y$ ,  $t_P^A$ ,  $t_P^B$ ,  $m^A$  and  $m^B$ ):

$$\begin{aligned} {}^{t+1}P &= {}^{t+1}P^A + {}^{t+1}P^B = (t_P^A + m^A Y^A) + (t_P^B + m^B Y^B) \\ (4) \quad &= t_P^A + t_P^B + Ym^B + (m^A - m^B)Y^A \end{aligned}$$

This is a linear function of  $Y^A$ . As such it has a maximum provided a range is given for  $Y^A$ . If the range is set  $0 < Y^A < Y$ , then the maximum possible national income product will be attained either where  $Y^A = Y$  or where  $Y^A = 0$ : Then,

$$(5) \quad C_{(K)} = \max {}^{t+1}P - {}^{t+1}P_{(K)}$$

and thus, from (4) and (5):

$$C_{(K)} = (m^A - m^B) Y_{(K)}^A \quad (K = 1, 2, 3)$$

The cost of applying any of the regional criteria is thus a simple linear

function of the multipliers. For any of the criteria, the greater the allocation to region A (given that  $m^B > m^A$ ) the greater the opportunity cost.

In conclusion, the "costs" of regional allocation criteria-opportunity costs as foregone national income product - vary essentially as do the Y allocations themselves.

On the other hand, a regional allocation model with international trade would consider a 2 region inter-regional input-output (I-O) model, restricted in several ways: the regions trade only with each other, households lie within the structural matrix, and exogenous demand represents purchases by the government.

Regional product and regional income, when summed, are seen to equal national product and national income. There is a concern with the reasonable determination of the regional location of the exogenous impact.

Final demands levels for each region and regional allocation or bills of goods are determined.

Let Y be the sum of increments in the bill of goods in each region,

$$\sum_{i=1} y_i^A + \sum_{i=1} y_i^B = Y$$

For each criterion (K) ( $K = 1, \dots$ ) there will be allocation level

$$y_{(K)}^S \text{ for each of the } S \text{ regions } (S=A, \dots, V)$$

A set of input-output coefficients is derived from hypothetical technological and trade data from a three sector, 2 regions economy; see table A.

The inverse of the Leontief matrix (I-A) is shown in table A.

The next step is to apply a series of alternate bills of goods as impacts on this by hypothetical economy. This means that we shall set up a set of vectors such that  $\sum y^S = Y$  where  $Y$  is a given sum (exogenous demand) available for allocation as  $y^A$  and  $y^B$  to the 2 regions. The impact on the economy will be measured as a vector  $X$ :

$$X = (I-A)^{-1} Y$$

Then we have a set of final demand vectors  $(\sum_1 \sum_g y_i^S = Y)$  whose impact on the total economy is the subject of interest.

A complete analysis must take into account the impact of alternative allocations on output levels in each of the industrial sectors as well.



APPENDIX IIThe Tinbergen Development Planning Model

Assume a system of  $R$  regions and  $N$  sectors. The sectors are classified into regional sectors ( $1, 2 \dots N_1$ ) national sectors ( $N_1 + 1, N_1 + 2 \dots N_1 + N_2$ ) and international sectors ( $N_1 + N_2 + 1, N_1 + N_2 + 2 \dots N_1 + N_2 + N_3$ ). The objective function is to be minimised is:

$$Z = \sum_{r=1}^R \sum_{n=1}^N v_n^r y_n^r \quad (1)$$

subject to:

$$y_n^r = a_n^r y^r \quad (n=1, \dots, N_1) \quad (2)$$

$$\sum_{r=1}^R y_n^r = a_n y = y_n \quad (n=N_1 + 1 \dots N_1 + N_2) \quad (3)$$

$$\sum_{n=1}^N y_n^r = y^r \quad (4)$$

$$y_n^r > 0 \quad (5)$$

where

$v_n^r$  = marginal capital/output coefficient of sector  $n$  in region  $r$   
in value added terms

$y_n^r$  = increase in value added of sector  $n$  in region  $r$

$a_n^r$  = increase in total demand (value added) for product  $n$  in region  $r$   
per unit increase of region  $r$ 's income

$y^r$  = increase in income of region r

$a_n$  = increase in total demand (value added) for product n in the country per unit increase of national income

$y$  = increase in national income

$y_n$  = increase in value added of sector n in the nation as a whole

Equations (2) are the regional sector supply and demand balance equations, while equations (3) are the balance equations for national sectors. There are no balance equations for international sectors, and exports and imports for these sectors may be calculated once the optimal solution has been found. Equations (4) state that the sum of sectoral income expansions must equal the income target in each region, while the inequalities (5) reflect the assumption that it is inefficient in a growing economy for any sector in any region to reduce its output.

TABLE A

ASSESSMENT OF THE IMPACT OF REGIONAL POLICIES ON  
LATIN AMERICAN ECONOMIES

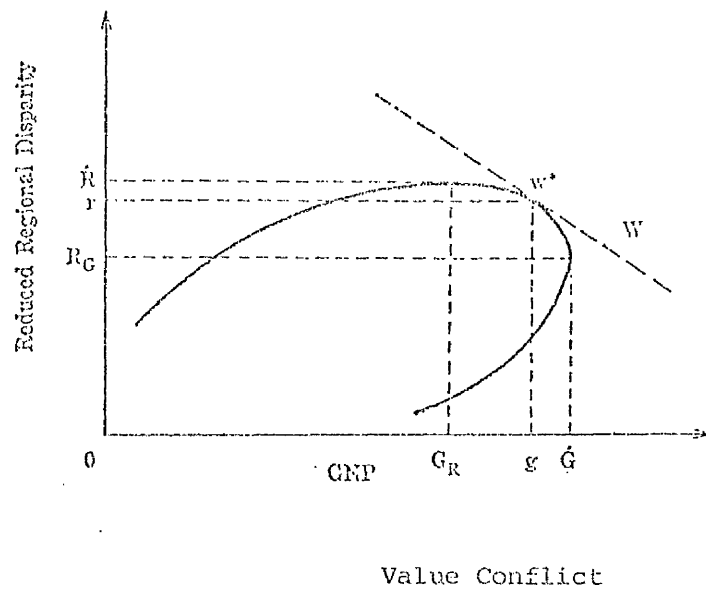
TECHNIQUE	REGIONS	OFFICIAL REGIONALISATION	CRITERIA	POLICIES
C	1. CORE	X	1. Magnitude of inter-regional disparity.	1. Depressed area.
B	2. RESOURCE FRONTIER	X	2. Restricting variables. (1).	2. Land settlement and Resource Frontier.
A	3. DEPRESSED	X	3. Propelling variables. (2).	3. Growth Pole.
	4. DEVELOPMENT STAGE	X		4. Decentralised Decision making.

(1) Factors restricting the feasibility and/or the necessity of reducing these inter-regional disparities (restricting variables).

(2) Factors increasing the urgency of dealing with these disparities, usually for political reasons (propelling variables).

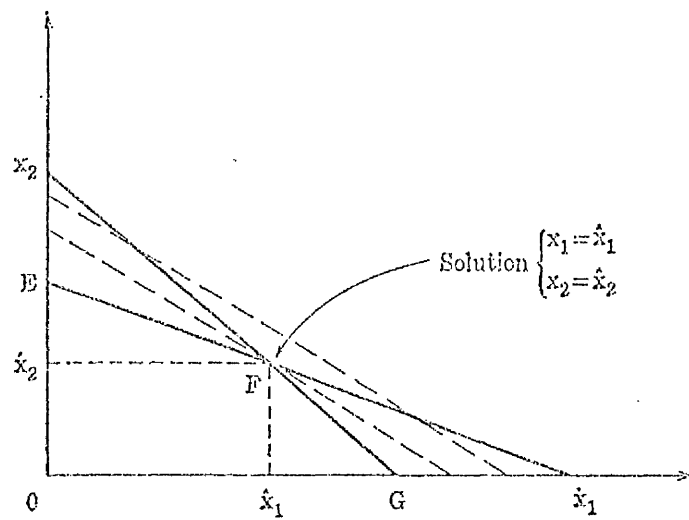
SOURCE: This classification is based on the model of regional policies and typology of regions proposed by Stohr Walter, following Friedman's approach to regional policy: A case study of Venezuela (1966). This approach is a reasonable theoretical background to deal with a practical appraisal for the Mexican case. Though it should be noted that the Friedman typology of regions requires a political-administrative adaptation for this particular country.

DIAGRAM NO. 2.1



SOURCE:- Reiner, T: Goals for Regional Planning, 1971.

DIAGRAM NO. 2.2



Feasible Space: Area OEFG

Objective Function: Max:  $c_1x_1 + c_2x_2$

Constraints: 
$$\begin{cases} a_{11}x_1 + a_{12}x_2 \leq b_1 \\ a_{21}x_1 + a_{22}x_2 \leq b_2 \\ x_1, x_2 \geq 0 \end{cases}$$

A Linear Program

SOURCE:- Reiner, T: Goals for Regional Planning, 1971.

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REGIONAL DEVELOPMENT IN MEXICOINTRODUCTION

The main objective in this chapter is to test the trends and characteristics of the regional income inequality model with respects to national and regional economic development in Mexico. The main features of the Mexican model of national growth up until the present are mainly related to their "efficiency" approach. Thus one can confirm this trend in the examination of national policy goals and the features of national public investment policies, such as the irrigation one. One should however, make evident the characteristics of main economic sectors to relate them to the interregional framework, devising the adequate choosing of relevant sectors in terms of national and regional requirements. Sectoral and regional level must consider tendencies of income distribution patterns in order to delineate an appropriate model of economic development. Basically, this analysis oscillates around the familiar efficiency-equity conflict in which the Neo-classical school argues that the optimal income distribution is achieved by following efficiency goals which necessarily involve "transitional" economic concentration with high interregional and national economic inequalities. This position is adopted by Williamson who postulates that the general development path for any country always implies increasing inter-regional disparities with high urban primacies.

Taking the Mexican development in particular, within the given context of a mixed and dependent economy, it is possible to confirm this general trend from its past experience of national and inter-regional divergencies. However, the characteristics of the Centre-Periphery Model (see Chapter I), namely productive factor differentials, concentration in public investment and the spatial configurations of core and subcores conform to the particular style of economic development. However, it is questionable

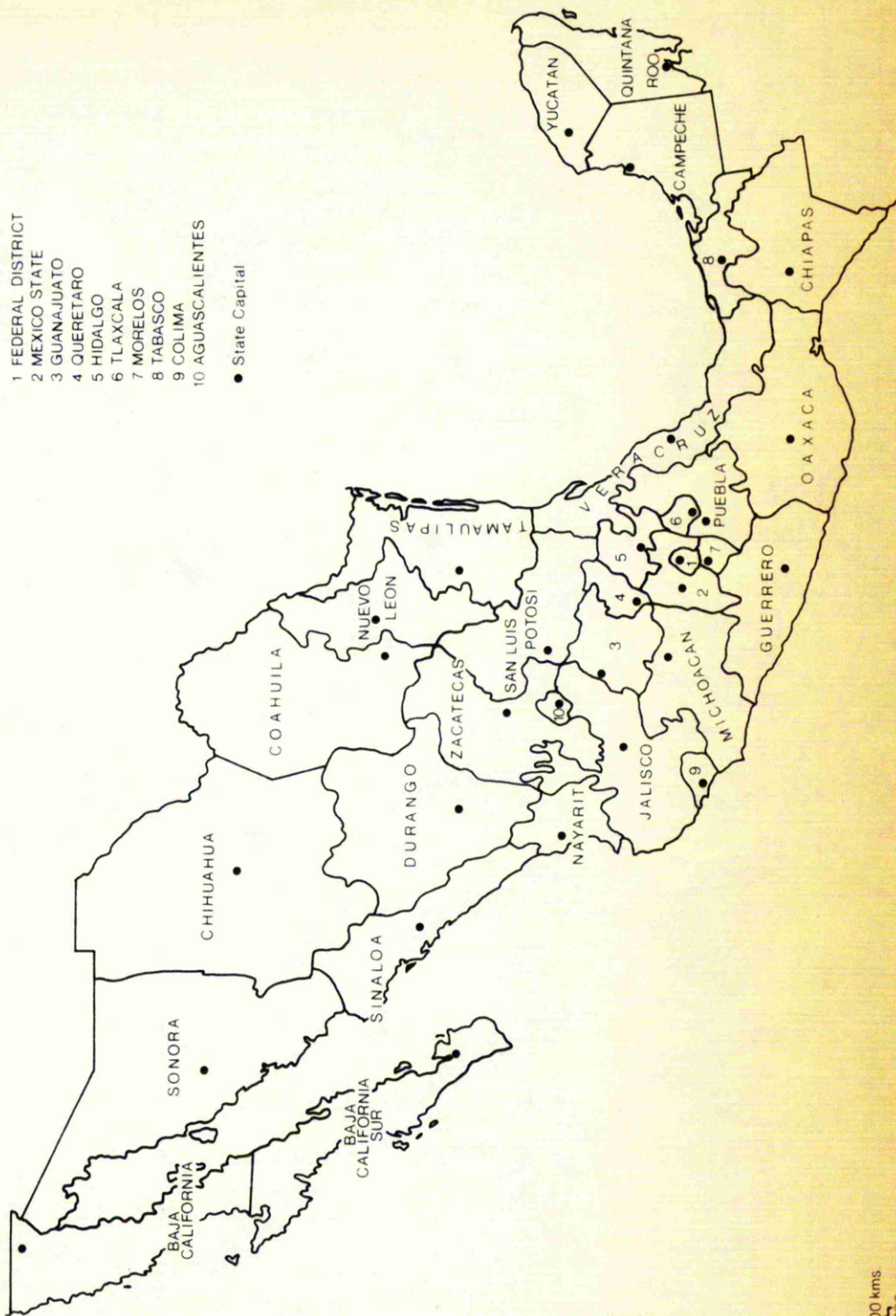
that future trends in regional imbalance will be automatically reduced by increasing economic efficiency thus making it impossible for Mexico to follow the same path as developed societies. The only alternative then, is the rational formulation and application of regional policy and planning in directing economic development. Conversely, this approach will strongly support the a priori pursuit of regional and national equity that is the reduction of gross inequality in national income distribution, which characterises developing countries and Mexico for strengthening economic efficiency and therefore economic growth especially. Subsequently, the long run equity goals would be based upon socio-economic decentralisation linked to national and regional objectives.

## 1. NATIONAL ECONOMIC PANORAMA

### 1. General National Features<sup>(1)</sup>

Mexico is a country of 2,022 million sq. km. (760 thousand sq. miles), which makes it the 5th largest country in the Western hemisphere and 13th in the world. Population has grown on average at 3.5% per annum trebling between 1940-1977, from 20 million to 65 million of which almost a half are under 14 years old. The political structure is a federal system with 32 states and a Federal District, where the State is represented through the Executive, Legislature and Judicial powers. (See Map 3.1).

In the context of world urbanisation Mexico had a "medium-low" rate between 1900-40, after which it really began to take off. By 1960 Mexico had moved into the "medium-high" class of urbanisation, approaching an urbanisation rate close to those of Peru and Venezuela which are not only the highest in Latin America but in the world. As yet there is no reason to think that this trend will not continue, such that Mexico should reach



0 100 200 300 kms  
 0 100 200 mi  
 Scale 1:15 million

the average level of urbanisation of the world's most developed countries by the 1980's.

Since the War, the accelerated process of economic development which has occurred in Mexico has transformed the structures of population and their standard of living. The gross national product is almost 10 times the 1930 level at an increasing average annual rate of 6-7%, although this growth rate decreased in the 2 worst years of the world recession in 1974 and 1975 to 5% and 4% respectively. GNP per head was about \$1,500 before devaluation of 1976 and about \$1,000 afterwards, putting Mexico among the middle income developing countries. Up until 1976 GNP increased faster than demographic growth allowing an annual increase of 2.9% in national product per capita, which is one of the fastest rates in the developing countries.

## 2. Mexican Model of National Growth

Three fundamental stages in the national economic development may be outlined (Loyo, 1970 and Carrillo, 1972):

1. The revolutionary stage from 1910 to 1920. The achievement of political stability in the country and the consolidation of the constitutional regime of government (prerequisites for development).
2. The Constructive Stage from 1920 to 1970. The construction of the institutional framework of development and the basic economic infrastructure together with the promotion and strengthening of aggregate demand and productive capacity.
3. The Distributive Stage after 1970 (although with some reservations). Hopefully this period would consist of strengthening and expansion of internal market and effective aggregate demand (Loyo, 1970).

The constructive stage comprises: a. the transitional economy

(1920-1940), b. the Mexican take-off (1940-1945), c. the drive for industrialisation (1945-1970).

The Transitional Economy. The goals of social justice which were formalised as part of the constitution (1917) in the post-Revolution years have remained as a source of inspiration and policy guidelines for all succeeding Mexican governments. In the years between 1920-1940 the main task of the government was in creating a fundamental change in orientation of the economy, from export based to a "more constructive self-development attitude".

The Mexican Take-Off. This period saw the emergence of Mexico as a self-sustained economy which resulted largely from the efforts of the preceding period in conjunction with the internal and external economic pressures occurring with the advent of the 2nd World War. This was the period of the "big push" which gave the economy those characteristics required for "take-off".

Drive for Industrialisation. It was the coordinated action of the private and public sectors which acted as the driving force behind the economic boom which occurred in these years. Both gave top priority to industrialisation policies.

The private sector substantially increased its range of consumption and capital goods manufacture, helped by government measures to increase industrialisation and import substitution. However, the increase in aggregate supply was not accompanied by a sufficient growth of aggregate demand bringing about the paradoxical situation whereby there exists on the one hand a manufacturing industry with 60 per cent of its productive installations inactive due to the shortage of markets, while on the other hand, a significant proportion of the population live in inadequate standards



of living. (Carrillo, 1972). It is recognised that the Mexican experience has tended more towards the 'Hard Line' within the constructive stage, which has resulted in a series of distortions which must be reformed in the distributive stage.

The economic development of Mexico has shown two well defined stages in monetary terms. One which covers the period from 1940 to 1957, featuring inflationary pressure and two devaluations, and another which lasts until 1976 (during "stabilisation strategy") whose main features are sustained economic growth and price and exchange rate stability. (Navarrete, 1974). It can be argued that the first stage initiated the regional imbalance, mainly in agricultural areas, which still continues and the second stage accentuated the unequal development, through the attraction of industrial poles. The country's foreign dependency and weak industrial structure were largely the product of this "stabilising" strategy. It also resulted in a more unequal distribution of income and wealth by supporting the more dynamic sectors of the economy, which meant less relative absorption of manpower, heavier income concentration, and greater dependence on imports and foreign technology. (Matus, 1976).

## 2. SECTORAL PATTERN OF DEVELOPMENT<sup>(a)</sup>

This section begins with a comparison of the growth trends and shares of GNP of industry and agriculture and continues with an examination of the causes and implications of their highly uneven development. (See Table 3.1).

Although the average agricultural product per capita, between the years of 1940-62, grew at an annual rate of 24% and increased by 68% over the entire period, the actual share of agriculture in GNP and employment in 1940-70 fell from 23% and 65% to 16% and 49% respectively. This was

largely due to the extremely low share of investment (private, public and foreign) directed to agriculture which created chronic inelasticity in food supplies, aggravating the low levels of productivity. Nevertheless, the agricultural sector still remains a significant factor in Mexico's economic development in that the country is now nearly self-sufficient in food production, and because it has increased its share of national exports, (from 25% to 50% between 1940-70). It has also provided a large supply of rural population for urban employment, and notably now represents a large consumer market due to increases in the spending power of the rural middle-classes.

On the other hand, the industrial sector has been the more dynamic and expansive sector, with an annual growth rate of 8%, and 9% in some important sectors like construction and power supply, compared with a national average growth rate of 6.6% per year. By 1970 it accounted for approximately 37% of GNP and employed more than 20% of the labour force which is a 58% increase from 1940. The path that these developments took was from export of raw materials for durable, capital and consumer goods, gradual import substitution of consumer goods, moving into the assembly of capital equipment, domestic production of chemicals and light capital, and then substitution of regular imports. The main centres of growth have been in the manufacturing industries. By themselves they produced 26% of GNP in 1970, and employed 16% of the labour force. All this has not been without social costs however, since unequal sectoral and geographic growth has resulted, and unemployment and under-employment exist simultaneously. One of the most unequal distributions of incomes in the World is maintained with marginalisation of large sections of people and concentration of luxury goods consumption.

#### Agriculture

Although in 1976 agriculture still employed 40% of the labour force and produced 39% of commodity exports, its share in GNP was less than 10%. The most important branch of agriculture is farming, which in 1975 provided 3.1% of GDP and relative to the rest of the world it has exhibited one of the highest growth rates in the period of 1930-75, on average an annual rate of 4%. However, progress has been far from smooth, rather it is characterised by periods of high and low growth. The former have been 1940-1960 (7.5%), 1960-1965 (6.1%) and the latter, 1930-40 (2.4%) and 1970-75 (0.9%). Fortunately, apart from the last period, growth of farming output has always exceeded population growth. Experiences in this sector and recent legislation have tended to reinforce its dualistic nature. Between 1940-58 agrarian policy was explicitly directed in favour of private property, in that, the Federal government committed itself to non-intervention in agriculture, reduction of land distribution and development of infra-structure which supported private property. By the end of the 1960's it was evident that this agrarian structure was at the expense of small private landowners and peasant farmers, unable to live off their small area of land and consequently forced into selling it to those who possessed large estates (latifundias) which resulted in the peasants becoming agricultural labourers and a large degree of disguised concentration of local holdings (neolatifundism).

Translating growth as an increase of productive capacity, it is considered that the agricultural sector has contributed in large part to sustained growth, but within the last few years, its relative stagnation due to the decline in irrigation investment (see Chapter 4) projects itself as a source of structural disequilibrium. The most dynamic growth of the sector occurred during the period 1940-55, when there was an average annual growth rate of 5.5%, caused by the notable expansion of workable lands benefitted by irrigation, but later growth declined to 4.1% during the period 1955-65

and only 2.1% as an annual average for 1966-73. The policies adopted for agricultural promotion (irrigation) were aimed at accelerating the product growth rate and directing agricultural products to urban industrial markets and exports. As a 'reasonable strategy' it favoured the emergence of technological and social dualism in the agricultural sector (dichotomic functioning of what is called the modern subsector and the traditional sub-sector) characterised by the coexistence of a small nucleus of farmers with all the facilities for access to credit and technical assistance and a great majority of impoverished population living at subsistence level. (Puente, 1974).

### Industry

The contribution made by the industrial sector to Mexico's economy has been increasing continually since 1940 in terms of its share in GDP, and as a source of employment and foreign exchange. To the extent that industry has been increasing, primary activities have been in decline. This would seem to reflect changes in trends of Mexican savings and investment which, as well as increasing their share in the GDP, e.g. from 8.6% to 20.5% between 1940-60, have increasingly come from private sources, e.g. the respective shares for the same period were 4.2% and 15.2%. Obviously enough, these investments have been concentrated in the industrial sector at the expense of others, particularly agriculture.

As would perhaps be expected, this type of development has significant dualistic aspects. With unequal sectoral and geographic growth there are frequent bottlenecks and severe inequalities in the distribution of income. Consequently, this leads to demand for luxury goods rather than capital accumulation from those who have the concentration of income and simultaneously the marginalisation of large groups of the population. This prevents the realisation of potential economies of scale and so represents a non-

optimal use of resources and technology. As a result the Mexican economy still exhibits low productivity, high costs and deficient capital formation, which acts as constraints on its international competitiveness, thus curtailing the capacity to pay for imports of capital goods so essential for development. The grave problem of industrial concentration has originated due to the fact that the most industrialised regions generate economies of scale which, combined with a growing demand, tend to accelerate the investment in such areas and increase the migratory flows.

### Income Distribution

In spite of the significant position of Mexico among the developing countries, regarding the development of productive structure, it has not distributed the benefits of development at a sectoral and spatial level throughout the population. As Hansen argues "...a large part of the bill for the past thirty years of rapid industrialisation has been paid in terms of foregone increases in consumption by the large majority of Mexican society located at the bottom end of the income scale". Thus, the extreme inequality in income distribution is a manifestation of the new dualism in Mexico's agricultural sector, whereby 85% of private holdings utilise modern capital equipment while the ejidos (3) are still farmed primitively. There is a growing number of landless agricultural workers in Mexico who represent a significant factor in the skewed distribution of income in general and in the agricultural sector in particular, (Hansen 1972). This distribution is even more unequal in those regions which have remained stagnant or have experienced only modest advancements. In 1950, the income of the non-agricultural population was 4.3 times greater on average than that of the agricultural population, and this relationship deteriorated still more by 1965 when it became 5.7 times greater.

The degree of inequality in the distribution of income exceeds that

of most of the world's developing countries, with the top 10% of Mexican families receiving almost half of the total post-tax income [Table 3.2]. Within this top group exists a privileged elite, comprising less than 400,000 families in 1963 who accounted for over 58% of disposable income. The average income of this "elite" was more than 7 times the national average (in 1963) while over 70% of families had below average income.

Between 1950 and 1963, the pattern of income distribution changed only slightly, with some redistribution mainly away, from the bottom 40% towards the top 30%, illustrating that although all groups enjoyed some increase in income, the higher incomes grew faster, reinforcing inequality. This tendency reflects the changes in economic structure during this period of high growth. The middle class (groups VIII and IX), consisting mainly of farmers in prosperous areas, semi-skilled and skilled workers adapted to urban life, together with the upper class of industrialists, financiers and land owners (Group X) have benefitted most from the development of the Mexican economy. (Navarrete, 1963). The growth of middle class incomes has provided an important market for manufactured goods especially consumer durables, encouraging industrialisation (Hansen, 1970). The lower middle class (groups V, VI and VII) have maintained a roughly similar share of total income due largely to urban minimum wage legislation. The lowest income groups (I, II, III and IV), comprising mainly of peasants and unskilled manual workers, have suffered a decline in their relative share of total disposable income since the "Mexican miracle". Hansen has summed up the situation in the following way: "...it is the paradox of modern Mexico that such a development strategy has been devised and implemented in the only major Latin American country to undergo a profound and bloody social revolution. In some other country the hard-nosed and unsentimental Mexican model of economic development might seem natural; in Mexico itself it appears incongruous". (Hansen, Ibid.).

### 3. NATIONAL PUBLIC POLICY

The Mexican state has played a key role in promoting economic development through federal public spending on basic infrastructural works and by enlarging its scope in the production of goods and services for industrial development. During the post-war period it laid the foundations for an industrial upsurge which was later transformed into a decisive industrialisation policy, geared to attract and channel savings and foreign exchange into this area and strengthen the domestic market (NBFT, 1972). Between 1935-1960 over 50% of public investment was directed towards essential infrastructure in agriculture, transport and communications. Agricultural output has greatly accelerated due to these irrigation investments and new road systems throughout rural Mexico. Nearly 30% of public investment from 1940 has been in the industrial sector. During the 1940's and early 1950's most of this investment was directed towards import-substitution industries including iron, steel and oil. In addition, a large portion of public investment has been placed in energy projects leading to a 10% annual growth rate in installed electricity and of 6.6% in gas and oil production. Considering the limited budget (State expenditure between 1940 and 1960 was usually around 11% and never exceeded 13% of GDP), the Mexican public sector has been particularly successful in encouraging economic growth.

Mexico's commercial policy has been strongly protective and has been complemented by incentives for private investment which have fostered the creation of markets for domestic industry. In recent years, however, there is a decline of support for import-substitution policies. After a lengthy period of post-war inflation financial policy succeeded in achieving price stability without substantial loss of capital formation or growth due to large public infrastructural investments. In fact from 1955 its record of stability of prices compares favourably with other more developed economies,

rising annually by less than 3%.

The 2 successive governments from 1958-1970 applied a policy of so called "stabilising development". Effectively this involved forsaking price stability for a rapid expansion of productive capacity. One of the main costs of this stabilisation policy has been an increasing dependence upon foreign borrowing to cover public sector deficits and avoid inflationary pressure (Hansen, 1972). This represented an application of "monetarists" and "structuralists" approaches to inflation in Latin America. In other words, a recognition that public deficits are a main source of inflation and the fear that reduction of infrastructural investment may lead to bottlenecks which slow down the general growth rate. In more recent years (1970-76), the state was obliged to take the initiative in enlarging and widening the spatial allocation of public investment. The new strategy looked for temporary solutions but assumed the responsibility for long-term development and reinforcement of the productive structure. Some questions have been raised regarding the continuation of this growth model. Namely that economic growth has been unable, by itself, to ensure full employment and satisfy other policy targets which justifies the need to reorientate national goals towards income distribution. However, the reduction in unemployment and under-employment and also the improvements in income distribution will be possible when the constraints imposed by the present market structure are removed (NBFT, 1977).

#### AGRICULTURAL POLICY OF IRRIGATION

In agricultural policy, irrigation is the most important aspect having major repercussions in development of the national economy. This is due to the outstanding importance of the agricultural sector as a basic source of labour employment and its inter-relation with the secondary and tertiary sectors in the development process. The importance of irrigation is



reinforced by the fact that it accounts for a large proportion of public investment in agriculture which has allowed an expansion of arable land. The irrigation works represented a dynamic and vigorous agricultural policy, with wide political implications which would effect an absolute change in the national agricultural development in future years surpassing the rest of Latin America and the majority of the countries of the world and constituting one aspect of the Mexican "Miracle". Thus the overall results of social and economic changes which occurred in rural areas were mainly related to their extraordinary agricultural growth.

#### NATIONAL POLICY GOALS (4)

The present formulation of national economic objectives is conditioned mainly by the failure of the stability model which led to the weakening of the national economic structure and precipitated a financial crisis in 1976. This situation was a result of heavy international borrowing required to finance a balance of payments and high public sector deficits, adding to the inflationary pressures during the world economic crisis. Also influential was the slackening of industrial and agricultural growth and the extensive geographic decentralisation which was necessary in order to meet the efficiency requirements for the internal and external markets of the country.

In fact, the overall goals are framed within the traditional "efficiency" approach with an over-emphasis on industrial strategy, and a neglect of the primary sector even when supposedly concerned with more balanced development. These national goals have two essential aspects: a minimum level of welfare and the strengthening of the capacity for national self-determination at all levels. The more specific long range objectives are as follows:

1. To achieve a substantial growth of production. The central aim is the achievement of an average annual rate of growth in gross domestic product between 6% and 7%. The sectoral emphasis of public investment lies on an energy programme comprising capital goods, oil, basic petrochemical industries, electricity, mining and steel. Attainment of higher productivity levels in industry should be through the utilisation of existing capacity.
2. To increase per capita income as fast as possible, and secure a proportionate increase in productive occupations for a labour force which is now growing at 3.5% per annum.
3. To strengthen the role played by the State as coordinator of economic development to confront the disequilibria and social and economic contradictions. A reduction of inflation rate to a yearly average of between 12% and 15% with a favourable balance of payments.
4. To improve economic, technological and political self-determination. The effect of industrial and commercial policy should be to eliminate the excessive protectionism and reliance upon trade tariffs.

## 2. NATIONAL AND REGIONAL DEVELOPMENT.

The Mexican Model is a very appropriate case in which to test the feasibility of maximising national economic development and at the same time reducing regional income inequalities. Mexican national planners are at present compelled to consider simultaneously adequate patterns of income distribution and regional equity for attainment of national growth. During the first half of this decade, the Mexican economy achieved high rates of increase in GNP, though government has not attempted to implement a model for reducing interregional differences towards subsequent increases of GNP (5). The attenuation of interregional differences with continuation

of national growth and development, justify the urgent incorporation of regional policy and planning aids with multipurpose goals.

#### NEOCLASSICAL MODEL Vs. INCOME INEQUALITY MODEL

The Mexican model completely contradicts the assumptions and predictions of the Neo-classical models (Borts and Stein, see also Chapter 1) regarding the tendency towards regional convergence (6). Up to now, tendencies towards increasing interregional divergences with spatial concentration confirm the hypothesis common to regional income inequality models, that of cumulative causation or centre-periphery. Thus marginal productivities are still higher in CE because of the concentration of productive factors linked to political and cultural power, (migratory flows to the CE are comprised of some highly skilled people with managerial capacity). One can observe (Tables 3.27-3.30) that from 1960 to 1970 the Core increased its economic power absorbing a higher proportion of the national output, including industrial and tertiary activities. The strong primary emphasis of the periphery can also be seen. The Core has the highest average gross regional product during this period, though those of the peripheral subcentres were also important.

The Mexican Model may be applied to Friedman's second stage of regional development ("transitional societies") based on the existence of a main core (CE with FD) with two inter-metropolitan and peripheral subcentres (CW and NE), and a large and poor periphery. Thus, endogenous regional variables (regional income per capita, employment etc.) and external ones e.g. public or private investments (national and foreign), migration etc., (see Chapter 2) confirm this spatial orientation. The emergence of two main subcores provides the foundations for an optimistic more balanced interregional pattern in the future. Agglomeration economies, public and private investment and selective migration have been seen as the main forces of regional inequality in Mexico. Thus, one shall examine the spatial orientation of all the main ...

productive factors and their impact on the national and regional structure.

#### LABOUR FORCE AND EMPLOYMENT

It has been found that the highest growth rates of employment in manufacturing industry are in the states of greatest per capita product, aggravating inter-state differences (Leimone, 1965). Similarly, at inter-regional level (8 socio-economic regions), the more developed regions, such as the CE or NE, have shown higher and faster growth rates of employment in the manufacturing sector from 1960 to 1970, (Lavell, 1970). Poorly developed regions such as the South, do not show any important increase in industrial employment and this is further reinforced by a general lack of industrial location incentives.

Important differentials in agricultural and industrial salaries do not exhibit any important correlation between levels of development among states or regions. Increases of employment in manufacturing industry are found mainly in states or regions which have high level of industrialisation together with low agricultural development. The constraint imposed by the elasticity of labour supply on the growth of interregional manufacturing employment is explained by the high proportion of the agricultural labour force in all states or regions. The shortage of skilled labour and the use of capital intensive techniques emerged as important factors in explaining interregional employment differences in manufacturing industries (Leimone, 1965).

#### MIGRATION

Interstate and interregional outmigration has accentuated interregional differences in labour force elasticity of manufactured industry (Leimone, 1965). Disguised unemployment in the poorest agricultural regions continues as a result of migration by the most productive age groups thus increasing

the dependent population. This is further aggravated by high birth rates and persistent low productivity levels. It should be noted however, that the core exerts great migratory attraction for contiguous regions (such as CW) and stagnation may result in the other regions through temporary movements of lower qualified groups from traditional poor regions to job opportunities in USA. These groups generally return to reinforce the labour supply. The developed regions do not increase labour productivity in the less developed regions and as a result productivity differentials persist. Economic and social mobility is greater in rich or intermediate regions, although the poor regions do show higher rates of stability. On the other hand, although regional labour migration to the PD continues to increase, the migration of capital resources probably reached its peak by 1970. The investment opportunities of the periphery have attracted important public and private investment in some locations such as Northwest or "Las Truchas" siderurgic pole.

Selective migration in Mexico has accentuated regional differences and obstructed movements towards equality by improving the demographic structure of the rich regions. (7) Less developed regions have experienced reductions of productive age groups through outmigration whilst developed regions show corresponding increases in these groups.

Consequently, some regions, such as CE, increase agglomeration economies through the widening of the labour market resulting in a downward pressure on money wages and lower production costs (which also produce internal scale economies), (see Sullivan and Friedman, 1977, Chapter 2). These migratory flows however were not able to change differentials of regional industrial product per worker nor the labour-capital ratios in manufacturing industries between developed and less developed regions (8). Similarly, before 1960 migratory flows were not able to change these

differentials among states (Leimone, 1965). Outmigration to developed regions up until 1970 grew faster than industrial employment. Thus employment in rich congested regions is based on high elasticities of labour and capital intensive policies. There has been no complementary increase in employment levels in regions of expulsion. At the regional and state level, the proportion of agricultural employment tended to decrease more rapidly in the developed regions so that interregional differences in agricultural and industrial labour productivity have not been eliminated by interregional migration. (Unikel, 1975 and Leimone, 1965).

#### AGGLOMERATION ECONOMIES

Regional agglomeration economies are obviously localised in the urban industrial concentrations which have higher rates of investment in social capital, larger size of manufacturing plants, more developed transport networks and better marketing services. This situation is the result of spatial supply and demand concentration in the central core and sub-cores caused by the spatial market-orientation of industrial units. Backwash and spread effects are more noticeable in those regions closest to the main core (e.g. CW or E.). Nevertheless, it can also be shown that the development of 2 strong intermetropolitan peripheries have also been the result of the regional impact caused by the core (9).

#### OTHER FACTORS

Backwash effects produced by the developed regions can be examined through the accumulation of capital and human resources mainly in the CE, though NE and CW have started experiencing this phenomenon. The CE also dominates in other aspects such as technology, innovations, education, political influence etc. Although measurements of interregional movements of goods and services presents some problems, the evidence points overwhelmingly to positive price ratio-exchanges for the developed core, (CE)

and negative price ratios for the less developed (South). The central Core maintains its orientation towards export of capital and manufactured goods to the poorer regions, while the latter preserves their exports of agricultural produce. The Core, naturally, has contributed to this by its increasing demand for agricultural products though it has the advantage of peripheral buying from competing producers scattered throughout the regions.

The Central Core also accounts for the bulk of private savings and public revenue. There is a general agreement that the less developed and poor regions have been financing the capital growth of developed regions through banking mechanisms in both traditional-agricultural or industrial sectors. Private savings, bank credits, capital coefficients per worker, public investment indexes are all heavily concentrated in the main core regions. (10).

Public policies have in fact aggravated the cumulative-causation process, reinforcing regional differences. Industrial and agricultural policies have favoured the already well-developed regions emphasising the process of concentration. In recent years, however, public and private investment has earned a rising rate of returns in traditional-peripheral regions. (See Chapter 4).

### 3. REGIONALISATION

At the present, there is an official regionalisation in the Mexican public sector for planning purposes. Previously, there were numerous attempts to achieve an appropriate regionalisation, following different criteria of particular public institutions, or even subjective ones, e.g. the ex-Ministry of Water Resources always applied a clear physical criteria while de-centralised public bodies such as the Minimum Salaries Commission

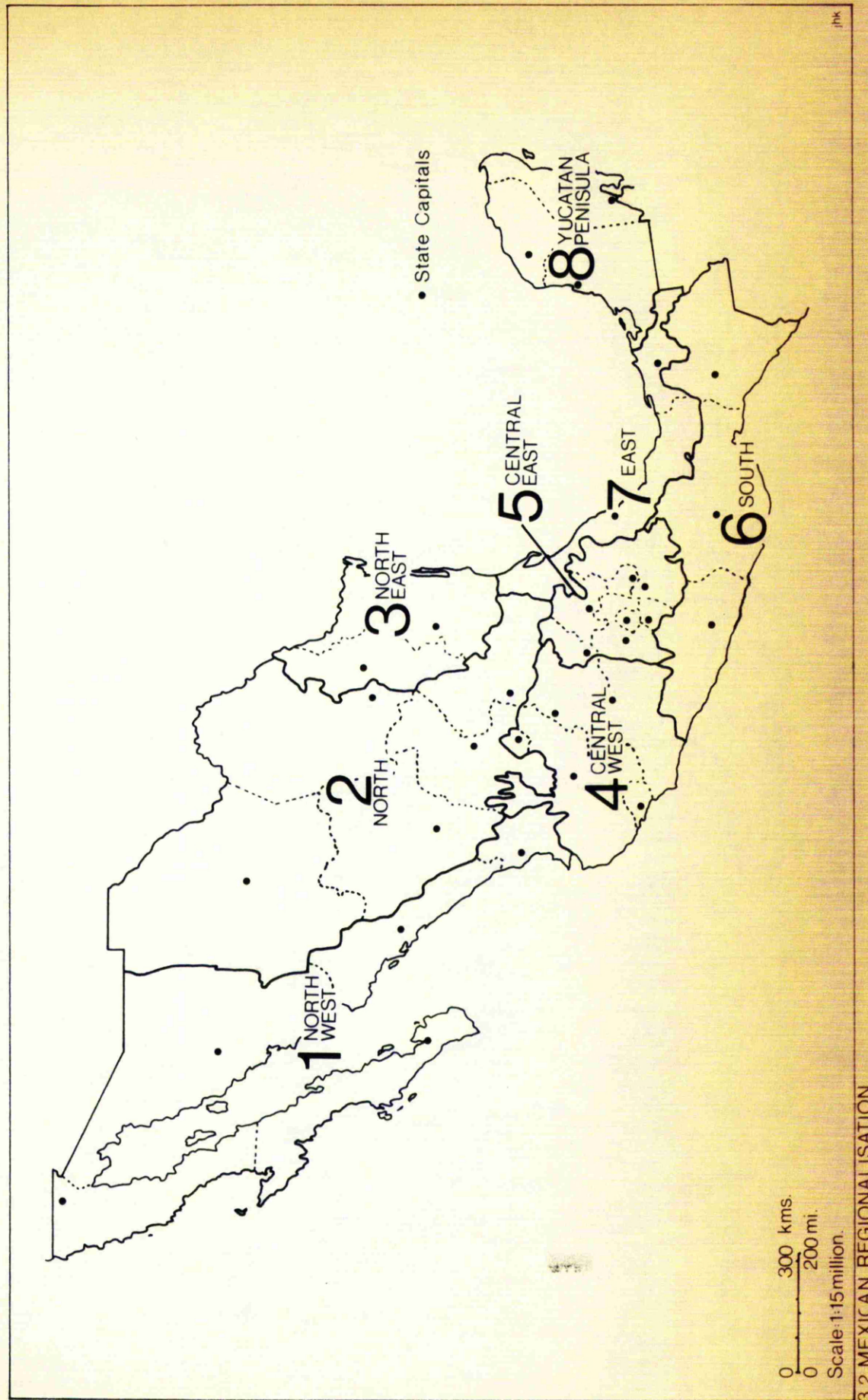
has applied an economic one. This situation had disadvantages especially the lack of an inter-disciplinary criteria taking into account levels of development in the regions and their possible transformation into planning regions.

Therefore, the regional analysis in this chapter is framed within a particular and official regionalisation outlined by Bassols (1970) which comprises the mentioned features and also formal and functional criteria in regionalisation (see Chapter 2). In Table No. 3.3 one can observe that this division comprises 8 large regions which cover a total of 104 economic regions (see Map 3.2). However, this total was reduced to only 70 due to planning aims, "the smaller the number of economic regions, the easier the achievement of regional plans will be..." (Bassols, *ibid.*) This approach divides the territorial areas in four levels.

- a) Economic zones or large basic regions (8);
- b) Typical economic regions, within the zones;
- c) Economic subregions within the regions;
- d) Microregions, within the subregions.

The significance of this classification is that the regional division is based on a selection of equal numbers of relevant criteria. The previous division was in terms of real areas existing on the national territory but this was not always suitable for economic and social planning. Consequently a second criteria was introduced in order to blend several regions for planning aims, and at the same time to project them in the short run. This took into account the need to achieve higher regional unity and more interrelation among the considered factors. In other words, in the first case, homogeneous and organised regions are outlined, and in the second, "complex" regions are structured for planning aims. Its application in terms of public planning implementation is still difficult to foresee but it has the practical advantage of taking into





account the smallest political boundaries (Municipalities).

#### 4. MEXICAN REGIONAL DISEQUILIBRIA.

All countries have evolved patterns of regional disequilibria in their stages of economic development, independently of their economic system, and Mexico is no exception. However, developing countries in general, experience more severe regional inequalities in terms of per capita income levels. (11). These patterns of disequilibria are explained by natural, historical and political factors. Among the most important historical factors one may identify the existence of three types of urban centres formations, as follows:

1. prehispanic communities, commonly settled on agricultural areas.
2. Mining and administrative centres of the colony.
3. Urban concentrations throughout the national export corridors, initially towards the "Spanish metropoli" (Mexico City-Veracruz Port-Corridor), and thereafter towards the regional centres of the North American economy i.e. Laredo, El Paso, San Diego, Los Angeles, San Francisco etc. The evolutionary process of the three mentioned strata around a handful of centres in the country has also been the result of public and private investment allocation.

#### LEVELS OF REGIONAL DISEQUILIBRIA

The national economic imbalance may therefore be related to 3 regional levels (12): Interregional, Intraregional and interstate. These levels may be examined using Williamson's regional dispersion indexes (13) which provide an overall picture of these tendencies in terms of per capita regional product (or income) indicators. One should notice however the limitations given by the use of these indexes in regional development (14).

### INTERREGIONAL LEVEL

On the basis of Kuznetz' classification of groups of countries by their level of economic development (15), Mexico in 1960 belonged to the 4th group which included those in a middle position of development with high interregional inequality coefficients, (Table 3.4). From the 5 countries within this group, the interregional inequality between 1945-60 stabilised in Italy and declined in Brazil and Spain. From 1960 to 1970 Mexico's index showed a high and increasing interregional disequilibrium in comparison with the group average for 1960 (16). However, the interregional indexes of inequalities by states for 1970 increased more than those of the eight macroregions considered. The main reason for this is given by the smaller physical size of the states. In anycase, the results confirmed the hypothesis of Myrdal, Hirschman and Williamson in relation to the higher increase in interregional inequality in the first stages of development. Therefore, if we follow the hypothetical bases of the last two authors in particular, the break-up or stabilisation of the interregional inequality index could be expected during the next two or three decades. Obviously, this would depend on the government's strategy in implementation of regional planning, tending to overcome the private and political interests opposed to decentralisation.

In predicting future patterns of interregional inequality, the Mexican situation in 1960, could be compared with that of USA in 1880 (Leimone, 1965). Following this comparison it could be that a decline of interregional income inequality may not emerge clearly for several decades, even when future stabilisation is expected. One should, however, recognise the peculiar regional and national features of this economy, strongly dependent as it is on the USA, which hinders any internal efforts for a more balanced development. Unless there is considerable change in this direction, mainly in terms of policy implementation and planning issues, the future stabilis-

ation or decline of the interregional inequality indexes will be postponed for many decades.

#### INTRAREGIONAL LEVEL

Intraregional indexes of inequality (Vw) for the 8 economic regions, show a similar increase from 1960 to 1970. With the exception of 3 regions (North, Central East and South), intraregional disequilibria increased. The NE and CW registered very high increases in their index of intraregional inequality because of the increasing importance of the metropolitan cities of Monterrey and Guadalajara (Table 3.5). Conversely, the North stabilised its index while the CE and S reduced them. In CE this is due to the growing importance of certain states, like State of Mexico relative to the MCMA.

The decline in inequality within the South is probably a result of the more concentrated efforts of the government in this depressed region. If the size of the region is taken into account, one can notice that the widening of intraregional inequalities occurs in smaller and in healthy regions (NE or CW) whilst large regions such as N, NW and S, stabilised or reduced their intraregional inequality. (See Map 3.3). This demonstrates, to a certain extent, the degree of interregional concentration in the Central Core and the lack of powerful growth poles inside the large regions which tends to narrow intraregional discrepancies. The remaining intraregional index coefficients (Vuw and Mw) show similar patterns of behaviour for the 8 regions, except the North, which registers a higher increase of intraregional inequality perhaps due to its size and the large number of states it comprises.

#### STATES LEVEL

There is good reason to believe that the interstate inequalities in

per capita product levels have been increasing since 1895, a point recognised by most commentators. Several different indicators reveal the growing differences between the gross per capita product rates of the more developed states and the poorer states from the beginning of the present century. The principal explanation for this is given by the industrialisation and urbanisation levels in rich states which have provided them with sufficient capacity to absorb the benefits of internal and external economies as well as monetary and human resources. Discrepancies of opinion have emerged, however in relation to classification of states with a medium level of development and also over the question of regional convergence or divergence (17).

One of the first interstate analysis, based on indicators such as per capita gross product, productivity and welfare, distinguished between the prosperity of a few states in relation to the backwardness of the others and recommended industrial decentralisation. (Yates 1960). (See Table 3.16). At this time, the eight richest states accounted for 30% of Mexico's population, and 63% of the GNP. The states with less favourable conditions represented another 30% of the population, although they only received 12% of the GNP product. The share of the more prosperous states in the aggregated value of industrial production of the country increased from 64.4% in 1950 to 75.7% in 1955. These disparities in per capita GNP, labour productivity and standards of living in general, representing deep contrasts between the different areas of the country. The main finding of this study was the growing tendency towards disequilibrium in regional development in terms of changes in per capita gross product between 1940 and 1960. It also suggested that in some states internal migration acted against this process. Nevertheless, because of the "centripetal forces", population and industry tended to agglomerate at an increasing rate around the country's metropolitan cores. In analysing

the per capita investment in infrastructure, outstanding contrasts between rich and poor states have also been observed. A more recent study reveals an escalation of state disequilibrium, the stabilisation of development of the richer states and the continuing backwardness of the poorer states. This analysis also shows favourable conditions in medium developed states for a reduction of the gap between them and the richer states in the future (Guzman, 1972). On the basis of this study the following facts emerge: (see Table 3.6, see also Tables 3.31, 3.32).

- a) In the thirty years from 1940 to 1970, eight of the nine states with highest development were located in the north of the country. The Federal District remains the state with the greatest relative development, although the state of Mexico, as a peculiar border state (--- where the development of the capital has spread), became annexed to the superior group.
- b) The eleven states with lowest levels of development are located in the south, south-east and the high plateau of the country. By 1970, Nayarit had dropped down into this group while Tabasco moved into the intermediate group.
- c) There is a group of states which have always tended to remain in an intermediate stable range, i.e. Veracruz, Campeche, Morelos and Guanajuato. In this group, states in the process of relative decline could be included, such as Durango, and Yucatan, and others on the ascendance such as Mexico and Sinaloa.

The table also reveals a worsening of regional imbalance (by subtracting each states development index from that of the FD for each period). Only Nuevo Leon, Sonora and Lower California have slightly enhanced their position relative to F.D. (This is an alarming symptom if we examine the situation after 1940 where it can be seen that in the

period 1940-1950 there were only 15 states whose indices were closer to the FD; in the period 1950-1960 there were only 5; and in the period 1960-1970, there were none).

A second way of examining regional imbalances is by analysing the levels of development in the superior, medium and lower strata. The relatively developed states present a lower imbalance than the states of lower level. Once again, one can see a time correlation, the greater the development, the lower the disparity compared with F.D. From this 5 points can be made clear:

1. Although it is true that all the states experienced some growth in economic development, the most developed 9 states were always the same. Of this group, only three reduced their regional imbalance; these three recorded the highest growth rate in the country, and their economic activity was the most diversified.
2. Similarly, the 11 most backward states were basically the same throughout this period. Their absolute development was the lowest, their regional imbalance was greatest and their EAP was mono-functional or bifunctional (18).
3. Most changes in relative positions occurred within the intermediate level.
4. A relatively clear regionalisation exists, with the FD and the northern states (USA borders) as the most developed and the southern, southeastern and several of the high plateau states particularly where agriculture and mining activities predominate, as the least developed. (19).
5. The more backward states of the country are characterised by under-developed agriculture, and their future development should be based on modernisation of agriculture (e.g. through irrigation

schemes etc.) as a basis for a more dynamic and diversified economy.

#### OVERCONGESTED MEGALOPOLIS (MACROCEPHALIA)

From the numerous and diverse studies of this phenomenon there is a general conclusion that the overcongestion in the megalopolis of the Mexican FD is a national problem of prime importance (see Table 3.7) normally related to the need for a new model of economic growth and which justifies changes in Mexican development policy (20). Thus the national regional disequilibrium is mainly related to the disjointed growth of the overcongested megalopolis (Macrocefalia)! There are two distinct points of view in this concentration issue (Carrillo, 1970): One, a managerial view, which emphasises the benefits of concentration and is systematically opposed to political decentralisation since industry gains from cheap and abundant labour, external and large scale economies, urban services, subsidised prices, low transport and marketing costs, etc. (21). An alternative view, shared by many prominent academics, expresses concern over the high social costs associated with concentrated centres like MC, referring in particular to the falling rates of return on private and public investment and widespread under-utilisation of existing capacity. As an example of this the average cost of supplying an additional cubic metre of drinking water to the FD, rose from 40 million pesos during the six years 52-58; to 80 million pesos from 1958-1964; to 100 million pesos on average between 1964-1970. Another interesting fact is that while the population of the FD increased by only 3% in the period 67-69, its budget increased by 47% which demonstrates clearly the high economic costs involved in the expansion of the FD. This view also stresses the environmental effects in terms of air and water pollution, and scarcity, transport congestion and increasing maintenance costs. The rural-urban migration and financial flows to the main core (22) and the concentration of effective demand, welfare and political and financial



power have aggravated the problem further. (23). This emphasises the so-called intranational or internal colonialism, referring to the servile and dependent relationships of the rest of the territory upon MC. (The "core-periphery" relationship is described in parts 2 and 6 of this chapter).

The problem of the overcongested Megalopolis should be examined in relation to its repercussions for both the national systems as a whole, and on its internal local urban structure. The former involves an examination of the mobility of productive resources in a market economy where investment is one of the main variables and outlining the main features of a centre-periphery model. (24). The latter considers the implications for urban efficiency and equity due to the negative effects of the growth of the Megalopolis. From the efficiency point of view, it seems that in spite of all the external economies resulting from political and technological concentration, external diseconomies have now surpassed these locational advantages. As for equity, social costs now outweigh the benefits (25) and also the megalopolis manifests extreme inequalities in income. A large proportion of the poor are migrants, who, as a result of their low skills are compelled to work in the low paid tertiary sectors (26). Consequently, one of the most alarming situations is housing conditions and general standards of living of the low income groups, particularly in the slums and shanty towns around the megalopolis.

## 5. THE INTERREGIONAL FRAMEWORK

### 1. Regional Population Densities

The highly uneven distribution of population between regions is one of the most salient features of the Mexican economy in an international comparison, and has an important bearing on the combination of physical

and socio-economic tools for regional planning. As can be seen from Tables 8 and 9, the three northern regions, comprising over 60% of the Mexican Republic contain only 26% of the population, (these underpopulated regions are larger than many European countries). In contrast, more than half the population is contained in the two central regions which account for less than 15% of the total territory. Consequently, there are wide disparities in demographic densities. The C.E. regions, for example, being 20 times more densely populated than Yucatan (see Map 3.4). Furthermore, the F.D. displays an alarming demographic pressure of 4586 inhabitants per square kilometre (compared with 161.8 inh./sq.km. for the most densely populated region).

There are also significant differences between regions in the degree of urbanisation. The ratio of urban to rural inhabitants in the North East and Central regions is in the order of 3:1, while in the South the population is predominantly rural, (a feature characteristic of underdeveloped regions). However, during 1960-70, urban population was growing faster than rural for all regions, although predictably, a very large proportion of the total increase in population was concentrated in the C.E. region.

## 2. Regional Output

Table 3.1 gives a breakdown by sectors and regions of GNP in 1970. As can be seen, output is even more concentrated than population, with 4 regions - Central East, Central West, North and North East - contributing over 83% to the total product (see Map 3.5). The small C.E. region alone accounted for over half the GNP of Mexico in 1970, and a comparison with 1960 data (Table 3.10) reveals a trend towards concentration of output in this area. Secondary and tertiary activities in particular are heavily concentrated in C.E., with serious consequences for the overall economic development of the country. National industrial production

increased 5-fold between 1960 and 1970 and now dominates the economic activity of all regions (particularly within the North East and Central East) with the exception of the South, which relies mainly on agriculture.

A comparison of Tables 3.10 and 3.11 indicates that the growth of industry within regions has been mainly at the expense of the tertiary sector, with the share of agricultural production in most cases dropping only slightly if at all (see also Table 3.15). Total agricultural output in the 10 years 1960-1970 increased by 140% representing substantial growth, though less dramatic than that of industry. The tables indicate a growing dominance of the N. West and C. West in agricultural production due to their heavy investment in irrigation although again, the concentration of agricultural output, is less marked than in industry. The increasing share of the C.E. region in total output of the tertiary sector stems mainly from the requirements of industrial concentration and is also linked to the high immigration into the over-congested urban core.

### Gross Product Per Capita

Tables 3.12 and 3.13 and 3.18, give a measure of the relative wealth of the 8 regions in terms of per capita income for 1960 and 1970. The main results are summarised in Table 3.14, (and also Map 3.6) together with the respective regional areas and population densities. The North East emerges as the wealthiest region on this measure, closely followed by Central East. Both regions reinforced their position at the top of regional wealth rankings during these ten years, while East, South and Yucatan experienced a substantial decline in gross product per capita relative to the national average (see also Table 3.17).

### 3. Urban and Industrial Concentration

Mexico has one of the highest rates of urbanisation in the world (see Table 3.19), and it became an urban country in 1970 (27) though is

estimated that by 1980 it will attain a level of urbanisation compatible with the most developed countries of the world. Thus for 1990 it is expected that this country will be predominantly urban. This urbanisation process may be divided into two main phases. The first from 1900-1940, with a relatively low rate of urbanisation mainly confined to the larger cities. Mexico City itself accounted for 60.3% of the total growth of the country's urban population between 1910 and 1921. The second phase from 1940-1970 witnessed a clear trend of rapid urbanisation with particularly high rates in the immediate post-war years. This process was apparent in most regions although mainly concentrated in Central East and Central West which together accounted for almost 60% of the increase in Mexico's urban population, between 1960 and 1970. In terms of city sizes, those with populations over 100,000 trebled their share of the country's urban population from 1940-1970 from 11.9% to 35.5% (28). This includes the substantial urban growth of Mexico City Metropolitan Area (MCMA) and the 2 metropolitan subcentres of Guadalajara and Monterrey, especially between 1960 and 1970 (Unikel, 1975). The heavy urban industrial concentration is one of the most important phenomenon in a regional analysis of Mexico and stems from six main factors:

1. The industrial development of Mexico City, Monterrey and Guadalajara. Furthermore, this urban size represents an indicator to devise the main growth poles of the Country (Table 3.22 and Map 3.7), which consolidated their positions as the main regional centres of the country.
2. The spectacular expansion of the northern frontier cities as a result of the 2nd World War.
3. The agricultural development based on internal and external markets.
4. The development of cities based on modern agricultural regions with high industrial output.

5. Urbanisation rate due in great proportion to the unforeseen and spectacular growth of MCMA whose population growth rate after being reduced from 6.3% to 5.5%, newly increased to 5.7% for 1970 and with an average annual growth rate between 1960-1970 of 5.4 and 5.2.
6. The accelerated growth rate of tourists centres.

The severely uneven distribution of industrial activity in Mexico and the fact that more than half of the cities specialise in tertiary activities has been a constant preoccupation with planners and governments. However, the timid and often contradictory policies adopted have far from modified the increasing tendency towards industrial concentration in the MCMA (Unikel and Garza, 1975). Within the cities themselves, urban income concentration presents a further problem. In this respect, government expenditure policies have deliberately favoured the higher income groups in the urban sector.

#### The Growth of the Over-Concentrated Megalopolis

Most of the large cities in Mexico have emerged relatively recently i.e. the last ten or fifteen years. There are only a few, namely, Mexico City, Monterrey, Torreon, Tampico and Orizaba where the metropolisation process can be traced back to the early post-War period or before. This section considers mainly the historic development of Mexico City since, apart from examining the industrial metropolis through related indices of economic concentration (see "Regional Disequilibria") an examination of specific local features merits attention.

In terms of population, Mexico City is the 3rd largest city in the world (13 million people in 1975) and it is estimated that by the year 2000 it will have 31 million inhabitants, overtaking New York and Tokyo, to become the world's largest metropolis. (29). There is general

recognition that MC has already surpassed its two critical points of optimum size in terms of economic efficiency (30) and self sustained growth, making it no longer suitable for massive public investment, which should be redirected to more profitable locations, perhaps in developing or depressed regions (Carrillo, 1970). The MCMA completed the first stage of metropolisation by 1970. This first stage of the process breaks down into 3 main periods:

1. Until 1930, Mexico City's 12 boroughs recorded an annual population growth rate higher than the surrounding districts. In 1930, 98% of the population of MCMA lived within the city boundaries. The remaining 2% inhabited 2 districts adjacent to the capital.
2. From 1930 to 1950 there was a demographic growth and spatial expansion. The districts of the FD grew more rapidly than MC (31), particularly between 1940 and 1950 when the growth figures were the highest recorded in this century. In 1950, the MCMA was almost wholly confined to the FD.
3. From 1950 to 1970. During the 50's, the MCMA spread beyond the boundaries of the FD and, in the 60's penetrated in a definite way into the State of Mexico, both physically and demographically. This is revealed in the high rates of demographic and industrial growth in the metropolitan municipalities.

Thus, if demographic patterns revealed in the various rings which surround the "core" of MC (12 boroughs) had continued, the capital would have begun its 2nd stage of metropolisation by 1970. The following features refer to those other cities which have a metropolitan periphery: Monterrey is clearly in the first stage of metropolisation. If the demographic ecological process of Monterrey continues at its present rate, this city will probably conclude this first stage between 1980 and 1990. (32).

Guadalajara also displays a metropolitan process, but it is less marked than that of Monterrey. It is expected to conclude its first stage around 1990.

#### Decline of Primacy and Future Trends

With certain reservations, fall of primacy can be examined as a symptom of transition towards a mature stage of development. (33). It has been suggested by some writers that polarisation, regional inequality and primacy are normal aspects of the early stages of development, corrected by natural processes. (34). However, in Latin American countries including Mexico, primacy has been associated with a historic pattern of industrialisation, import-substitution and foreign trade. (35). One should also emphasise the need to assess primacy within the context of national urban systems and economic development. Thus, the fall of primacy perhaps provides a rough indication of a movement away from the preliminary pattern of economic concentration which is an important consideration in relation to the feasibility of a national equity model. This approach must also take account of structural economic factors such as the internal and external economic dependence of national systems. In an international comparison, the importance of predominant cities in Mexico is revealed (Table 3.20), suggesting that the evolution of the urban system, 1900-1960, conforms to Alonso's hypothesis. Namely, that primacy rose continuously during the preliminary stage of economic growth from 1910 to 1950 and, thereafter dropped to a constant level (Table 3.21). This was mainly due to changes in migratory flows, in the period 1940-1960, away from Mexico City towards the 2 major regional centres of the country, Guadalajara and Monterrey (Table 3.30). However, from 1960-1970, Mexico City re-emerged as the centre of migration, which, together with the lower demographic growth of the major cities (excepting Guadalajara) prevented the expected further decline in primacy, although by 1980 some fall is expected. (36). If one examines the entire urban

structure, Mexico passed from the stage of scarce primacy (1900-1910) to another of growing predominance of the metropolitan area (1960-1970) which is reaching or has reached its maximum, considering also the relative reduction in importance of Guadalajara and Monterrey (see Unikel, 1975). The urban hierarchy of the country clearly presents 2 parts as follows: that from 15,000 to 100,000 and that from 100,000 and more inhabitants. The predominance of the higher "primacy index" of the Mexican system of cities corresponds to the second size range. Also, the system shows that from 1921 to 1950 there was a lack of cities in the 500,000 and 1,000,000 inhabitants group. (37). The high primacy in the upper part of the urban hierarchy expresses a great dependance of the MCMA even when the larger cities which follow: Guadalajara, Monterrey and others have begun to develop their own urban subsystems though by no means do they seriously compete with the MCMA. Thus, the main question is related to the relationship between urban demographic development and the process of economic development and modernisation of the urban economy or if it is occurring in a non-synchronized way (Unikel and Garza, Ibid.).

#### 4. Agglomeration Economies

Measurement of regional agglomeration economies presents some difficulties. Nevertheless some indicators may be used to show that the most developed regions have absorbed a major proportion of basic agglomeration economies (large external scale economies and internal scale economies). General measurement of agglomeration economies by states has previously been undertaken (Leimone, 1965). This analysis showed that until 1960 developed states had proportionately more benefits from higher rates of agglomeration economies, than poorer states. Similarly, following the 8 regions classification and taking into account urbanisation rates and plant-size in manufacturing as indicators of agglomeration economies, (33),



one could imply the following facts during 60-70:

The most developed regions (NE-NW-CE), as was seen previously, experienced higher rates of urbanisation, and manufacturing plants were larger on average, than in the intermediate or poor regions. External-scale economies as measured <sup>by</sup> means of transport or marketing (Labour force/ transformation industry and per capita motor-vehicles) are also more evident in the most developed regions together with a higher proportion of physical investment in infrastructure (roads and railways) and specialised services. Internal scale economies are also more predominant in the rich regions. This is indicated by the proportion of sales value per commercial units or services. In 1970, for instance the CE accounted for almost 52% of the net sales value and NW and NE also had important shares of the total (Tables 3.1, 3.2, 3.18, 3.28, 3.33).

#### 5. Regional Migration

Migration is one of the most dynamic factors in the spatial analysis of Mexico. Although net migration in the urban population increased between 1960 and 1970, the proportion of total urban population accounted for by migration declined due to higher natural growth rates (Table 3.24). In absolute figures 5.68 million people were added to the urban population through natural increase, and 2.75 million through internal migration from rural regions. The migration process compared with other countries is quite remarkable considering that during the 20 years 1950-1970 approximately 4.5 millions of people moved from rural to urban areas representing 20.1% of the total increase in population and 20.4% of urban growth.

As can be seen from Table No. 3.23, regional migration from 1930 to 1970 has been mainly channelled towards Central-East which accounts for over half the total in migration. However, its share has been declining due to the increasing importance of North East and North West. This

demonstrates the powerful attraction of the capital city, and of growing industrial concentrations like the North-East and also of modern agricultural regions like the North-West. During most of this period, Central-West region accounted for the bulk of total out-migration. However, its share declined dramatically between 1960-1970, as a result of the considerable movement of populations out of the South and the North, which together contributed over 3/4 of the total out-migration. For the 32 states in 1960, in-migration predominated in 12 of them, while the remaining 20 states experienced a net outflow of population.

One of the main reasons for migration is the expulsion of manpower from the rural areas as a result of the deterioration of the farming sector. In developing countries like Mexico, the repulsion factors predominate over the attracting factors and are usually related to agricultural and sometimes industrial dualism. Such a situation is illustrated <sup>in</sup> Table 3.23 where most of the out migration is found in the semi-traditional regions like the Central West or traditional ones like the South. It has generally been believed that lower levels of productivity in the agricultural sector encourage higher rates of out-migration. However, it has been found rather surprisingly, that during the period 1950-1970, the states with modern agricultural sectors, in spite of having high levels of productivity per worker, also had a high tendency towards migration due to their greater contact with important urban concentrations (Cabrera, 1975).

The Mexican cities can be classified into 3 categories according to their net immigration balance relative to their total growth. (39).

1. "attraction" cities (Social growth larger than natural growth);
2. "balanced" cities (Not receiving migration or offsetting exits with entries);
3. "Rejection" cities (Expelling population). The number of

"balanced" and "rejection" cities has grown more than proportionally to the "attraction" cities, illustrating inter-urban and inter-regional competition in a static market. This situation has also contributed to the increasing migratory flows to the capital and is a symptom of regional, rural and urban deterioration (Unikel, 1975). The factors of attraction are mainly related to the urban system primacy. The strong primacy makes competition of other urban systems with the FD almost impossible.

More than 50% of the migration it received during the period 1950-1970 came from the main 37 cities (those with over 50,000 people in 1960). (40).

Although the other integrated urban systems (Central West, North West or North East) have a greater power of attraction, it is unlikely that there will be a fundamental change in the migratory flows at least in the medium term. This assumes an absence of further decentralisation policies. There is also a possibility that only the cities located within the influence of the FD area will benefit from a future relative drop in the volume of migration to MC. This situation would aggravate the regional disequilibrium since no other urban system would be able to compete with the attraction which the city of the central area of the country would generate (Unikel, Ibid.).

## 6. Interregional Investment

Regional investment played a significant role in worsening inter-regional disequilibrium and socioeconomic concentration around MC. The application of profit maximisation criteria in the allocation of scarce resources is partly connected to the "concentrating" effects of public and private investment. That is, government investment mainly in infrastructure and direct productive activities has been directed towards

those developed regions with higher returns in the short run and a wider tax base instead of poor regions which lack economic incentives. This orientation has resulted in a spatial concentration of private investment (Table 3.30) including foreign investment in the main markets of overcongested areas, and thereby reinforcing polarisation of economic growth.

The Mexican public sectors can be considered as comprising of 3 subsectors: 1. The government - Federal, State and Municipal; 2. Decentralised (Nationalised) enterprises; 3. Agencies for the promotion of economic activity. For purposes of analysing public expenditure, we focus on federal, state and decentralised enterprises. The Federal expenditures of the various Ministries of State (Executive Power) are spatially concentrated in the central core and other rich regions (excluding ministries such as Agricultural and Water Resources whose expenditures are normally determined by geographical determinism). In education for instance, the FD receives 12 times more public spending per capita than the rest of the country. In terms of the 3 regions, the spatial disparity in public federal investment allocation between 1965 and 1969 shows the same features, with the CE region receiving almost 15 times as much as the Yucatan peninsula (Table 3.25 and Map 3.8). (41). This disparity becomes even more evident when we view these fund's use:

- a. In terms of the allocation for social welfare purposes the CE region received 71.3% of total allocation with the other regions only receiving on average 4.1%. Yucatan received the lowest allocation of 1.8%.
- b. The share of the allocation for the promotion of agriculture and fisheries was taken by the North and NW regions (20.7% and 27.8% respectively) with Yucatan receiving the smallest share (3.9%).

- c. A third of all the public industrial investment went to the east region (34.3%) with the CE and NE regions receiving a further third between them (16.9% and 17% respectively). Yucatan received only 1.1%.
- d. Public investment in transport and communications was more evenly distributed though the concentration again was in the CE, CW, N and NW regions (26.1, 15.1, 14.0 and 17.1% respectively). Yucatan was again lowest with only 4.4%
- e. The CE region received 88.4% of the military expenditure though this is probably due to strategic rather than economic reasons.

A comparison of the budgets of individual states shows that the FD spends about as much as the 32 states taken together. State governments of the country (3,464 million pesos) represented 97% of that of the FD (3,800 million pesos). For example, the FD government accounts for 44% of the national public resources. Considering that only 14.4% of the population live in the FD, this means that its inhabitants absorbed 6.7 times more per capita resources (815.91 pesos) than the rest of the national population (121.89 pesos per capita). This represented 19 times that of Oaxaca's state.

Decentralised enterprises is something of a misnomer since the industrial enterprises of the federal government are much more concentrated than those of the private sector. This is also one of the key causes of the spatial disequilibria in Mexico.

## 7. Regional Employment

Regional employment is here analysed in terms of EAP (economically active population), since in the absence of official statistics this gives an approximate indication of employment levels. The regional distribution

of EAP conforms to the pattern of concentration previously noted for other economic variables (Table 3.26 and Map 3.9). In 1970, 64% of the total economically active population were contained in three regions, CE with almost 36% of the total, CW and N. Considering only the primary sector, the inter-regional distribution of EAP is more balanced, although CE and CW still account for a large share as does the traditionally agricultural south region. Employment in secondary and tertiary sectors is strongly correlated as can be seen from an examination of the urban industrial regions. CE and CW regions absorb two thirds of active population in secondary activities and almost 60% in tertiary sectors.

The sectoral division of EAP gives an indication of the level of development in the various regions:

1. NE and CE could be classified as developed regions where secondary and tertiary population represent about 74% of the total. Nevertheless, tertiary population absorbing 40% surpasses that of secondary activities.
2. NW, N and CW emerge as intermediate regions where the population employed in the primary sector still represents around 50% of total population.
3. E and Yucatan can be considered as semi-traditional regions where the primary population accounts for almost 60% of their total.
4. A strong traditional South with 75% of its EAP in the primary sector.

#### 6. CORE-PERIPHERY RELATIONSHIPS

To test Friedman<sup>n</sup>'s core periphery model, all the information available for the 8 regions is presented in a new regional framework given by a Central-Core, two main Sub-Cores and periphery (Tables 3.27-3.30).

These tables show that from 1960 to 1970, the Core region reinforced its economic power, as given by the main indicators. The two metropolitan sub-cores maintained their important position, while the large periphery featured an overall stagnation. In 1970, the Central Core accounted for more than a half of GNP (see Map 3.10) and, around 75% of industrial and tertiary output was located in the Core and the 2 metropolitan Subcores. The periphery accounted for more than a half of the primary sector output.

Gross product per capita from 1960-70 doubled in the core and subcore regions while in the periphery it increased only slightly. In 1970, the Gross product per capita in the core was almost 3 times that of the periphery. Industrial and tertiary output per capita of the core were higher than in the periphery though worsened even more if one considers the per capita output for the total population as a whole. The only exception was the primary per capita output which represented almost a half of that of the periphery.

In Table No . 3.29 one can observe that the Core and two subcores absorbed during 4 years (1965-69) more than a half of total federal public investment (see Map 3.11). At a sectoral level, the Central Core accounted for the major sharings in investment in social welfare and military expenditure, and altogether with the two subcores accounted for almost a half of industrial and transport investment. The only exception was agricultural investment where the periphery absorbed more of two thirds of the total. If one considers a 3 regions classification: North, Core, South (Table No. 3.30) one can also notice the strong spatial concentration of public investment through state institutions and enterprises though the last columns presents an estimation of private and public investment combined.

The Central Core accounted also for a third of total population and more than a third of urban and EAP in the country during 1970. And

together with the 2 subcores they represented almost two-thirds of total urban population and more than a half of EAP and total population. Secondary and tertiary active population were also predominately concentrated in these regions.

Additionally, table 24 shows some indicators of concentration of agglomeration economies in the core region, and also the lower rates of illiteracy in comparison with the periphery. One can also notice the Core region accounted for more than 3/4 of total immigration of the country from 1960 to 1970 while the periphery absorbed the same proportion of total outmigration in the country.

## 7. REGIONAL EQUITY TOWARDS NATIONAL ECONOMIC DEVELOPMENT

The evidence presented in this chapter, suggests that the dramatic economic growth of Mexico, within the framework of a mixed economy, has resulted in a heavy concentration of productive resources and severe inequalities in income. It could be argued that this uneven spatial development was necessary condition for the rapid growth of GNP, at least up until 1970.

However, during the last 8 years, it appears that the continuing concentration of population and economic activity in a small area of the country has been detrimental to the maintainance of high rates of economic growth. This includes sub-optimal investment within the metropolitan area of Mexico City and mounting diseconomies resulting from congestion and pollution. National and regional unemployment coexists with excess industrial capacity, mainly in the core and two subcores. Thus, redistribution of income is necessary for the long run expansion of the internal market, which at present is restricted to a small proportion of the population with high incomes. The lack of higher education and job training for the majority of the population has constrained a qualitative improvement in the supply of labour. Thus, the skills of labour force



is considered one of the strategic factors for assignment of financial resources to different regions (Pedrao, 1971). Furthermore, the situation presents serious social and political problems, since it is unlikely that the poorer regions, and the urban workers will passively accept the increasing gap between the living standards of rich and poor regions and social groups.

Consequently, a model which pursues regional equity as a condition for continued national growth is required. Linear programming models provide an important tool by allowing the selection of relevant sectors and incorporating regional aims, but their application presents a complex problem (see chapter 2 and 4). Moreover, such a model must be linked to a policy of decisive economic decentralisation covering industry together with efficient types of agricultural organisation. In support of this view, a recent study dealing with the contribution of multi-sectoral policies (mainly industrial, agricultural and transport), emphasises the increasing trends of demographic growth and recommends the adoption of a policy to improve regional distribution of income and raise regional employment levels, thereby securing better use of available resources without affecting the rates of national growth (Pedrao, 1973).

In conclusion, a more equitable distribution of income and a more balanced regional development are necessitated by social and political pressures. Furthermore, there is no logical reason why the pursuit of these goals are incompatible with sustained national economic growth. As Alonso says ... "Given that the whole hearted pursuit of efficiency goals will in due time result in satisfying the equity goals, can we be sure that the opposite does not hold? If regional equity is in some measure actually pursued for its own sake, may it not just serve to accelerate national growth?" (Alonso, 1968).

CHAPTER IIIFOOTNOTES

1. Main sources used for description of General National Features were "The Times", 17th August, 1976; "The Economist", May 1977 and also "Mexico, 1976", Bank of Foreign Trade, Mexico 1977.
2. Based on the next references: Mexico 1976, Bank of Foreign Trade, 1977. Carrillo, R., Regional Development in Mexico. An Inter-regional Approach, Rotterdam University Press, 1972. Hansen, R., The Mexican Policy of Development, 1972.
3. The "ejido" is a Mexican mode of collective land ownership similar to the kibbutz in Israel or "Commune" in China though preserving the individual property rights.
4. Based on the economic policy goals in the short and medium run. Ministry of Finance (Treasury) and Ministry of Planning and Programming, D.L. 15-77; Latin American special report, a supplement to LAER, March, 1977; Barkin, David, op. cit.
5. The only exception is given by the Linear Programming Model provided by Carrillo in 1972, which in the present has been found applicable to other national economies like Spain. Carrillo, an Interregional development model for Mexico. See Bibliography.
6. This model proposes that the growth of manufacturing industry in the regions play a decisive role on the per capita income growth. Therefore, the faster growth of employment in the manufactured industries in lower income states in USA have produced a regional convergence among the states.
7. Apparently, until 1970, coefficients for women show the same type of selective migration. In 1960, women represented 18% of the labour force.
8. The following indicators of per capita income level and their increases are used by John E. Leimone. Cumulative Causation and Inter-regional Growth in Mexico, May 1971, Vandervilt University. Doctoral Thesis: A/L - proportion of agricultural employment and total employment. (pop. cens.) MP/L - proportion of manufactured employment and total employment. (ind. cens.) MI/L - proportion of manufactured employment and total employment, per capita added value of manufactured industry, per capita value of commercial sales. These indexes show a positive relationship with the per capita income levels or increases. The high positive correlation of per capita product levels in 1960 with these variables may imply that the greater development states have registered more higher rates of per capita income growth than the less developed states and consequently that the inter-regional inequalities have been widening accumulatively.
9. Monterrey (NE) is the exception. There is a regional autonomous process based on the existence of mining resources.
10. Carrillo, A. (1965) measures these differentials and continuity of the same situation could be applied for 1970.

11. Underdeveloped countries experience regional inequalities with lower per capita income levels than in the poor regions of European countries. Some estimations of the ratio of maximum regional per capita income to minimum per capita income (during the 1960's) show that the majority of countries had disparities of 1:10 (between their poorest subnational units and their richest). Some extremes emerged, Guatemala had a disparity of 1:37 between the poorest and the richest states, and in the other direction, Chile had a relation of 1:5. In Mexico, the metropolitan zone of Mexico City absorbed in 1965, 16% of GNP, 75% of national industrial added value and 62.6% of national investment in higher education. Unikel, L., Regional Development Policies in Mexico. Mexico's College. (see Bibliography).
12. This also results in another range of inequalities: urban-rural, inter-urban, inter-rural, intra-urban, intra-rural. Slater, D. Underdevelopment and spatial inequality. Approaches to the problems of regional planning in the Third World. In progress In Planning, Vol. 4. Part 2, Pergamon Press, 1975.
13. The main criticisms of Williamson's analysis is given by the next points:
  1. A general continuum from low to high levels of development and the path for developing countries to follow developed countries. Slater (1973) argues that there is no one common route to development. The continuum conceals the differences in the way various countries achieved socio-economic transformation and forget that development in the Western capitalist societies was closely related to the underdevelopment of the non-western countries.
  2. Developing countries are placed in an historical vacuum, thus growth and development are seen as being synonymous and obviously this need not be the case. Further, there is no definite trend towards decreasing inequality in the west and conversely in the Third World there is a trend towards an increasing national and regional inequality in income distribution. (Slater, op. cit.).
14. Some weaknesses of the per capita income indicator have been pointed out:
  - a. Lack of consideration of the output of non-monetary sector.
  - b. Lack of consideration of regional cost of living.
  - c. Regional heterogeneity with internal spatial variations in per capita income.
  - d. Lack of consideration of regional income distribution.
 High regional per capita income need not reflect internal regional development. The indicator ignores the role played by the multi-national companies thus mis-utilisation of income in luxury consumption and property speculation and non-productive activities. (Slater, op. cit.).
15. Kuznetz classifies countries in 7 groups according to per capita income level and development.
16. In the former estimation, regional units are given by 8 economic macro-regions. The second estimate is based on the official political-administrative division of 32 states within the 8 regions.
17. Carrillo and Medellin have concluded that the regional disparities of Mexico have grown from 1950 to 1960, and from 1921 to 1960, with the exception of the Northern region. Mendoza and Wilker on the other hand conclude that the relative gap between states has narrowed

in the period 1940-1960, gradually in 1940 to 1950 and in a significant way from 1950 to 1960.

A study of CEED (Economic and Demographic Studies Centre) shows that in the period 1900-1970, with respect to urbanisation and economic development, regional disparities declined between the Mexican Valley, the North East, the Northern Gulf region, while those of the Central West, South and South East remained practically constant. In addition, the gap between these groups of regions, with regard to the more backwards increased over time. (Unikel, 1975).

18. By monofunctional, one should understand the predominance of one sector in the state's economy, bifunctional, the predominance of two main sectors and so on.
19. With some exceptions, this coincided with the results found by Unikel (1975) in the following way:

The most prosperous states are those situated along the USA borders, and also the FD and the adjacent State of Mexico. The poorest states form a large part of the central region, one on the Gulf (Tabasco) and those on the South Pacific (Guerrero, Chiapas, and Oaxaca). The intermediate states are on the Gulf Coast, on the North-Pacific and in the remaining states of the central and Northern regions. (Unikel, 1975).

20. "This has produced a transfer of resources from the countryside to the cities, particularly from medium cities to the capital. It is likely that this concentration will continue throughout each period with increasing force. Equilibrating action is now urgent. The old appraisal of regional development has identified it strongly with creation of industrial poles. Those who have been interested in the internal development of the country have relied on estímulos to industrialisation. They have been victims of an illusion. The economic pressures must not lead to the sacrifice of social and political objectives." Solís, L., Social Inequality and Regional Economic Disequilibrium. (1974).
21. "... The serious consequences of centralism not only take root in that country, by way of its governments, runs with the expense of congestion and the diseconomies of scale of a large city, while the local managers in the city, particularly those who come in the future, may only collect the fruits of such a concentration; But by the very fact that the resources in this form absorbed by the over-congested megalopolis (Macrocefalia) could have a much greater social productivity for the country as a whole if they were invested in the solution of other multiple national problems; whose priority and social productivity is higher than the success in the simple centralism that already erodes the economy and welfare of the whole country. (Solís, L. op. cit.).
22. The drain of 50% of its savings through the banking system and the creaming away of a considerable part of their skilled workers and intelligentsia by selective migration have obviously diminished their growth possibilities and potentialities. (Carrillo, A. 1970).
23. Future developments of demand and supply orientation will depend on the behaviour of private and public sectors. The main incentive of MC for private entrepreneurs are given by the positive side of agglomeration advantages which are further supported by the tremendous

concentration of effective demand in MC where it is already 3.4 times as high as that of the other 31 state capitals together. On the supply side, the FD alone, compared to the country as a whole, accounts for 66.8% of construction, 80.8% of electricity, 62.3% of trade and commerce, 77.9% of printing activities, 40.4% of basic metals, 76.7% of automobiles, 59.7% of machinery, 65.2% of skilled personnel, 96.8% of theatres, etc. (Carrillo, 1970).

24. This approach may be examined in the work of Mattos, Carlos, "Some Considerations on Spatial Mobility of Resources in Latin American Countries", 1975. (See Bibliography).
25. The central question lies in examining if the economic, social and political costs of the extremely rich city surpass the respective benefits. In general terms, one should know if the predominant city represents a constraint or a promotive factor of national and regional socio-economic development. Therefore, decision in favour or against high primacies can only be done in social or ideological terms, since it cannot be solved by a simple difference of economic losses and gains. In conclusion, theoretical and empirical evidence do not seem to categorically confirm that the primary city is a "parasite", or in other words which costs (economically and socially) more than that which it produces... (Unikel, 1976).
26. This tremendous inflow of manpower, apart from competitiveness in the already oversupplied labour market, has considerably aggravated the proletarian housing conditions of the city, where already 39% of the inhabitants are living in dwellings of merely a single room and at an average of 4.9 persons per room. An official survey carried out in 1958 shows that 58.5% of the inhabitants of MC had housing problems and that 80% of the leaders of families in the proletarian suburbs of the city's poverty belts had come from outside the FD.
27. In 1970, clusters of non-urban and rural population declined to 55.1% and 47% respectively. In other words, Mexico ceased to be a pre-dominantly rural and agricultural country during the ten year period between 1960 and 1970. (Unikel, 1975).
28. It is expected that in 1990, 14 cities will have over half a million inhabitants and urban size will also be overwhelming. It is probable that eight cities will have over half a million inhabitants by 1980 and another six will expand to this size by 1990. Guadalajara and Monterrey will grow to a million and a half in 1980 and over two and a half million in 1990. Other important cities will be Puebla, Ciudad, Juarez, Leon, Tijuana, Mexicali, Yampico, Merida, Torreon, Chihuahua, Veracruz, San Luis Potosi, Hermosillo and Acapulco.
29. According to Sunday Times, 1977 and Mexican Sources. See Unikel, op. cit.
30. L.H. Klaassen, Regional Policy in the Benelux Countries; Area Redevelopment Policies in Britain and the Countries of the Common Market, p.29.
31. Thus, one can observe the following process:
  - a. That of the central commercial district (3rd and 4th quarters) which registered a rapid population growth from 1940 to 1950, and since then a sharp decrease.

- b. That of the 10 remaining quarters of Mexico City, and that of the local offices and a Town Council of Mexico State, which constitute the first fringe area, whose population increases and later decreases.
  - c. That of the delegations and municipalities of the second and third fringe areas which have maintained an uninterrupted and progressive growth from 1940 to 1970. (Muñoz, 1975).
- 32. Since the population of the central municipality experienced a systematic decrease from 1940 to 1970 in relation to the total population of the metropolitan zone of 1960 and, consequently an increase of the periphery. (Muñoz, Ibid.).
- 33. Alonso (op. cit.) based on Williamson's bell shaped curve (as a result of regional inequality plotted against economic development) and El Shaks' work (1965) in connection with a cross-section of World nations, finds a near normal curve of primacy on economic development. That is, primacy occurs rarely in very under-developed countries, rises during "take-off" stage and then decreases thereafter. This is independent of both suburbanisation of large cities and the break up of large urban areas but refers to continuity of growth of large cities in mature economies although secondary centres grow faster. W. Alonso, "Urban and Regional Imbalances in Economic Development", *Ekistics*, Vol. 27, Num. 162, May of 1969, pp.351-355.
- 34. As Alonso explains, that it has been suggested the existence of "a form of negative feedback" of development. "An invisible hand may be at work, and given world enough and time, it may reconcile the efficiency and equity goals". Alonso, *Economic Development and Cultural Change*, Vol. 17, No. 1, October, 1968.
- 35. As in the analysis of W. Alonso, "Urban and Regional Imbalances" in *Economic Development*, *Ekistics*, Vol. 27, Num. 162, May 1969, pp. 351-355, where periods of historic pattern in relation to high primacy are found for Latin American countries:
  - a. Increase of regional concentration and primacy: Export orientation of Latin American economies 1900-1929.
  - b. Increase of primacy 1930-1969 Non-integrated industrialisation and import-substitution. Manufactured industries with weak locational factors though they are market orientated.
  - c. Estabilisation and reduction of primacy-integrated industrialisation 1970-2000. (Prediction).
- 36. According to another source from 1940-1970, Mexico's index of 2 cities dropped from 617 to 5.2 and the index of 4 cities dropped from 2.8 to 2.7. Guadalajara and Monterrey grew to an already greater rhythm. It has also been predicted that in the last 3 decades of the 20th century the majority of 8 countries under consideration will be experiencing a decrease in the primacy due to the following factors:
  - 1. The large size of the primary cities.
  - 2. Growing scale diseconomies or congested costs.
  - 3. Industrial location will orientate toward raw materials and vertical integration and the concentration of installations will be associated with a decrease of primacy. The government

will attack high primacy through a decentralisation policy with renewal of the political process.

37. This is based on the diagram provided by Unikel, which shows that the first part of the "hierarchy" was during all the period 1900-1970 much more closer to the type of range size cities system than the second part. This difference among both parts which is expressed graphically through distinct geometrical slopes, was relatively small from 1900 to 1970 and it increased until 1930. From that year the disparities have been attenuated. (Unikel, 1975).
38. In measuring agglomeration economies in rich states, Leimone used 3 alternative measures of plant size in manufactures: value of invested capital by plant (factories), workers by factories and production per factory. (Leimone, 1965).
39. "Attraction cities" are those whose net-immigrant balance exceeds 0.5%; "balanced cities" are those whose in-migrant net balance ranges between -0.5% and +0.5% and "rejection cities" are those which in-migration net balance are inferior to -0.5%, all three, annual increases.
40. Between 1940 and 1950, 10 cities accounted for 76.4% of all immigration; in the period 1950-1960 the ten most important centres of attraction absorbed 82.9% of all migrants between 1960 and 1970.
41. Although with a different regionalisation, from 1959 to 1965, the C Region absorbed 51.7% and altogether with North region accounted for almost 80% of total public investment in industrial development and more than 95% of investment for social welfare. Madrid, 1967. Policy of industrial location (The Case of Mexico), Mexico, DF, June 1967, UNAM. Mentioned by Shapira, Ibid.

CHAPTER III

REGIONAL DEVELOPMENT IN MEXICO: REFERENCES

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CHAPTER IVREGIONAL POLICY AND PLANNING IN MEXICOINTRODUCTION

This chapter examines the evolution of regional policy and planning in Mexico, within the framework of national development policies. Two broad types of regional policies may be distinguished: A national-fiscal industrial policy with spatial implications and a physical-agricultural approach through river basins. This latter strategy represented a decisive effort of public policy aimed at regional decentralisation through executive commissions. After 1970, the foundations for a comprehensive regional policy were set up, emphasising economic decentralisation and creation of laws and bodies.

The impact of the 2 regional policies mentioned above is examined. An overall cost benefit analysis of the river-basins strategy in an inter-regional and intra-regional level is undertaken, with particular consideration of the equity effects of the policy. The process of national development planning in Mexico, together with the upsurge of regional plans is also analysed. Emphasis is given to the different aims and features of inter-regional planning in comparison with the incipient intra-regional planning. Additionally, the dissociation of the sectoral and regional aspects of the planning process within the particular characteristics of the Mexican public sector will be examined. In general terms, the analysis focusses on the conflict arising from the pursuit of a high degree of political and economic decentralisation through the implementation of regional planning, in a highly centralised public sector. Hydrological regional planning represents one of the most consistent approaches in the construction of regional plans, with a good degree of decentralisation through coordination of different central and regional public bodies and combining urban and rural aspects.

There is a strong concern with regional planning in Mexico. In fact, one of the main problems is the numerous bodies involved in similar projects, which results in a waste of public and private resources and bureaucratic overlapping. Consequently, this chapter examines the particular constraints and the institutional and social requirements for the implementation of regional planning. A planning systems approach, which covers the determination of sociopolitical, economic and physical systems and their interaction to achieve the proposed goals of regional development, seems most relevant.

If one considers the guidance provided by the central coordinating body in the public sector, one realises the need for an administrative reorganisation to achieve a new regional structure. The costs and benefits of this new structure will be discussed in order to determine the feasibility of such a commitment, while at the same time pursuing national development aims.

#### 1. THE MEXICAN REGIONAL DEVELOPMENT POLICY: TOWARDS DECENTRALISATION

In analysing the stages of national economic development (Chapter 3), it is not possible to observe a consistent and integrated regional development policy. Therefore, the preliminary efforts of a regional policy until 1970 may be framed within a CONSTRUCTIVE STAGE with a "hard line" national policy. (1). In other words, considering economic efficiency, the Mexican model of economic growth has pursued growth maximisation, disequilibrium and an income concentration process. This orientation is also related to a prices and rate of exchange stability model. (Stabiliser Model). The concern for regional policy emerges as a timid attempt to counteract the sectoral and regional imbalances within a dualistic and negative personal income distribution as a result of economic and national concentration policies. It has been noted by some, however, that this disequilibrium is the product and logical consequence

of a national development stage, where scarce resources are aimed towards the growth and integration of the national productive structure, to the detriment of welfare and regional development. The outlines of Mexican regional policy may be framed after the second world war with reference to 3 strategic development policies: 1. Industrialisation based on import substitution; 2. Migration and agricultural expansion; 3. The building of a basic infrastructure. In this way, industrialisation reinforced by protectionism and import substitution represented an apparent "spear-head" of regional development in conjunction with a policy of agricultural expansion. (2). However, this overall policy was based upon rural-underemployment with high demographic pressures creating strong migratory movements and pressures on agricultural output.

It is only in the period from 1970 when the setting up of numerous bodies and the introduction of various measures may be viewed as a first attempt at regional policy in Mexico. (Unikel, 1975). This recent period, is characterised by a reorganisation of the national policies towards the "soft line" type, characterised by social equity, equilibrium and social criteria considerations, although it would be premature to assert the dimensional effects of these at the moment. Within a framework of national policies with the coordination of a public spending programme and numerous disarticulated regional efforts it may be noted that most of the types of "regional policies" implemented or non-implemented until 1970 can be classified in terms of their orientation as follows:

1. Institutional Form. The majority belong to the Federal Government concerning the form of organisation for the coordination, appraisal or study of programmes. The unique executive experience is given by the River Basins Policy.
2. Guidance System. Cooperative national-regional guidance which shows lack of regional autonomy in the bodies.

3. Major Orientation. Consolidation of other development areas, new growth poles development and a physical-agricultural approach. In recent times spatial considerations have been incorporated into industrial urban national policies (see Table A).

One can also distinguish two types of basic regional policies so far, apart from other preliminary and inconsistent efforts:

1. An economic industrial approach characterised by fiscal measures at a national level though with a slight spatial orientation. It is also related to fiscal public promotion at a spatial level in some relative cases and also public crediting: Federal Tax Relief, Local Tax Relief and Industrial Credit; also, the economic promotion of the Northern Frontier Fringe and free zones and perimeters of the country (Programa Nacional Fronterizo).
2. A physical and agricultural approach with orientation towards the provision of regional GSC (General Social Capital): The Regional River-Basins Policy.

The River Basins policy represents the most outstanding instrument of regional development and it is related to the exploitation of the natural resources in the river basins by means of dam building, irrigation, etc. The institutional arrangement comprised the setting up of executive and regional study commissions in some isolated areas of the country (Map 1). They were assigned public funds for use in the implementation of specific programmes coordinating simultaneously federal-state and local government levels with the aim on the one hand of raising agricultural returns and power supply for industrial requirements, and on the other, to provide the foundations for the promotion of regional development policies. By law they were granted regional autonomy which was not feasible due to their financial dependence on the Federal government.

and they also considered agro-industrialisation and colonization in their original aims. Given the importance of this policy, subsequent analysis will be carried out in part 2 of this chapter.

#### FISCAL INDUSTRIAL POLICY

Although spatial considerations have gained importance only recently, this is the first coordinated appraisal for the industrial deconcentration of the Central Core of Mexico. Three types of policies of national importance may be examined as follows: 1. Local Tax Relief: "the State Tax Exemption Laws for Industry"; 2. Federal Tax Relief: "The Law of New and Necessary Industry"; 3. Industrial Crediting: "The Guarantee and Development Fund for Medium and Small Industry. There are also those policies with a regional or local focus, i.e. the Industrial State Scheme, "the National border scheme" and the state development agencies with regard to industrial zones (Lavell, 1970).

1. Local Tax Relief - These laws have existed in certain states of Mexico since the immediate post-revolutionary period, and are now utilised in all states with the exception of the FD, the industrially congested areas of the states of Mexico (i.e. those areas adjacent to the FD) and Nuevo Leon (i.e. the city of Monterrey). The laws allow for exemption from the 1.3% sales tax, from a stamp duty and from local land taxes, and are applicable to both new industries and those expanding their capital investments. These exemptions may be valid for time periods varying from 10 to 30 years depending on the state concerned.
2. Federal Tax Relief - This law, formulated in 1941 and later revised in 1946 and 1955, was a major component in the strategy devised to stimulate import substitution in Mexico. Those industries covered by the law are granted total relief from excess profits, stamp, industrial and income taxes and also from import duties on raw



materials or components needed in the production process. The period of exemption is for 5, 7 or 10 - years depending on the nature of the industry and its importance to national development.

"New industry" includes those branches of manufacturing that are not well-represented in Mexico and also those producing a similar product to that already produced in a national plant, given the premise that the new company guarantees a 20% saving in the price to the consumer and an increase in the efficiency with which the good is produced, as compared to existing ones. "Necessary industry" is defined as that of fundamental importance to the continued industrial development of the nation. The industries falling into this category are delimited by the Secretariat of Industry and Commerce.

3. Industrial Credit - Industrial development in Mexico has also been stimulated by the availability of short and long term credit facilities. This fund supplies credits to small and medium size industries. Established in 1953, the Fund now grants credits to companies whose capital investment does not exceed 15 million pesos or fall below 25,000 pesos. (3). The industry covered by the Fund is defined as "small" and medium" sized industry-categories which, in 1960, accounted for 56.8% of all industrial plants in Mexico and 79.2% of the industrial labour force (Lavell, 1970).

Another spatial industrial policy was appraised through the Northern Fringe Programme (Programa Nacional Fronterizo). This programme provides diverse important economic incentives for the location of bond plants ("maquiladora industry") and it has attained the setting up of almost 500 plants providing 80,000 jobs which has partially contributed to the reduction of chronic unemployment and under-employment in the Northern fringe, given the permanent and massive immigration during 1940-1970 from

other regions of the country. Apart from this basic set of policies, one should be aware of diverse and non-coordinated regional efforts by different federal government bodies which could be classified on the basis of their sectoral orientation, institutional foundations and type of regional policy (Table A).

Among the rest of the exploratory efforts, planned development poles has represented the popular policy though it has lacked a decisive sectoral and spatial coordination by a central unit, in this case the (MPP) (Planning and Programming Ministry). Some failures in this policy, have been found relating to the multiplicity of opposing interests on the part of the federal bodies involved, e.g. Los Truchas development pole. Besides natural urban growth poles, i.e. Monterrey and Guadalajara, some important examples may be examined (see Table A) (Navarrete, 1974):

- a) The Tehuantepec Isthmus Pole (Under the Coordinating Commission for the Integral Development of Tehuantepec Isthmus) which comprises 3 depressed states, is based on hydroelectric agriculture and oil production. The area is important as a movement centre of raw materials and goods from both the Pacific Ocean and the Mexican Gulf. The Commission is responsible for infrastructural works and the promotion of the location of public and private industrial enterprise.
- b) Los Truchas Syderurgic will represent the greatest steel producer combined with an important irrigated agricultural output for exportation. The pole presents locational advantages due to iron ore deposits, strategic inland and maritime transportation systems (River Balsas Stuary and L. Cardenas Port) and also one of the most important Mexican hydro-electric plants (Infiernillo).
- c) Lower California Pole represents a combined effort of infrastructural investment, tourism, fishing, agricultural and mining activities. The transportation improvement to link this peninsula

to the continent via new ferries and the building of new ports will give more viability to its success.

- d) The smaller potential metropoli of "Jurica-Benito Juarez" in Queretaro is based in agro-industrial development with an important economic infrastructure, potential markets and especially in its closeness to the metropolitan core.
- e) The industrial corridors of Jalisco and Mazatlan-Matamoros will consolidate the industrial development of these states and it will encourage the industrial decentralisation of the country. This effort is also related to infrastructural works (railways and ports) and could reach an integral development through a regional export-base with feasibility of bond plants ("Maquiladora") industry.

In general, one could assert that until 1970, Mexico did not possess a regional development policy nor national economic development plans with personal and territorial income distribution considerations. There was only one national plan which aimed at the reduction of regional disequilibrium (The Economic and Social Development Plan 1966-1970) though it did not undertake measures to attain it (UNIKEL, 1975). Thus, it is more convenient to think of a Mexican regional development concern, and not of a decisive and deliberate organised public policy.

#### AN APPARENT NEW REGIONAL POLICY

The most relevant aspect of the new policy is concerned with a focus in growth poles, urban decentralisation policy and especially regional institutional decentralisation. Up to now, however, it seems that the traditional regional river basins approach is being abandoned, (4) which represents a regression in regional policy though one should anticipate a feasible replacement, considering the new institutional orientation through a comprehensive and coordinated regional policy.

The new orientation after 1970 could be the result of the public awareness towards the danger of carrying on with a simple national economic growth process. This change is also due to the sociopolitical pressures for regional autonomy coming from both poor and advanced states (5) which is a reflection of the changing role of traditional central-state government relationships (Centralism v. Federalism). It seems that some states have a clearer idea of the disadvantages of centralism and have strengthened the regional position of a group of states within the federal system (Unikel, 1975 and Shapira, 1972). One should observe, however, that this reorientation also obeys the need to improve economic income distribution patterns within an equity model as the only dynamic solution to carry on with the national internal economic growth process in the long run. The new policy comprises sectoral, administrative and fiscal measures for industrial decentralisation and regional development. They may be classified into two groups: a) Direct Promotional Action (1970-1973) and b) Coordination (1973-1976). The first group encompasses direct and promotional measures for industrial, commercial, agricultural and population location in backward areas of the country (decentralisation). The second comprises the instruments orientated to coordinate all the measures linked to industrial decentralisation and regional development. They have represented overall aims towards an integral and balanced socioeconomic development and with a more equitable income distribution structure (Unikel, 1975) (See Table A).

The policy represents in an important way the first coordinated attempt at a national level to appraise an urban policy of decentralisation. This effort is also linked to an officially adopted regionalisation pattern with <sup>regional</sup> 9/units as well as administrative and fiscal decentralisation. One can observe in the institutional goals (Table 4:13) that the new regulations and bodies include measures for metropolitan deconcentration and for urban hierarchies linked to the discouragement of migration to over-concentrated

centres. There is a shift towards incorporating the social costs of public services in price systems and also the creation of new urban poles and population policies according to the development of the country. The institutional innovation inside the central government represents an attempt to promote coordination mechanism at national, regional and state levels in order to produce harmony in the decision making process. The most important introduction is given by the creation of regional bodies, i.e. Tehuantepec or Arid Zones Commission and promotive socioeconomic state development committees throughout the country. The emphasis has been on controlling the growth of the overconcentrated megalopolis and reorientating public investment towards the periphery (6) though it seems that this aspect is encompassed within overall national economic development as a way to achieve a more compatible income redistribution.

Industrial decentralisation may signify a greater balance for the overall sharing of economic activities in the country but it mainly represents a limitation of the Mexican capital's growth. It is evident that the administration of the megalopolis represents a considerable challenge, and above all in the suburban and shanty towns outside the F.D. boundaries. It also seems that there is a problem of political administrative boundaries between central government and state level to face the growth control of the dynamic core (Pedrao, 1971). "Decentralisation" has been considered as a necessity in totally reassessing the economic policy of the Mexican government, taking into account as a fundamental objective the strengthening of general demand by means of employment policies and effective distribution. This corresponds to the characteristics of the "distributive stage of the process of development in the long term". It is precisely within this context of national development that the policies of decentralisation and regional development must be placed, and not, as they have been presented until recently as an abstract solution to the "regional disequilibrium" problem (Solis, 1973).

That is, the promotion of the policy and strategy of regional development within the distributive stage of the country's development is, in essence, the most suitable response (7) and is politically less controversial, considering (amongst other problems) the already infirm overconcentrated megalopolis, the solution to which is in fact a by-product of such policies. Thus, "this can only be remedied peacefully, by means of the true and effective implementation of income distribution policies and regional development which bring about the concept of balance between supply and demand within the objectives of welfare and social justice as stated as one of the fundamental principles of the Mexican Revolution" (Pedrao, 1971).

The regional policy efforts until the present day have featured a general approach which, if it is related to one particular stage in a planning process could be rather successful. Implementation of regional policy represents the most difficult task of any public policy since it has to lie on a unique and well devised coordinated effort. Even more important, it should be related to a higher degree of decentralisation and regional financial autonomy. Until now, the Mexican approach in regional policy, comprising numerous sectoral and spatial measures with institutional innovations, is linked to an instrumental and institutional effort linked to the centralistic type of government, and the new measures are not encompassed in a normative criteria for regional policy coordination within the national growth aims. (8). Therefore, this reorientation is encouraging, though there is still a "weak concern" for regional development as a result of political and ideological constraints.

This new regional policy may be associated also with a national development orientation towards equity, which coincided with a national growth crisis in 1976 stemming from a "deficit public spending" policy and consequently international borrowing pressures. Obviously if we consider the long-run impacts of regional development policies one could

deduce that this crisis did not have direct relationship with the new orientation in policy but it reflected the neglect of highly unfair personal and territorial income distribution structures in economic development.

One of the most important obstacles for the implementation of regional and national development policies is the lack of continuity due to the six year changes in Government policies. This produces preventative political measures and "substitute remedies" instead of an integral structural national-regional development plan which reverses regional and national welfare imbalances among minorities favoured with public policies and large majorities with lower socio-economic and marginal conditions, i.e. "ejidatario" peasants, private "minfundistas", non-skilled workers, unemployed or under-employed, etc.

#### FUTURE AIMS OF A NEW REGIONAL POLICY

Undoubtedly, the long term aims for a new and more consistent regional policy must be related to the short term aims of national economic growth which are complementary and not mutually exclusive (see Chapters 2 and 3). Thus, on the basis of past proposed aims one should consider as future relevant aims the following:

1. The achievement of social equity and welfare. To improve the real purchasing power of the population, raising their living conditions and inducing greater dynamism into the national economy, not only by increasing salaries but by suitable income transfers.
2. Comprehensive industrial decentralisation of the over-concentrated "megapolis". To promote regional development by means of coordinated programmes of investment which would generate greater social marginal productivity than those applied in the already economically congested areas. In effect, the instruments should be

related to an adequate coordination of a public programme of investment in infrastructure. The setting up of public and regional enterprises and incentives to investment.

3. Regional Socio political stability.
4. Regional development as a concomitant of federalism versus centralism.
5. The strengthening of the internal and external market through the rescue of traditional agricultural sectors.
6. The national integration and incorporation of marginal groups to welfare. To increase the income of "ejidatarios" and private farmers, as well as their standards of living, by means of organisations for the production, transformation and marketing of their product and through the application of subsidies and income transfers.

Naturally, one should be aware of the sociopolitical national-regional goals conflict which can be solved through adequate development planning mechanisms.

## 2. REGIONAL STRATEGY BY RIVER BASINS

### INTRODUCTION

To give evidence of regional development by means of a river basin policy is fairly adventurous because the foundations of this strategy were not the result of deliberate and planned efforts or presumably encompassed in a national policy of economic regional development. However, one should define as a relative strategy of regional development by river basins, the evolution of technical and administrative efforts by the Mexican government directing the overall objectives of development towards a regional framework of river-basins. Although this implies a limiting



physical infrastructure criterion in planning, it sets down the primary foundations for more comprehensive future regional and national development planning. This regional strategy was clearly based on water as a guiding national resource among many other constituting factors for a modernisation process of the traditional agricultural regional structure. On a national level, the efforts of the hydrological policy were justified in maximising the benefits of a fairly scarce natural resource, from the point of view of its particular exploitation - water for irrigation, industrial aims and domestic use (In Mexico, in 1960, 90% of water was employed for irrigation, 7.5% for industry and 2.5% for domestic use), as well as specifically social aims, i.e. considering water as a factor of social welfare. The emphasis in irrigation was linked to the interests of a component farming sector representing an important factor in the whole country. However, the important increase of water for industrial and tertiary aims is correlated with the evolution of the development-process where secondary and tertiary sectors predominate over the primary sector. The general guidelines of this policy have been slowly modified in relation to the requirements of the development process. However, the initial orientation towards improvements of farming output totals and the satisfaction of the vital necessities of human activities has been recently reorientated towards multi-objectives, implying their direct inter-relationship with the productive activities of secondary or tertiary sectors. The national scarcity of water resources is also combined with an unequal regional water allocation and an inadequate regional availability of water per inhabitant which is also the result of an unequal distribution of demographic groups throughout the territory. (9).

Additionally, the regional hydrological policy faces restrictive natural-physical factors for its overall success. (10).

## 2.1 The National Features of the Policy

Apparently, these were factors of a political order rather than technical ones which conditioned regional development of the river basins by means of the Water Resources Secretariat (1946) (SARH- Agricultural and Water Resources at present, 1977), preceded by the National Commission of Irrigation (1926) and clearly they featured a logical imitation of the American policies of regional development, particularly the creation of the Tennessee Valley Authority (T.V.A., 1933). (11). Given the regional socioeconomic conditions which prevailed at that period it was inevitable that the public sector should realise some regional policy which might avoid social or political tensions. The direct analysis of the Presidential reports in this period induces one to think of the awareness of public power - although clearly shaded by political factors - about the grave regional imbalances and the necessity for realising judicial as well as economic restructuring policies such as that for farming. (12).

However, to what extent was the social factor characterised as a norm of institutionalisation in the hydrological policy, and what degree of correlation can one establish with supposed "social benefits" in a wide range of marginal groups? Evidently, the social factor of a hydrological policy was not formally established though it was incorporated in the official government position on the matter. This was a product of the growing social demands incorporating large groups of the population subject to inadequate climatic and natural conditions and also with deficient production levels thus requiring a change in the orientation of national policy. Obviously, for such a policy, an 'a priori' national socioeconomic planning did not exist, but rather a political concern about attenuating internal tensions (Barkin, 1970).

It is worth examining the Government's concern in 1951 about the phenomenon of rural over-population and the attempt to alleviate this through dynamic hydrological policy (13) which included industrial aims

and measures to control out-migration originally. However, the particular importance of the above-mentioned policy, lies in its representing the first and most consistent regional strategy, with higher levels of public investment, with a dynamic organisation within the orbit of a national development policy. It is evident that from the prehispanic epoch the water resource infrastructure has played a relevant role in the regional farming structures of Mexico, even when their consolidation as a public policy dates only from 1926.

The importance of the analysis of a regional policy, with hydrological criteria lies in representing the only public policy which has had an impact on the economic development of regional sectors with the very uneven availability of productive factors and with very heterogenous social problems. However, it is even more important to examine whether in the light of the diverse regional development and planning theories examined, this hydrological public policy has attained the appropriate goals, or has contributed to their obstruction, allowing a deterioration of sectoral and regional inequalities and essentially aggravating the dualism of a traditional agricultural sector. The modest aims of this analysis offer us an opportunity to see whether the hydrological regional policy has improved or worsened the serious inter-regional disequilibria by pursuing economic rather than social criteria. Previously, one could detect the existence of two possibilities, although it is more feasible that the said policy should be identified with the classic processes of inter-regional concentration. The "Alemanista" policy which represents the evolution of this policy was closely linked to particular national and foreign interests, as can be observed in different legal modifications. (14). This orientation may also be tested by identifying this policy with one accentuation of social and regional inequalities within the country, and by branching into a strategy of agricultural development

linked to external demand. Additionally, the need to utilise external demand determines an "agricultural" policy favouring large capitalist farming managers, widening their divergence from the "minifundistas" farmers. The essential factors of this agricultural policy may be shown in the following way:

After 1940, but more specifically from 1946:

- 1) The development of agriculture depending more on external forces (demand and supply of inputs) than on the internal market.
- 2) The best lands, those of irrigation, and other resources - capital, labour force, physical inputs - begin to be concentrated in specific regions and in the hands of a few land owners.
- 3) This growth opens the doors to foreign capital which begins a process of control of agriculture.
- 4) Agricultural products constitute the basis of commercial balance in Mexico, on the part of exports.
- 5) The economic policy of the country, and more specifically, the fiscal and monetary policies support the monopolising of land and the exploitation of human labour, contributing to the grave inequalities of income distribution. (Paz Sanchez, 1971).

On the other hand, it is essentially considered that the regional approach of greatest relevance in the 1946-1952 period, should be specifically referred to the installation of executive river basin commissions with ample decentralisation of powers relative to matters of regional and social development. (15). In this way the following executive commissions were created in these six years: (16).

1. The Papaloapan Commission (1947). 2. The River Tapalcatepec Commission (1947). 3. The River Fuerte Commission (1951). 4. The River Grijalva

Commission (1952).

An eminently social justification for the creation of the Papaloapan executive commission was pointed out in this period. (17). In the same way, the Tepalcatepec Commission was created to deal with serious social and technical problems involved in the utilisation of the waters of the River Tepalcatepec and its tributaries. This was to produce irrigation facilities and hydroelectric power, but it was also clearly linked to an all-out effort to improve economic and cultural conditions, for the inhabitants of the basin, thereby creating agricultural and industrial development in the zone. (18). Two other commissions emerged based on the economic and social success achieved by the first. In June 1951, the creation of the Rio Fuerte Commission was ordered and in 1952, the Rio Grijalva Commission was created.

## 2.2 Regional Decentralisation: The Executive Commissions of River Basins

Mexico has made numerous attempts to consider the regional aspects of economic development, through the creation of diverse regional bodies which have mostly fulfilled a spontaneous and temporary function in accordance with the country's historic and political stages of development. Undoubtedly, this is due to the lack of authentic Regional Planning which might have eliminated criteria of a merely intuitive political order at the decision-making level. It also lacked a wide knowledge of the very heterogeneous regional structures which preserve natural or human resources potentials and which also require differential foci in potential public investment. The Executive Commissions for River Basins in fact represent the unique effort systematised in matters of regional development which has denoted levels of importance through the budgets of assigned public investment, the inter-institutional coordination of federal (Secretariats of State), state, municipal and private levels, etc., and

the elaboration of infrastructural plans which have a wide knowledge of the natural environment, although not of the social conditions of the areas concerned. (19). Nowadays, 3 'executive' Commissions are active throughout the country, and their action is developed on an area of 600,000 km<sup>2</sup>, equivalent to 30% of the national territory:

1. Papaloapan Commission; 2. Rio Balsas Commission; 3. Grijalva Commission. Even when they are study or special commissions, it would be possible to attribute a level of "executivity" in the future to other commissions which are acquiring importance within the regional organisational structure of the W.R.S: 1. Hydrological Commission of the Mexican Valley; 2. Study Commission for the Rio Panuco Basin;
3. Commission for the exploitation of the Saline Waters (See Map No. 4.1).

According to the judicial framework, the executive commissions possess by means of Presidential decrees, the characteristics and attributes of true bodies of regional development, even when in fact they have been classified as simple executives of water infra-structure. This takes into account the direct administrative dependence of these bodies on the W.R.S. and their supposed character as decentralised bodies. (20). This is the result of a centralised government which has the capability to replace them by simple irrigation districts. This has been the case recently with some of the executive commissions again being absorbed by the Ministry of Agriculture and Water Resources. Thus, one can see the diverse limitations of a judicial-administrative or organisational nature with which the commissions are faced. These are fundamentally revealed by the lack of regional autonomy preventing rapid and flexible decisions in the numerous and complex basic agricultural problems which require to be solved to achieve adequate levels of spatial and regional efficiency. A particular example, is the lack of powers to deal with the remodelling of the land tenure system which is the essential problem of Mexican agriculture. On the other hand, they might improperly assume powers in

matters of colonisation. In this respect, it has been argued that the integrated river basin programme has been partially related to the programme of colonisation of the Alemanista 6 year period (Cardenas, 1965).

Nevertheless, in spite of the difficulties mentioned above one can note the following advantages in the structure of such regional bodies.

- 1) They have more flexibility than other federal bodies, seen for example, in personnel contracting or in the formulation and modification of programmes.
- 2) They work and coordinate activities in diverse fields, with different bodies and at different governmental levels.
- 3) They overcome the difficulty which they previously had in carrying out one single project which may include diverse fields of activity, and joint participation by different bodies with separate functional criteria.
- 4) They set up problems with an interdisciplinary focus which allows them to find better solutions, by-passing political-administrative divisions which stand in their way.
- 5) They represent a preliminary step in the establishment of planning on a regional level, with which they would later integrate contributing their experience, organisation and specialist personnel.
- 6) Even without a national plan in existence, the regional bodies are useful for assisting regions with specific problems, which will be brought about by the same plan.
- 7) By means of their generalised activities, similar levels of development can be attained with greater speed in different zones.

- 8) The formulation of plans belongs appropriately to the commissions because of their close and continuous contact with the problems and populations in their territories. (21).

Of course this assumes a simple way out, and one should emphasise that without national planning, it is not possible to coordinate investment on a regional level. Furthermore, the success of a regional policy based on the activities of these bodies should not be judged by purely quantitative criteria tied to the growth of aggregate variables such as increments in agricultural output, development of the export base, increases in irrigated areas, etc., but with regional internal foci of a social character which could confirm the improvement in regional welfare within the framework of the geographical unit conceived as the "River Basin". That is to say, the analysis in question could cover 2 levels:

- 1) An intra-regional focus on the progressive improvement in the levels of income per capita in the internal regional structures.
- 2) The contribution to inter-regional welfare and also in relation to the development of the national economy, promoting the reduction of serious regional imbalances.

Throughout the analysis of diverse studies it has been effectively demonstrated that the assignment of public investment by river basins has modestly contributed to an improvement in regional welfare levels, as indicated by increases in agricultural and industrial output, new hydro-electric supplies, more widespread education and higher per capita incomes. One should be aware that the river basins act potentially as homogeneous poles of regional development by virtue of the fact that the water provides an essential incentive as much for agricultural as for industrial development. (22). The latter represents an important point of view considering the unequal regional distribution of water resources and their possible link with true economic poles of regional development.



So, for example, in the corresponding regions of the Coasts of Veracruz and Tabasco, in the Gulf of Mexico, and the estuary of the Balsas, and also in a part of the Coasts of Oaxaca and Chiapas, they exceed approximately 150,000 million M., i.e. 42% of the country's total water resources which might obviate the need to orientating public efforts towards the promotion of industrial and demographic development in these regional poles.

However, one would have to consider carefully whether in fact it has contributed towards equalising the levels of personal income among the most marginal social groups in the river basins, or whether on the contrary, the benefit obtained from the public investments on the part of regional power structures have accentuated even more the economic or social inequalities.

### 3. IMPACT OF REGIONAL POLICIES

Any evaluation of Mexican Regional policies should be related to the administrative-coordinative and complementary role played by the state, due to the national growth constraints in the short run, to assign more public intervention in economic activities. (23). Since there have been no specific spatial policies, a sectoral regional approach would seem more useful for identifying those policies to be evaluated. The Mexican experience comprises mainly of fiscal policy and the granting of industrial credits (though these policies may have national effects) and a physical and regional agricultural policy (e.g. River Basins Policy) although other deliberate spatial measures could be examined, e.g. Northern Borders Fringe Programme or Sydrurgic Pole "Las Truchas". However, it is necessary to consider the impact evaluation indicators given in the second chapter and a benefit-cost analysis of public policies seems of great relevance in setting up the orientation of future policy guidelines (24).

## Regional Industrial Policy

The Mexican fiscal industrial policy does not represent a deliberate regional policy but a national incentive policy with spatial implications orientated to promote industrialisation. Therefore, a regional evaluation should be linked to its locational effects, and a costs appraisal in public policy implementation. Impact evaluation is mainly related to the three policies described in the beginning of this chapter: 1. Local Tax Relief. 2. Federal Tax Relief. 3. Industrial Credits.

Local Tax Relief - The negligible locational effects of these exemptions which can be seen in Table 4:1 are based on the following arguments:

1. Exemptions are granted by all states and are mutually exclusive.
2. Other more traditional factors influence the locational decisions of companies.
3. The loss of scarce development funds for local state.

Therefore, benefits acquired through provincial industrial location and attraction policies are not complemented by local tax policies since tax relief fails to aid national industrial decentralisation. In Central Mexico for instance, "Tax exemption was merely a welcome support, but not an important factor for the remaining companies. From this it is logical to conclude that this factor actually has very little significance in locational decisions" (Lavell, 1970, Ch.4). Costs involved in this policy are related to the loss of state fiscal income (collection) i.e. before the abrogation of the tax relief in F.D., Mexico's state and Monterrey, considerable public funds were being lost (25) which was necessary for local and regional development.

Federal Tax Relief - The application of this instrument was not primarily based on any spatial or locational criterion since it has been linked mainly to a national industrialisation programme in relation to import substitution policies e.g. in encouraging industrialisation. Thus the Federal government grants exemption throughout the republic without

considering different levels of regional development. The majority of granted factories (accounting for 65% of total capital investment and 40% of employment) are to be found in the Valley of Mexico ... as compared to 19 states out of a total of 33 which by 1960, has not received a single exemption (see Table 4:2). Regional distribution of exemption granted for three separate periods, between 1941-1964, resulted in a heavy concentration in Central Mexico and to a lesser degree, in the North (Lavell, 1970). Political factors are seen as the main constraints for spatial considerations in industrialisation policies, even when the importance of some other factors have been emphasised in regional development:

- a) The exempt industries feature the dynamic growing industries with high profit levels because of market size and no competition. They also fall in the capital and luxury consumption goods categories with advantageous technologies probably having high value/added components and high value/weight ratios and also utilising initial high percentages of important materials and component parts.
- b) Therefore, in locational terms, they tend to make locations more attractive at points of importation, or intermediate points between these and the market. A regional location may also favour these companies because there exists administrative concentration. They are also more able to decentralise out of the concentrated area because of their high value/weight ratios and their high value/added component which represents considerable significance in the expansion of employment in provincial centres. Furthermore, if one considers the foreign nature of these companies accustomed to government influence, any introduction of locational criterion may be possible without subsequent conflicts. Any decentralisation policy is also reinforced by the view that foreign companies generally find the

"cheap labour force" as the main international location incentive to settle down in Mexico (26).

Industrial Crediting -- As we know this is operated as a Federal Fund for small and medium size industries. In the light of the fund's aim to aid location of factories outside industrial concentrations, Lavell (1970) attempted an assessment of the changing location of credits granted and the possibility of encouraging regional financing. A marked decrease in the importance of the FD has been reflected in marked increases in only 4 states, i.e. the FD has notably decreased in importance over the last 10 years; between 1961 and 1962 it attracted 48.2% of the credits granted, whilst between 1960 and 1970 it attracted only 22.6% (see Table 4:3). However, the State of Mexico which represents the metropolitan area has increased its tendency to attract credit. The importance of the Fund for regional development policy lies in its aids to industrial decentralisation with a more equitable spread of credits and its assessment of credits distribution. Preferences for decentralised industry depend on the national supply and demand of credit which carries a political connotation (Lavell, *ibid.*).

#### Regional Strategy By River Basins

The Mexican regional development policy is mainly referred to an agricultural orientated hydrological policy of irrigation whose importance lies in representing the only relevant national policy of agricultural promotion and also related to higher levels of public investment in infrastructure. This feature has allowed it to decisively intervene in different regional development contexts. Evaluation of this policy using the aids of Cost-Benefit analysis should comprise not only efficiency aspects but also equity considerations related to income distribution in two regional levels: 1. National and Inter-regional; 2. Intra-regional.

# 1. National and Interregional Level

This aspect comprises on one hand the analysis of the policy from the perspective of its contribution to national economic efficiency, to national output levels and also to national economic development (27). On the other hand, the analysis of its contribution to reduce income disparities in welfare and economic concentration, greater equity in inter-regional income distribution may also be looked at. This is weighted against the costs for public sector in terms of expenditure in socio-economic infrastructure and also the social costs of infrastructural works for the different regions. The impact of the hydrological policy acquires outstanding characteristics, for its participation in the supply of foods for the internal and external markets, the raising of high levels of agricultural productivity and its predominant influence in the industrialisation through hydro-electric supply. An essential objective of the regional policy is its contribution towards eliminating inflation which brings about serious repercussions in the national and regional economies. The essential phases of hydrological works - planning, construction and operation - have been directly related to a policy of large scale irrigation (Table 4:7). This has received diverse criticism through the importance of investment, the lack of rational usage of stored resources, bad location of projects, and the allocation investment in certain more favourable geo-economic regions. This aspect may comprise on the one hand, the impact on national efficiency through examination of increases in physical and value agricultural outputs, amounts of irrigated areas, productivity levels, etc. And, on the other hand, the impact on economic development through exports, labour force transference and capital formation.

Agricultural Output and Irrigated Land - This aspect represents one of the most important contributions to national agricultural output. Comparing different yearly periods one may observe that while in 1930 the cultivated

surface and the value of harvests in irrigated areas represented 0.1% of the national total, the corresponding levels in 1966 were 14% for cultivated surface and 29% for the value of production. (28). For 1975, the irrigated area was 4,750 million hectares representing 28% of the total area cultivated and 75% of the value of the national agricultural output. (29). (see Tables 4:4 & 4:5). The outstanding importance of "large irrigation" in comparison with "small-scale irrigation" (almost 97% for major irrigation in 1972) may also be noted. It is clear that the agricultural richness generated in irrigated districts is great, in comparison to investment and has contributed to national development avoiding the possibility of insufficiency in agricultural production. This impact also gains importance by its direct relationship to anti-inflationary policies of a certain level thanks to the creation of an agricultural supply which may expand on the one hand, the external market, and on the other, reinforce the internal market. As we have seen, nevertheless, the agricultural output gained through irrigation has been spatially concentrated in specific areas such as the North and North West. This is also a result of unequal allocation of public investment. In the same way, a greater concentration of harvested area and annual harvest value of irrigation districts can be found in such traditionally favoured areas as the North Pacific or Central regions (Table 4:6).

Regarding national demand, the contribution of irrigation investment has been very weak because of the increasing demand from a growing population. Even when from 1945 to 1966 the imports of agricultural goods in the national total were reduced from 7.7% to 4.5%, imports of agricultural products have been increasing in direct relation to this growing, demanding population which does not keep proportion with increases in irrigated areas. (30).

Productivity Levels - One could also notice that the greatest levels of agricultural productivity achieved correspond to irrigation agriculture which confirms the official public statements on this policy. In this way, for 1973, the productivity levels in irrigation districts rose to 4,360 pesos per ha., while the rest of the country only reached 1,922 pesos per hectare (see Table 4:5). One should recognise likewise that the higher efficiency levels in irrigated areas are due not only to water availability, but also to adequate supply of credit, technology, fertilisation and agricultural extensionism.

Exports - The contribution of the policy to national economic output through exports of agricultural goods in irrigated areas is fairly clear. The contribution of these areas to total agricultural production from 1964 to 1970 rose to 33.2%, while 2/3rds of agricultural exports are generated by them. The irrigation districts have also shown favourable organisation types such as the "agricultural directive committees" which have been guided by production towards export. In other words, they guarantee cooperation between the production and marketing of products through feasible inter-institutional coordination in the bodies concerned. However, the impact of export-bases towards reducing inter-regional or intra-regional differentials is fairly limited since this aspect may be put within the framework of the national and regional income concentration patterns of the agricultural sector. Additionally, this aspect has also been linked to a dependant type of economy with unjust rates of exchange in agricultural exports. It may also be seen that even when the agricultural sector has been the principal supplier of foreign exchange, its contribution to total GNP has been decreasing, while exports of industrial origin have gained relative importance.

Labour Force Transference - It seems that the contribution of this policy to the retention of the labour force in their own regions has been fairly

limited, due to the fact that in recent years strong migratory currents from the rural to the urban sector have existed, creating grave dilemmas for regional economic policy. However, the hydrological policy interferes in the spatial mobility of labour force which could be summed up in the following way:

- a) Thanks to regional hydrological investment it is possible to minimise the flows of labour force to large urban concentrations, by virtue of more remunerative agricultural employment which raises income levels and sustains regional urbanisation processes.
- b) Within the framework of Lewis' dualistic model (Lewis, 1954) the levels of productivity in both opposite sectors (Agriculture-Industry) could be satisfactorily raised creating a labour force surplus which might be better used in a dynamic urban industry. However, agriculture has provided the urban industrial sector with an over-abundant labour force creating a reserve which has maintained lower salaries. The agricultural labour force represented 68% of the national in 1930, and fell to 51% by 1965.

Capital Transference - It is evident that due to irrigation agriculture the formation of capital in the agricultural sector has been boosted since water has brought about a greater stock of capital per hectare, greater credit levels, mechanisation, extensionism and in general, all kinds of technological innovations. However, following the pursuit of growth policies at "all costs", irrigation agriculture as with the agricultural sector has produced a process of unequal concentration of resources and incomes in the same sector. Various analyses show a greater transfer of resources, of the agricultural sector to the urban sector, providing innumerable benefits for the latter which in general aggravates the structural imbalances and the dependant exploitation of agriculture. At



a regional level similar actions occur if we consider certain poles of urban development which have grown at the cost of a decapitalisation of the agricultural sector and motivated at the same time by a direct relationship with export bases and commercialisation mechanisms which have failed to bring about internal regional development. It was expected by way of multiplier effects that the magnitude of public investment should have contributed to the regional capital formation and an optimum combination with other productive factors. However, one should examine the personal and spatial distribution of those resources, to make evident their channelling and the direct effects on capital accumulation.

#### Public Costs of the Policy: National and Regional Irrigation Investment

This aspect has represented higher costs in terms of national public expenditure and it has represented the most important item of hydrological investment. It has shown a continuous and marked increase, within the total public investment at constant prices from 1926 to 1953, a decrease from 1957 until 1961 and a further noticeable increase from 1962 until 1966. In the last government periods (Sexenios - six years) until 1970 however, there has been a notable decrease in relative terms compared with the past agrarian emphasis in public expenditure. From 1959 to 1973, under the title "agricultural promotion" irrigation investment has represented an average of 14% of total public investment in successive federal budgets comparatively similar to public expenditure in electricity. Nevertheless, it has been inferior to the other types of industrial, communications or social welfare public investment. After 1973 though one can observe a greater average yearly increase rate (Table 4:8). It is interesting to note, however, the negligible importance of hydrological investment within the GDP (Gross Domestic Product). From 1942 to 1954, this fluctuated around 1.1%; in the period from 1955 to 1962 it was reduced to only 0.5%. During the two years 1963-1964, investments in irrigation works were restored to represent 0.9% of GDP. It seems also that due to

the fact that the basins with the greatest potential had already been exploited as well as the slow effect of public works in recent years, the overall investment profitability index continues the downward trend begun in 1962.

Similar to other types of public investment, regional hydrological investment has been guided by economic criteria of cost-benefit project evaluation though with export-base orientation (31). This brought about the strengthening of already developed regions such as the North and North West (North Pacific) and worsening the inter-regional disparities. It has been pointed out that, between 1947 and 1958, of the total large scale irrigation investment, 25% was allocated in Sonora State, 20% in Tamaulipas, and almost 16% in Baja California Norte. Additionally, investments by regional river basins commissions amounted to more than 2,100 million pesos, of which 864 million went to the Papaloapan Project, and 516 million to the Fuerte Commission. Therefore, the most important share in the total national investment went to the Northern and North Western regions with the exception of the investments in Michoacan, Valle de Mexico or Papaloapan in the Central Western, Central Eastern and Southern regions. However, low investments in the South were explained by its generally abundant precipitation though with general drainage problems. In Central Mesa's states there is a conflicting situation for investment since water for irrigation and public services is in short supply and there are physical constraints to the location of projects (Yates, 1965 and Shapira, 1972). Additionally, from total public investment in the six year period 1959-1964 only the regions No. 2 and 9, absorbed 37% and 21% of this total (Table 4:9). The main reasons for the regional distribution of irrigation investments have been explained through the following factors:

1. Physical-geographical constraints.
2. Economic Factors. Regional importance for growing export crops and

supplying domestic demand for certain agricultural products. The North and North West are considered leading areas of agricultural productivity in Mexico (Marino, cited by Shapira op.cit.).

3. Political Considerations. Government favouritism or regional political loyalties to home state, and also the need to reinforce national integration in problem areas and especially in the borders as a way to avoid U.S.A. expansionism (Shapira, 1973).

General Evaluation -- One may notice from the above the way in which the Mexican policy of hydrological investment has evolved to meet the needs of external demand, following the "growth criteria" guidelines of export base theory, the social aims of which from the point of view of welfare are arguable. A complementary aspect may be related to the limitative effects of this approach in terms of regional rural employment. Some effects, however, can be observed in the promotion of real employment through the physical construction of works and the creation of multiple economic activities.

As we observed, there has not been a clear long-run strategy in irrigation investment due to continual changes of public policy. However, the foundations for this policy were set up after 1970 through a national-regional hydrological Plan (Chapter IV). In general terms the irrigation policy following an efficient criterion has contributed to increasing the GNP rates and has promoted the optimisation of one of the scarcest national resources. There has been improved indirect expenditure recovery due to exports or commercial income taxation and thus a secondary contribution to the development of industrial and tertiary sectors. A note of the contribution of irrigation investment to livestock activities through dairy farming basins as well as modernisation processes such as urbanisation, power supply, water culture, tourism and communications must also be taken. However, one could observe that its contribution to

reducing inter-regional disparities and in particular the decentralisation of the over-concentrated core has been rather limited (Chapter III). In an intra-regional level it seems that irrigation investments have accentuated income concentration in dualistic agricultural sectors and reinforcing the advantageous position of industrial sectors.

Thus the main criticism of the policy lies mainly with its low impact towards building more balanced inter-regional welfare levels. Large irrigation projects achieved very low social equity effects, e.g. the Papaloapan Project, even when they set down the foundation for a more comprehensive regional policy. Furthermore, a new type of regional irrigation strategy within a comprehensive regional development planning should include the reorientation of "large scale irrigation" towards a smaller scale (32) within the framework of cooperative economic organisation linked to the development of other sectors such as livestock or secondary and tertiary activities. This policy may feature low cost types of investments through organised hydro-agricultural development units. It may be noted that a negative irrigation policy would represent the growing waste of a fundamental resource for agricultural and national development. On the other hand, a more consistent policy would aid the reduction of social tensions in poor regions and may contribute to reducing migration to the central cores by creating rural employment and reinforcement of the internal market.

Intraregional Level - This aspect comprises the already noted "efficiency" and "equity" levels, transferred to the region itself. Although, in this case the regional export-base orientation combined with urbanisation effects should be pondered with the regional income distribution impact. At an intra-regional level, the benefits derived from an irrigation policy are similar to those at a national level are as follows: (1) increases in regional output; (2) development of a regional export-base;

(3) public services (electricity, communications, drinking water, etc.) and regional urbanisation; (4) regional fiscal collection. The costs for the policy may comprise in economic terms the higher rates of regional public investment covering also social services related to new resettlements as a result of public works. In a similar way as at the inter-regional level, the policy may be justified within an efficient criterion of increasing regional output with an export-base orientation, as one can observe in diverse analysis, but not in relation to intra-regional equity levels because of higher levels of personal and territorial economic income concentration. Thus, contribution of agricultural policy to regional economic growth has been evident though not in terms of economic development. Irrigation has had a considerable impact on urbanisation growth rates (33) in those regions favoured with important irrigation investments which, in turn, has also contributed to regional population deconcentration, e.g. Mexicali, Lower California, had a yearly average urban population growth rate of 7.9% for the period 1930-60, due to the influence of the irrigation district of Rio Colorado. Within a physical classification of river basins in the country as a whole, some of them achieved in 1970 not only high levels of urbanised population but also higher increases of EAP (Economic Active Population) in secondary and tertiary sectors in comparison with temperate agricultural regions (Oribe Alba). In this way, some river basins such as Nos. I, XVII and XXVII registered large urban population concentration of more than 80% with respect to the total for all the basins, meanwhile other basins such as Nos. I, II, VI, XXII, and XXIII registered higher rates of urbanisation (Table 4:10). On the other hand, some basins presented a more favourable sectoral distribution of EAP in terms of predominance of secondary and tertiary activities and also a few basins showed the highest concentration of EAP in all the different sectors (Table 4:11).

Another important effect is mainly related to the regional multiplier effects of hydrological investment demand and public taxation. However, even when there is a regional impact this has been mainly linked to the national growth requirements. Thus, one estimation of the socio-economic regional impact of an investment of 496 million pesos at 1970 prices in one region of the country registered the following results at local, regional and national levels (WRS, Aguilar, 1972).

- a) It produced the expansion of expenditure to 1,941 (2 million pesos) that, is a multiplier effect of approximately 4.
- b) It brought about an increase in savings of 450.7 million pesos, equivalent to 91% of the initial investment.
- c) It contributed an increase of 325.6 million pesos to fiscal resources which represented 65.0% of the original expenditure.
- d) It allowed an increase of 806.5 million pesos in the consumption of goods and services of national origin.
- e) Regionally, the multiplier effect for the "five dams" was distributed in the following way, in the local areas 22.6%, in the states 9.5%, and in the rest of the country 67.9%.
- f) In conclusion, for each invested peso in the construction of a hydrological project an expanded effect of 4.00 is generated through the expenditure in consumption, savings and taxes.

It is considered that apart from direct recuperation, an indirect recuperation exists through the expansion of consumption expenditure, i.e. effective demand, and in the generation of savings and taxes, which permits the government to widen even more public investment and also to

include massive labour force programmes, since, as jobs are created, consumption is created and thus the multiplier acts. The improvement of the internal demand of goods and services by the raising of regional per capita income levels is also perceived (WRS, Ibid.).

A very good example of the intra-regional impact of hydrological investment may be examined in the area of "Tierra Caliente" within the river basin controlled by the Balsas Commission (previously, Tepalcatepec). In this area one can notice a clear example of the true benefits which regional water policies have brought about. The project is small, with a total investment of some 600 million pesos over 20 years, and in an area of only 18 thousand Km<sup>2</sup>. It has been asserted that more than 60% of investment during the first 20 years was channelled into the Tierra Caliente and almost 90% of the expenses were for irrigation works, creating an increase in agricultural production much greater than could have been expected had the Commission not intervened. Between 1950 and 1970 the cultivated area increased 2.5 times, while the irrigation area increased almost 6 times. The value of the agricultural product increased also more than 6 times in terms of constant prices corresponding to 1960. (Barkin, 1972).

However, it seems to be that all economic information about the region makes evident a clear process of quantitative growth linked to the export base, where the benefits obtained in the transition from a traditional sector of agriculture to a commercialised one, go to the classical minorities far from the true regional interests. Thus, regional development has been a process of enrichment and structural change. The regional impact acquired confirms the overall preliminary strategy of national and regional income and investment concentration as noted in Chapter 3. The assumed programmes of regional development evidently do not necessarily facilitate or permit a redistribution of personal income.

On the contrary, they aggravate the inequality of income in favouring within the capitalist process, a greater concentration of wealth and income. It was noted that the great increase in the agricultural production of Tierra Caliente was accompanied by population increases and the concentration of landownership, which facilitated the income concentration process. That is, government policies did not encourage a process of self-sustained growth in the region, instead, they proportioned incentives for the transference of profits to other much more industrial parts of the country. The increase of production for export, was combined with a slight improvement in the living conditions of the area's inhabitants. In conclusion, one can support the argument that the project of the Tepalcatepec basin has channelled the bulk of the benefits to small groups of private investors who already belong to a regional elitist structure. It was not successful in stimulating regional development nor in the reduction of income inequalities, since the regional considerations seem to be secondary and respond to political needs more than to the desire to achieve a regional balance. Thus, "it would seem to be erroneous in basing regional development in the normal evolution of the free market forces. Therefore, power and welfare must be redistributed through a reformulation of the strategy of regional and national development" (Barkin, Ibid.).

#### 4. IMPLEMENTATION OF REGIONAL DEVELOPMENT PLANNING

It is rather difficult to find regional development planning in Mexico because the few experiences with any degree of continuity have been confined to particular efforts of public federal programmes with deep political orientation rather than to a comprehensive approach. The river basins approach is a clear example of this situation though in the last few years it has evolved into a more consistent national-regional hydrological planning which could be the foundations for an overall



regional strategy. One must also take into account the absence of any national planning - although, there are important examples of national growth strategies which may provide the basic framework for the operational integration of the planning process.

#### 4.1 National and Sectoral Planning

National planning has always incorporated a political bias - highlighting its powerful attraction - though its lack of rational comprehensiveness has prevented a successful implementation. It seems that one major constraint for planning is the high degree of public centralisation which requires an approach based on intuition, experience and faith (Carrillo, 1970). Thus, development planning in this mixed type of economy is viewed with a high degree of scepticism, which results in a continuous replacement by partial policies lacking/technical, comprehensive approach. For example since 1933, there have been important modifications in public organisation, resulting in the first and second six-year plans, the National Investment Commission (1947 and 1953), the setting up of the Ministry of the Presidency (1958) (now the Ministry of Planning and Programming) and the First National Development Programmes (1962) which gave rise to the Immediate Action Plan (1963-1965). All these efforts, however, were mainly concerned with investment allocation by productive sectors, representing in other words, simple budgetary expenditure programming. During the 1950s for example the public investment policy was "the maximisation of activity by each individual agency without regard for the others" (Schaffer, 1966). Even though there has not been any national comprehensive planning in Mexico, one could assert that "there is a close approximation to national economic planning" (Glade, mentioned by Shaffer, 1966). The general consensus is that the only coordinative mechanism for development aims is economic planning within a rational and social framework. The efficiency-

equity criterion for attaining greater annual growth rates with improvement of income distribution, must consider the essential need for an overall judicial and administrative reorganisation (Navarrete, 1974).

Macro-sectoral planning has existed in Mexico for a long time, though dispersed among different federal bodies dealing with economic, social or physical approaches. It has been implemented in two inter-related ways: (a) a policy of coordinative control and regulatory activities by diverse federal agencies; (b) through agencies which are clearly labelled for this purpose (Shaffer, 1966), and in general through long-term investment in fundamental sectors at the Federal Government level, public enterprises and credit institutions and in response to urgent crises or needs. The principal sectors of concern have been electric power, petroleum, transportation and irrigation due mainly to government ownership and their major share of public investment. There have also been development programmes in agriculture, manufacturing and chemical production (Shaffer, 1966). There is a general opinion that such sectoral plans overlap their functions and that there is a lack of coordination, particularly in the private sector, but essentially the overall planning process has been characterised by political improvisation.

There are some doubts about the rather limited control taken by the Ministry of the Presidency (in charge of Planning) over these different bodies and agencies. Its efforts mainly cover the coordination of budgetary public investment programmes rather than strict plans. Despite each agency providing sectoral plans, the Ministry has not had the manpower to carry out extensive national planning (Shaffer, 1966). It seems that the Ministry of the Presidency has taken over planning for specific regions which were previously undertaken by other public and private institutions, e.g. this Ministry started focussing on sectoral

planning in tourism and the steel industry incorporating them into other sectoral regional and national plans. Many examinations have been made of the restricted coordinating role played by this Ministry, especially when one considers that coordinating roles have been given to the traditional ministries in charge of national economic policy, e.g. Nacional Financiera (State bank), Banxico (Central Bank), the Treasury (Ministry of Finance) and also the Ministry of Industry and Commerce. This situation was noted during the creation of the Inter-ministerial Planning Commission (1962) for the drafting of national, social and economic development plans, which gave birth to the "Plan of Immediate Action 1962-1964" and the "Programme of Economic and Social Development of Mexico 1966-1970". Thus, coordination has always been constrained by political rivalries among the Secretariats representing political factions within the ruling party. Thus investment policy is framed with a view to 3 factors: 1. National Economic Policy defined by a few ministries; 2. The power position of government structures and Ministries; 3. The relative strength of the different states and municipalities which are important in determining the geographical distribution of public investment (Mirin, mentioned by Shapira, 1966).

#### 4.2 Regional Planning Momentum in Mexico

The idea of regional planning emerges then in the absence of comprehensive national planning and is mainly related to physical and national orientated approaches with a wide range of conflicting goals. It has also been associated with political improvisation rather than long term plans due to changes in government. Regional planning by administrative and regional allocation efforts only came about as a result of the river basins approach, which has become more consistent in recent years through a national hydrological plan. The concern for regional planning in the central government can be traced back to the

functions allocated to the Ministry of the Presidency according to the Law of 1958 (which created this Ministry) though this had strong linkages with the president (Table A). A Planning directorate with regional planning and coordination functions was created in 1959 in this Ministry assuming the roles previously undertaken by other bodies such as the Ministry of Water Resources. By 1968, however, the Ministry's publications showed that it had only taken preliminary action in regional planning. Generally, up until this date, investment evaluations for regional development were based on national socio-economic impact criteria (Shapira, 1966). Within the Ministry, there existed an administrative dichotomy between Planning and Investment Directorates which constrained the coordination of policies (Wionckzek, mentioned by Shapira, 1966). It was only in the last government period 1970-76, that the foundations for a long range comprehensive regional policy were set up. However, the coordination of sectoral and regional plans with financial and administrative decentralisation is still difficult to foresee. In 1976 the National Commission for Regional Development was created and the Ministry of the Presidency (now Planning and Programming) was internally reorganised through the new Regional Development Direction and the Promotive Commissions for States' development as well as through Regional Commissions (Diagram 2).

The main conflict in this "new approach" must be related to the search for alternatives for inter-institutional coordination at the Federal, State and Local levels and also with the private sector. Although duplication or overlapping of public functions - with the subsequent waste of financial and human resources - has been a typical feature of public coordination, the "new approach" has slightly improved this situation. One should however be aware of the possible political conflict which public sector and regional coordination may bring about. Thus,

true regional development planning should include, if not a profound public reform, at least an important judicial reorganisation which allows the decentralisation of financial and public policies at regional and state levels. At the same time, existing agencies such as the river basins commissions, should be able to take advantage of this new regional structure. Until now, the functions of the new promotive committees for state's socio-economic development (Diagram 2) have represented alternatives to state public negotiation against a powerful central government, though they lack financial autonomy for investment allocation according to local needs. It should be noted, however, that up till now the Ministry of Planning and Programming has not held a leading role in coordinating a well defined inter-regional development policy. The new orientation in regional policy, transferring responsibility for public investment allocation to the Ministry of Planning and Programming, instead of the Treasury (Ministry of Finance) and according to sectoral and regional priorities represents a powerful foundation for regional planning. An officially approved regionalisation of the country together with a long term research undertaken by UNO-ECLA aimed at solving the conflict between sectoral and regional investment allocation, gives a favourable outlook in regional planning for the future. The new National Commission for Regional Development may establish a more relevant precedent since it may encompass a re-ordering of regional priorities, taking advantage of powers previously allocated to other bodies. Its actions should be based on a multi-sectoral and multi-spatial coordination at different levels of authority which do not interfere with the different institutions, thereby reducing inter-departmental power struggles and friction between planners and politicians. Future planning must have a regional bias, although without of course losing its links with national and sectoral aims.

Mexico is passing through a phase in its development where it desperately requires the setting up of a real regional economic planning structure utilising valuable past experience such as that gained by the executive commissions of the river basins. Also, in regional research there is a large body of experience on the part of numerous public and private bodies which, in a supposed organisation of regional information, could give rise to the structuring of long term regional development planning. The solution of the efficiency-equity conflict is limited to economic decentralisation which involves the creation of adequate mechanisms for public and private coordination. Public policy is always determined to carry on with higher rates of national growth (especially after the financial crisis of 1976) which may represent a sectoral investment priority, thus neglecting the regional one. A regional focus in policy is basically justifiable in terms of improvement of one of the worst patterns of national income distribution, although it faces diverse political constraints in the decision making process. One should, however, support the view that a more even regional distribution of productive resources through decentralisation represents one way of increasing internal market demand and strengthening the national economy. Furthermore, a spatial strategy would reinforce the feasibility of making productive capacity more efficient in the national economy as a whole. The new national economic policy of focussing on energy resources (oil and petrochemicals), social services and agriculture represents a suitable background for directing a strategy towards depressed areas (since the new discoveries of oil are mainly in the south-east - a typical depressed area of the country). The improvements in state and municipal planning together with a more consistent political consciousness of the centralised national system among the general public are also encouraging.

#### 4.3 Regional Hydrological Planning

It is only in recent years, that important efforts have been made toward integrating regional hydrological planning within the requirements of national policies through a national hydrological plan. They have however mainly focussed on empirical research and coordination at a preliminary stage. The importance of hydrological planning stems from the high proportion of GNP contributed by the primary sector, which up till 1970 accounted for almost 50% of EAP and a high percentage of the underemployed as well as potential export capacity due to the availability of water resources. It has been argued that lack of consideration of hydrological planning has limited the success of national planning attempts such as the "Immediate Action Plan 1962-1964" (Benassini, mentioned in Shapira 1966). Considering the insufficient coordination at the federal and state levels and the need for a local social focus, a river basins strategy through executive commissions could be politically justified. However, in the past, this approach has involved a high degree of centralisation (Shapira, Ibid.).

Examination of the decision-making process of the ex-water resources Secretariat, in relation to inter-agency coordination for the national implementation of policies, is rather important for the setting up of regional planning. Traditionally, planning in water resources has consisted of short and medium-run strategies, featuring an operational orientation, aided by modern project evaluation techniques and project ranking methods like cost-benefit, linked to particular national strategies. Due to its high share of the Federal sectoral investment allocation and its technical expertise, the Ministry of Water resources has a powerful position among the various Ministries in the annual budget negotiations with the Ministry of the Presidency. At present, this situation restricts inter-federal action at a regional level. However, it has made possible an operational coordination within the framework of the

river basins (Shapira, Ibid.). Recently, a powerful step has been made in public sector reorganisation by joining the Ministry of Water Resources with the Ministry of Agriculture, which traditionally overlapped in most of their functions. A preliminary examination has been made of internal evaluation of development projects, regional investment selection and external factors affecting water resource investment. This has taken into account: (1) national and regional goals; (2) a ranking criteria of national resource allocation between "typical regions"; (3) supplementary packages of inputs and operations needed to maximise the economic effects of programmes (Shapira, Ibid.). As a result of this largely economic evaluation of projects and the requirements of international creditors, priority was given to modern, export-orientated agriculture through the selection of some locationally advantageous regions, which in turn strengthened managerial capacity in these regions. This situation has obviously reinforced inter-regional agricultural differences.

Although there have been many regional hydrological plans (Northwest, Central and Gulf Plans, etc.) it was not until the 70-76 period that a national hydrological plan was outlined. River Basins Planning was thus introduced into the framework of public sector planning. The National Hydrological Plan (NHP) became the most important research planning body of the WRS and recently made a report of its own progress (IPES-SRH 1975). With regard to regional planning it mentioned that the WRS, by means of the creation of Executive Commissions in some of the country's river basins has succeeded in covering around 15% of the national territory which includes over 40% of the surface water resources as well as more than 40% of the country's total population. This has contributed to the formation of development poles around the infra-structural works especially in the arid and semi-arid areas. To carry out national water planning, the country was divided into 13 regions, taking into account the tested



experiences of WRS as well as other government bodies. The 13 regions were then grouped into 4 zones; the North, Central Pacific, Centre and Southeast Gulf Zones (see Map .2). In relation to future socio-economic developments, the NHP considers the following of prime importance in justifying more investment in Water Infrastructure: a) A demographic national growth of 3.5% annually, estimating (for the year 2000) the population to be around 140 million. b) Greater demand for urban services. c) Growth in agricultural product of 5%. d) Imbalanced distribution of the GNP at sectoral and regional levels. This body is responsible for the execution of National and Regional Water Plans and investment project evaluation. The overall objectives of the long term National Water Plan are related to formulation of a systematic planning process exploiting water resources for the national selection of programmes, projects and policies which contribute to the fulfillment of the objectives of National Socio-Economic Development. The more immediate objectives of the Plan are:

1. Formulation of policies related to the exploitation and control of water.
2. The formulation of alternative programmes of water development for the short, medium and long term.
3. Design of a system of information which covers the immediate necessities and assures a flow of data for systematic planning.
4. The institution of a systematic programme of training and technical guidance.

The coordination required for the implementation of the plan is supposedly achieved through the distinct groups set up within the public administration. Directive Councils of Finance and Public Credit formed by the Secretariat of Presidency, the General Director of National

Finance and that of the WRS who presides in the Council, define at the highest level the policy orientation to be pursued in the elaboration of the plan. The Coordination Committee and the Internal Communications Board within the WRS assures the complete participation of all the bodies concerned, directly or indirectly, in the exploitation of water resources (Table 3).

The national river basin plan apparently outlines its policy in relation to the known geometrical growth of population and the availability of water resources, meaning that the general planning problem in Mexico possesses some peculiar aspects. In effect, economic development and the population explosion have brought about a constant increase in the global and per capita consumption of water, and, at the same time, a decrease in its availability to cover future needs. Based on this information important forecasts are made with regard to the supply and general demand of water up until the year 2000. The NHP points out for example, that in order to maintain a 5% rate of growth in agricultural production, it will be necessary, for the rest of the century, to open around 3 million hectares to irrigation with a million hectares of drainage works. In the North zone, problems of water scarcity are already present, while in the South East they will be using less than 5% of the available volume in that zone. In the Pacific and Central zones, some conflicts in water usage at the regional level are revealed. In regions such as Mexican Valley, Lerma, Lower California there are problems of water scarcity. By the end of the present decade problems will exist in the North East, which could be resolved by means of transferring water from the Pacific to Central Area. Major water and soil reserves are found in the Gulf coast zone and also future crops of sugar cane and rice will probably be changed from arid zones to humid zones (see Appendix 1).

#### 4.4 National and Regional Conflicting Systems of Inter-Institutional Coordination

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Regional coordination through river basins provides a typical example of attempts to decentralise the decision-making process from the central-federal level to the regional and state level. In practice it represents federal coordination in the river basins, since the role played by the regional and state bodies is fairly limited because of the lack of financial autonomy. Similarly, attempts to involve the private sector in regional public coordination are unsuccessful in practice; as one can imply, the Ministry of Water Resources has played a leading role, as a result of its powerful authority in the physical demarcation of the river basin. The Ministry of the Presidency on the other hand has played a very restricted role even though it has legal powers to intervene at sector and regional levels. This is due mainly to the lack of political power and insufficient personnel and financial resources. One would expect the public sector to maintain a structure compatible with the economic activity of the country. That is to say, that each official dependence or body would have responsibility for a stage of the regional development programme. However one of the most important obstacles to the attainment of the objectives of public and water projects at a regional level is the duplication of functions between different secretariats of state, decentralised enterprises and state bodies (Appendix 2). In the Central Government one of the main reasons for this is the administrative and judicial regulations (Law and Internal regulations for Secretariats of State, and others). The largest irrigation projects are often obstructed by the confusion within and between the government development agencies with respect to their functions.

The executive power today consists of 17 Secretariats of State, and numerous departments of State, decentralised and state participation

enterprises and to achieve a regional water project a wide range of additional bodies participate in regional coordination. (The new public bodies for regional development in the period 1970-76 should be considered, as well as those from the private sector) (Table 1). The serious bureaucratic problems and excessive centralisation of the Secretariats and state agencies in decision making at a national level represent another of the main obstacles to regional development due to their lack of knowledge about regional and local problems. The absence of a two-way (horizontally and vertically) coordination between the different bodies is one of the principal reasons why regional development plans are impractical and unrealistic in developing countries. Consequently the following features are generally found in the efforts of the coordinating authority for hydrological regional development:

1. There is no single unit of integral regional planning with overall control. Instead, the water resources agency may induce regional development, by making clear the multi-purpose perspectives of water projects.
2. The political aspects are considered, to a certain extent, exogenous, and also predictable through certain behavioural indicators towards the irrigation works.
3. The inter and intra-institutional relationships, as points of departure for the system, are not clearly defined.

Thus the need to reduce overlapping justifies a re-organisation of functions of the main federal bodies and a demarcation of administrative boundaries. One should also emphasise the need to abandon an exclusively river basins orientation in favour of a wider central agency with federal, regional and state coordination in which the Ministry of Planning and Programming would logically assume the coordinative role.

## 5. A PROPOSAL FOR REGIONAL DEVELOPMENT POLICY AND PLANNING

Any practical proposal for a regional policy in Mexico, should consider the socioeconomic and political barriers given by the framework of a mixed economy. The essential role of the public sector for a more decisive management of strategic economic sectors should be emphasized, combined with a comprehensive and long-run inter-regional development policy (see Chapter 2) which contributes to national aims. In this context, the most important policy tools are national fiscal measures; taxation and public expenditure controls, and legislation favouring overall decentralisation. Formulation of an adequate regional policy requires the selection of strategic sectors with inter-regional and intra-regional aims (according to a regionalisation of 8 macro-regions), though one would be inclined to suggest that the former be given priority.

There is an essential need for a consistent administrative reorganisation of the public sector for planning implementation and control, combined with a decisive effort from political and judicial organisations for decentralisation of decision making. This involves the application by the MPP (Ministry of Planning and Programming) of an inter-regional investment model of a linear programming type (such as that of Carrillo in 1970, op.cited. see bibliography) which combines the sectoral aims of national development policies with those of regional character. Hence, an accurate regional differentiation (such as the typology suggested in Chapter 2) would serve the purposes of regional policies and their instruments. Tax and expenditure policies, their direct and indirect spatial effects should be considered in relation to inflationary trends. The creation of regional employment and choice of appropriate policy instruments should not interfere with the long run national development aims although in the short run downward trends are possible. Incentives through direct and indirect taxation policy must incorporate a spatial

dimension which considers the need to allocate new industries and regional and local government resources in less congested areas. This could be complemented by a devolution of financial autonomy to the state government allowing a more balanced sharing of total public expenditure.

Advantage should be taken of national policies with spatial implications, i.e. fiscal-industrial and river-basins policy to try for a more comprehensive approach. In the fiscal-industrial policies already examined (Chapter 4, part one ) it was suggested that local and federal tax relief and industrial crediting, are required to pursue a spatial orientation for economic decentralisation. The local tax relief should be discriminative in relation to the use of local factors of production, employment effects, and the magnitude of industries in terms of capital or production costs. Introduction of locational criteria in the granting of exemption to new and vital industries should be combined with policies for the promotion of small and medium sized industries. This includes industrial fiscal exemption for those companies locating outside of the large agglomerated cores (Lavell, Ibid.). Industrial crediting should discriminate in the same direction as taxation, and should also include locational controls for large industries, since the small and medium size industries always respond to the development of the former. It also seems necessary to increase regional participation in crediting by improving communication links and ensuring greater procedural efficiency within central government. This would stimulate regional industrial development through identification of the major factors effecting the growth of new, locally generated industry (Lavell, Ibid.).

It would seem that the use of strict controls or cost burdens in the industrial congested core is not politically feasible and may also

result in a reduction of national growth rates. An alternative way of discouraging industrial location in the core in the short run, may be to increase the marginal costs of public and social services (electricity, water, social concessions) which are mostly absorbed by large companies. But in the long run, provisions should be made to incorporate more restrictive locational controls upon economic activities in the congested areas. This approach, which means an orientation toward increasing production costs, may be complemented with progressive taxation on companies whose location aggravates the environmental pollution in the Federal District. Furthermore, spatial fiscal incentives should also be applied in low developed states or regions to attract high value added industries which use more labour force.

To complement this, general federal subsidies in the megalopolis and urban-infrastructural investment could be reduced. In addition, effective locational control of public investment may reinforce incentives for new regional centres in peripheral areas. However, discrimination against urban growth aims of MAMC must avoid national-metropolitan political conflicts and deterioration of urban infrastructure (Unikel, 1975). Another possibility would be to utilise federal taxation to discriminate between different types of industries in terms of number of employees or area of land owned by the companies. All these measures have already been proposed (Yates, 1960, Unikel, 1975) but they have never been implemented.

### Decentralisation

All these diverse measures, however, must be part of an overall national and regional development strategy, featuring economic and social decentralisation as a crucial aspect of regional development. Basically this involves an attempt to decentralise the decision making process and is the only way of balancing the serious inter-regional differentials in

returns to productive factors and rates of unemployment. Decentralisation should be linked to the continuity of national economic growth rates with greater equity of personal and regional income distribution patterns. Further, it involves a strategy of industrial diffusion, following the "work to the workers" approach, as a relevant instrument to face the extraordinary rates of rural-urban migration. Thus, adequate control of productive factor mobility-where labour represents the basic factor - should be directed toward creation of regional employment. At the same time, this requires an improvement in agricultural organisation which would increase marginal productivities of the local labour force. Decentralisation should also include a physical dispersion of administrative, educational and political bodies. The Mexican government has already started decentralising some important public services, but the relocation of the political and administrative bodies of central government is still difficult to foresee. Fiscal decentralisation has already been discussed but more consistent efforts are necessary. Financial autonomy in regional planning bodies would also be required for an overall strategy, i.e. the "river basins" approach should be replaced by the regional commissions of the MPP with greater regional autonomy. One of the essential factors for a successful general decentralisation and regional planning is an efficient coordination of national, regional and state levels which basically requires resolving political constraints. Decentralisation in practice has been seen as an inefficient growth strategy, though one should bear in mind that past sectoral-national approaches have brought with them high rates of inefficiency (excess capacity in public and private sectors). Thus there is no valid argument which would lead us to reject a perhaps rather inefficient decentralistic approach in the short run, especially given that higher levels of social equity may be achieved in the future.



It seems that an overall policy would be constrained by severe political opposition and reductions in national growth patterns. The dilemma between territorial and personal income redistribution may be solved through large subsidies, such as the direct supply of productive resources to the marginal groups, though these may also affect national growth in the short run.

FOOTNOTES

- (1) The alternative for the "hard and soft" lines are given by the dilemma for the short and medium term public investment among productive and social welfare aims.

During this stage of Mexican development (1921-1970) the federal governments have only partially achieved the aims of creating a productive structure which is capable of meeting the needs of the inhabitants within justice and welfare levels (Carrillo, 1972).

- (2) For instance, the "river basins" strategy emerges as a national concomitance of industrialisation since it is required to satisfy the essential needs of the internal and external markets as well as supply electric power to increase the per capita national product as quickly as possible. External demand on the other hand is the most important variable of Mexican regional development.
- (3) The upper limit has everywhere risen from its original 3.5 m pesos and the lower limit has been reduced from 50,000 pesos, except in the case of industry locating in areas of "industrial concentration" where it has remained at the original level.
- (4) The new government which took office in 1977 disbanded the Balsas Commission which was absorbed by the Ministry of Agriculture and Water Resources. This reinforces the "centralistic" feature of the public national system.
- (5) Although this concern has not been based in the past on real regional sociopolitical pressures, one could assert that at present the new reorientation could be governed by ever growing sociopolitical pressures not only from backward areas but also from the developed regions of the country. Even pressures for urban power groups who see in the uninterrupted population concentration in the large cities a worsening of the marginal conditions of the incoming migrants and the resultant danger of aggravating social conflict which may be expressed in a violent way. (UNIKEL, 75).
- (6) Allocation of public infrastructural investment in Mexico State worsens the overconcentration in the central core of Mexico City, and also aggravates income concentration. (UNIKEL, 75). Additionally, many other public decisions at the state level constrain the successful implementation of regional policy.

- (7) To this effect, Carrillo<sup>1</sup> (72) expresses that a new economic growth strategy with regional and personal distribution may represent the only way out to the dramatic national problem of lack of employment and popular purchasing power.
- (8) It could be argued therefore that the river basins policy and fiscal policies of the post war period up to 1970 featured a consistent national regional policy. However, an attempt at a comprehensive policy was not evident until the period 1970 to 1976, when the appropriate government and legal reforms were introduced. Nevertheless, despite these attempts, the lack of intergovernmental coordination, adequate investments and regional autonomy prevented the implementation of such policies and until these problems are overcome, it is more convenient to think of a Mexican regional development concern and not of a decisive and deliberate organised public policy.
- (9) The distribution of Water Resources in Mexico bears no relation to the location of inhabitants of the country, since the S.E., with 7% of the total national area, accounts for 40% of the Water resources and contains only 8% of the population, while the High Plateau in the Northern Plateau with 51% of the territory, sheltering 60% of the population, only possessing 12% of the resources cited. (See Chapter 3 and Appendices I and III.)
- (10) The physical framework of reference shows for example that the mean surface flow of 360 thousand million<sup>3</sup> is concentrated in 70% of the Gulf and Southeast Zone and only 2% in the North Zone. Likewise it accounts nowadays for 120 million cubic metres in dams in operation, dams in construction and in natural reservoirs. In the North this capacity is used principally for irrigation and in the Southeast for the generation of H.E.P. and flood control.
- (11) Naturally, it is necessary to point out that Spain was the first country to conceive of regional development by river basins, through the creation in 1926 and 1929 of the Hydrographic Confederations of the Ebro, Segovia, Guadquivir, Duero and the Eastern Pyrenees which, unlike the regional development bodies created in Mexico (executive commissions) preserved very important features in matters of autonomy, decentralisation, coordination, and a high degree of specialisation. However it is true, that the successes of the T.V.A. were largely responsible for establishing a programme of integrated river basin development in Mexico. (Barkin, 1970).
- (12) Presidential reports. The Presidents of Mexico before the aforementioned work, Vol. III..."the Lic. Miguel Aleman, opening the ordinary sessions of Congress, 10th Sept. 1947.

- (13) Thus in the Presidential Report of 1951 one notes that...  
 "The Government of the Republic is convinced that the large agricultural and hydrological works which they have attained, as well as the growing industrialisation of the country will absorb our excess of rural population, avoiding the emigration of workers to overseas..." Making an assessment of the attainments in the 1946-1952 period, Orive (1970) states that investment destined for irrigation continued at a growing rate. The average percentage of investments in this past 6 years with regard to the total budget of the Federation, was extraordinarily high, 12.5% comparable only to that destined for education and for Public Works and the Communications Secretariats and more than double that for the Secretariat of Defence.

The Aleman Doctrine presupposes that economic development adjusts itself to the norm and that prosperity, which may be achieved, may be divided equally amongst all social classes. The need also to resolve the country's problems in a way which cannot be delayed, for the economic and moral alleviation of the farmers conditioned by the agricultural policy of endowment and restitution of "ejidos", creation of new population centres, colonisation and respect for the authentic small holdings. Aleman's Doctrine, Mexico I believe in you, by R. Lopez, M. Aleman, M., "Four Messages of President Aleman. Mexico, D.F. 1952. Printing Laboratories of the Nation.

- (14) As that of 27 article of Mexican Constitution where the agricultural and livestock unaffected right was affirmed and also the concept of the "small holding" just like the brake on agricultural distribution, and in general the different concessions received by the small hold.
- (15) In this way the examination of the six year period of President Miguel Aleman acquires vital importance in relation to the hydrological regional policy and the factors of social order.

In general, one notices the interest that there is by relating the integral progress of Mexico to the problems of the peasants by pursuing a fundamental objective, viz. the raising of the economic and moral standards for the human element and the increase in the agricultural output. Undoubtedly in the preliminary ideas expounded by the executive, a deliberate social policy in terms of irrigation is barely noticeable. However, this remains implicit in its preoccupation with changing institutional mechanisms through regional development.

- (16) Papaloapan Commission, instituted with presidential consent on the 26th February 1947, published in Official Paper (24th April, 1947). Tepalcatepec Commission, published in Official Bulletin, 17th July 1947. Rio Fuerte Commission created with presidential permission 27th June 1951 by the Federal Executive in accordance with various Secretariats of State and published in the Official Diary 29th August, 1951.

- (17) "It was the government's purpose to promote the integral and harmonious development of the Papaloapan Basin, whose area of 45,000 km<sup>2</sup> covers potentially very rich areas of the States of Veracruz and Oaxaca, compared to those of some small countries... the river constituted a serious and constant threat to the inhabitants of the basin due to its frequent overflowing as in 1944, which caused very serious material damage and irreparable loss of life... Other very important factors which obstructed progress and the lack of communication..." Once these problems are resolved, a great agricultural and industrial zenith would come, with the consequent benefits, not only to the population of the basin, but to the economy of the whole country... It was also mentioned that the said Commissions would enjoy ample faculties to dictate all means and dispositions in agricultural, industrial and social matters with the aim of achieving, within the basin, the integral and harmonious development of natural resources, including MAN, as the most valuable resource, whose social and economic betterment was the final objective of the work of the new body. (ORIBE ALBA, 1970).
- (18) It is worth emphasising the stress laid on a social thesis by these first commissions, when it was expressed that "... Man, the final objective of the work of each commission, a fundamental link in the chain for the exploitation of the natural resources of each basin, ought to improve not only in the economic sense but also culturally and socially..."
- (19) Among the functions of the said Commission, integrated through the Subsecretaries of Industry and Commerce, of Investigation and Fiscal Execution of the Secretary of Finance and Public Credit and of the Secretary of Agriculture and Livestock, are those of researching analysis and execution or proposal of measures which tend to promote economic development of the area.
- (20) Coincidentally, Cardenas (1964) expresses that "... the programmes of regional bodies (executive commissions) have a strong influence on the secretariat to which they belong (WRS), in spite of the fact that in theory, there exists a coordination, a planning of a national order through the Ministry of Presidency..."
- (21) Completing an apologetic vision of the activity of these bodies, Barkin (1970) points out "that the commissions of the river basins have offered a form of planning and coordinating public expenditure in a region in which it was difficult to do this by means of the secretariat and state government, apart from the economic convenience of the investments to obtain a more efficient use of water, so scarce in some parts of Mexico, and so abundant in other parts.
- (22) Referring to this point Buenrostro asserts that "the use of water resources for irrigation, cannot be separated from the exploitations of water for other uses, nor for other social purposes, economic or infrastructural, since the interactions produced in varying degrees should be considered in each case.

- (23) The supporting view for strong public intervention into regional aims may be found in the Works of Holland, "The Regional Problem" or "the State as a Public Enterprise".
- (24) Unfortunately, regional statistical data could not be collected, i.e. employment, which may have reinforced our analysis. The theoretical constraint is given by cost-benefit approaches linked to "efficiency" criteria in public policies, neglecting, on the costs side, the impact on income distribution and social inequity patterns.
- (25) And it was also proved that the elimination of the tax relief would lead to low inflationary effects and profitability levels.
- (26) For instance, Holland in "Regional Problem..." points out that Multinational Companies have estimated that the force factor cost in a country like Mexico represents 1/5 of a similar one in a European (or elsewhere) market.
- (27) Towards defining the impact of the hydrological policy in Mexican regional development, we will take as a basis the ideas expanded by Johnston and Mellor explaining the contribution of agriculture to economic development, in accordance with a classic 2 sector model:
1. Economic development is characterised by a substantial increase in the demand for agricultural products; the failure to expand the supply of food to the rhythm of growth of demand may seriously obstruct economic growth. Apart from the autonomous changes in demand, supposedly of limited importance, the annual rate of increase of demand for food is given by  $D = p + ng$ , in which "p and g" are the growth rates of population and the per capita income, and "n" is the income elasticity of demand for agricultural products.
  2. The expansion of exports of agricultural products may be one of the most promising means of increasing income and Foreign Exchange particularly in the first stages of development.
  3. Transference of labour force in agriculture to non-agricultural sectors. That the greatest part of the labour force for the growing sectors should withdraw from agriculture in the first stages of development represents a grave problem owing to the fact that no other source of labour exists.
  4. Agriculture as a dominant sector of an underdeveloped economy may and ought to make a net contribution to necessary capital for fixed investment and for the growth of a secondary industry.

- (28) This also means, that in contrast, the participation of cultivated surface in temperate areas was reduced from 99.9% in 1930 to 86%, and the production value from 99.9% to 71%. These figures enable us to conclude that the agricultural production in irrigated lands has achieved greater advances than those of temperate agriculture.
  
- (29) It is interesting, however, to observe that in the 18 years from 1941 to 1958 inclusive, 1,922,432 has. were put under irrigation which represents more than 75% of the total irrigated area for 1966.
  
- (30) In fact, it has been assumed theoretically that the irrigation strategy has had important effects in the provision of internal consumption of agricultural products and therefore in the reduction of the imports of such goods and their substitution for durable goods and mainly for production goods.
  
- (31) The bottleneck for the elaboration of a regional development policy is caused by the profitability orientation in public policies and private investment within the framework of a mixed type of national economy; for instance, the Government uses strictly economic evaluation criteria in public investment allocation in the evolution of a regional river basins policy.
  
- (32) Large-scale irrigation is done through public expenditure on impressive dam projects which cover large geographic areas (sometimes the size of European countries) and which also represents power supply plants and other activities. In contrast minor irrigation refers to expenditure on low scale irrigation programmes for small sized areas and low population levels.
  
- (33) The existing relationship between investment in irrigation and the widening of the regional economic base, is fundamentally interesting. One must consider that investment in irrigation may have repercussions of great importance which stretch much further than direct increases in agricultural production, since they can give an impulse to fundamental changes in the economic structure of the regions in which they are found. The increase of agricultural productivity improves the competitive position of the region in national and international markets and combined with the increased quantities of agricultural resources attracted into the region, they will generate growing demands for goods and urban services, stimulating the urban growth of the region. On the other hand, investments in irrigation may be seen as an instrument of regional and urban development policy, and may constitute a powerful stimulus to urban development with a subsequent intensification and widening of the regional economic base. (Crosson, 1973). However, one must maintain a certain principle of inter-dependency in actions relating to irrigation by its direct relationship with other public policies which would obstruct or assist the objectives of public investments in irrigation. The reasons by which potential productivity of the agricultural sector of the region increases, rests on

the fact that the supply of the principal scarce resource, water, is increased and stabilised seasonally by the project, which is exactly comparable to the effect produced in a given labour force in increasing (and improving) the Capital stock with which it is equipped. On the other hand, the following direct effects of investments in irrigation on regional development could be additionally considered:

- a. Increase in productivity of whatever quantity of resources previously employed.
- b. Development of investments and planning of transport projects which will produce higher levels of competitiveness in regional markets by virtues of the low costs of distributing products to external markets of the region.
- c. Development of technology by means of public policies implemented with such an object.
- d. New and expanding opportunities for the employment of resources in urban activities.
- e. The incorporation of modern inputs in the production function will generate opportunities for employing more resources in new activities. (Crosson, Ibid.).



## APPENDIX I: REGIONAL ALTERNATIVES OF THE HNP

### The North and Central Pacific Zone

54% of the harvested land in irrigated districts of the country, is found in the Northern and Central Pacific zones, which account for 29% of the national territory. These zones are made up of the Peninsular Region of Lower California, the North West region and the Central Pacific Region and 10% of the national IGP is also generated there. This is also one of the most important zones of the country. The following medium and long term objectives are outlined by the HNP:

- To intensify the PLAMEPA programmes
- To carry out rehabilitation in Irrigation Districts
- To build new water infrastructures
- To open new agricultural areas to production. Thus by the year 2000, 4,795,000 has. are projected to be opened to cultivation, 692,000 has. to be rehabilitated and 730,000 has. to be improved with PLAMEPA.

All this implies an investment of 18,800 million pesos so that by the year 2000, 1,850,000 has. will be under control. Out of the 4,795 m has. 2,250,000 has. will be harvested with increasing returns due to the rehabilitation works in the present irrigation districts and to the actions of PLAMEPA.

### The Northern Area

This is a typically arid zone. It represents 30% of the national territory and the harvested area in the irrigation districts has practically remained the same in the last decade, due principally to the unavailability of water which has hampered the creation of new irrigation zones.

The following objectives are proposed:

The rehabilitation of irrigation districts.

The improvement of plots of land and the operations of the districts.

Irrigation of live stock production, basically of intensive breeding, the production of fodder for irrigation districts for fattening and milk production.

So for the year 2000 round about 29,450 million pesos will be required of which 12,400 million will represent federal investment, resulting in an increase in the annual value of agriculture of 2,300 million pesos.

#### Central Zone

Comprising 13% of the area of the country, the Central Zone has a mean annual rainfall of 930 mm, which in 1970 supported 3,600,000 has. in temperate agricultural production, generating 63,800 million cubic metres of mean annual surface water flow. Owing to climatic and socio-cultural characteristics in 1970, it represented 53% of the total population, corresponding to 65% of the urban population, making it the most urbanised zone with a density of population four times greater than the national average.

The population prognosis indicated that by not carrying out strong measures of decentralisation, the total population in the year 2000 will be 68 million, 1.3 times the present total population (Diagram 5 - River Basins Commission) of the country. Owing also to the high concentration of economic activity and population, great demand for food-stuffs and industrial inputs from the agricultural sector has arisen which consequently has brought about intensive use of soil, especially in the Lerma and Mexican Valley regions. The economic concentration has meant

a greater demand for water for industrial use, and the population has generated a growing demand for drinkable water and sewage services. Considering the information and problems previously proposed, the following objectives were adopted:

- To accelerate the decentralisation of the Central zone.
- To open to cultivation 61,600 has. more than at present.
- To improve 438,000 has. in plots of land (Parcelas).
- To rehabilitate 361,000 has. representing an investment of 12,400 million pesos.

#### Gulf and South East Zone

This covers 27% of the total national area of Mexico and is a zone containing fertile and semi-fertile soils. This area has a large indigenous population and agriculture is one of its principal activities. The production of this area in 1970 was based on 33% of the national arable land, and 89% of the temperate land.

In the planning of this zone it is estimated that 29,990 million pesos will be invested for the exploitation of 700,000 has. of irrigation lands in the River Panuco Basin and in the Papaloapan and Grijalva-Usumacinta Basins. To promote also the temperate zone of Piamonte besides of the flood control works and supplementary irrigation.

There exists to date approximately 4,500,000 has. of irrigated land from which some 3 million are harvested in the irrigation districts generating 35% of agricultural production in 36% of employment in the sector and 75% of its exports.

For the year 2000 the programmes will allow 4,400,000 new hectares with hydrological water infrastructure which is equivalent to 5,300,000 has. of harvested area. Regionally, the greatest part of these surfaces

are located in the Gulf, South East and Pacific regions.

The contribution to employment of the agricultural infrastructure works will oscillate from 40% to 60% of the EAP of the primary sectors. In production, the contribution will be 40% and besides export surpluses will be available after meeting the requirements for basic foodstuffs and industrial inputs supplies for exportation.

APPENDIX IIGOVERNMENT BODIES INVOLVED IN REGIONAL COORDINATION FOR PLANNINGSecretariats of State (Federal Level)

Secretariat of Agriculture and Water Resources

Secretariat of Communication and Transport

Secretariat of Commerce

Secretariat of Public Education

Secretariat of Industry and Commerce

Secretariat of Public Works and Human Settlements

Secretariat of Patrimony and Industrial Promotion

Secretariat of Planning and Programming (Ex-Ministry of Presidency)

Secretariat of Health and Assistance

Decentralised Bodies and Enterprises of State Participation

Syderurgic "Las Truchas"

Federal Commission of Electricity

National Commission of Population Subsistence

National Institute for the Indigenous Population

National Deposit Warehouses

National Institute of Agricultural Research

National Consultative Commission for Fisheries

National Commission for Fruit Cultivation

National Fund of Common (Ejidal) Promotion

National Commission for Sugar

Mexican Institute for Coffee

National Producer of Seeds

Mexican Forestry Products

National Commission for Minimum Wages

Mexican Institute for Social Security

Guarantee Fund for Promotion of Medium and Small Industry

Official Credit Bank

National Bank of Agricultural Credit

National Bank of Cooperative Promotion

Bank of Mexico (Guaranteed Funds for Promotion of Agriculture, Livestock and Poultry Farming)

National Financier S.A.

National Sugar Financier S.A.

National Fund of Common Ejidal Promotion

National Agricultural and Livestock Insurance

(Federal Level)

National Commission of Regional Development

Employment Analysis Group

Pider

National Urban Development Commission

National Hydrological Plan

(Regional Level)

River Basins Commission

Papaloapan

Panuco

Grijalva

Fuerte

(Balsas Was Liquidated in 1978)

Federal Regional Commissions

Tehuantepec Isthmus

Arid Zones

Metropolitan Mexican Valley

(State Level)

State Governments

Promotive Commissions for States' Development (33 States)

MAIN OVERLAPS OF PUBLIC PROGRAMMES AT A REGIONAL LEVEL

1. Rural farming training
2. Programme for colonisation
3. Programmes of small irrigation
4. Work and Social Promotion
5. Storing of Production
6. Achievement of technical studies of the sector (socio-economic, social)
7. Rural distribution
8. Generation of electrical energy
9. Problems of soil occupation
10. Drainage and drinkable water services
11. Construction and conservation of roads and bridges
12. Commercialisation Plans
13. Official Statistics
14. Public Works in general (construction)
15. Extensive Farming
16. Services of agricultural defence, livestock and farming sanitation
17. Farming organisation of production
18. The Execution of Loan and Subsidy Credits
19. Investigation and Farming Experimentation
20. Coordination
21. Public Sanitation



APPENDIX NO. III    GENERAL PHYSICAL FRAMEWORK OF A REGIONAL HYDRO-  
LOGICAL POLICY.

- (1) The mean annual volume of rainfall on the country is  $1481 \times 10^9$  cubic metres equivalent to 755 mm.
- (2) The considered irrigation requirements by geographical areas,
- |   | %    |
|---|------|
| Area in which irrigation is indispensable | 62.8 |
| Area in which irrigation is necessary     | 31.2 |
| Area in which irrigation is desirable     | 4.5  |
| No need for irrigation.                   | 1.5  |
- (3) The total volume of surface water is 355,936 million cubic metres on average (less than 25% of the mean annual rainfall in the country).
- (4) 68% of the total land surface is taken up by plains and valleys.  
17% is mountainous and 11% of intrazonal lands.
- (5) Mexico's territory is classified in the following way:
- |                              | %  |
|------------------------------|----|
| Grazing in mountainous lands | 35 |
| Forestry area                | 34 |
| Arable land                  | 15 |
| Grazing in plains and ridges | 8  |
| Useless surface              | 8  |
- (6) The cultivation and arable area which, with existing technology, is economically viable nowadays is around 29.3 million hectares.
- (7) In the WRS, at present, it is considered that although 30 million hectares could be irrigated "with the mean annual volume of precipitation in the country", the physical limitations cause them to be reduced to 8.2 million hectares". To this area can be added 3 million

hectares with underground water making a total of 11.2 million hectares, as the maximum area capable of irrigation in Mexico.

Sources: Orive, A. 1970 op. cited. (see bibliography).

[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Federal Tax Relief																		
Industrial Crediting	National	X			X								X	X				X
Northern Frontier	Regional	X			X								X	X				X
Border Fringe & Free Zones	"	X		X											X			X
REGIONAL PLANS																		
Northwest	Regional SPP/INTER S	X			X								X	X				X
Quicot	"	X			X				X								X	
Hontalpa	"	X			X								X	X			X	
Exocco	"	X			X				X				X	X			X	
Agostura	"	X			X				X				X				X	
Axaca	"	X			X				X								X	
MEXICO : TYPES OF REGIONAL POLICIES (PART 2(1) : REORIENTATION IN REGIONAL POLICY AFTER 1970)																		
State Industrial Pre-Investment Funds	States NAFINSA X	X			X								X					X
National Industrial Promotion Funds	"	X				X							X					X
Trust Promoted Industrial Parks and Cities	" SPP/NAFINSA	X			X									X				X
National Urban Development Commission (CODURPA)	Urban PWS	X		X										X				

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
5. Employment Analysis Group (GEPE)		x		x								x		x				
5. National Hydrological Plan (PNN)		x			x											x		
7. INTEGRAL PROGRAMME																		
Rural Development (PIDER)		x			x													
Arid Zones Commission		x		x					x									
Tehuantepec Commission		x		x				x		x			x	x			x	
Promotive Committees for State Socioeconomic Development		x			x													
Administrative and Fiscal Decentralisation		x			x			x						x				
DEVELOPMENT POLES																		
Tehuantepec		x		x					x					x				
Las Truchas				x						x				x				
Lower California		x		x					x	x				x				
Jurica-B. Jua.		x			x					x			x					
Ind. Corridor (JAL/NAZ/NAT.)		x			x								x					x

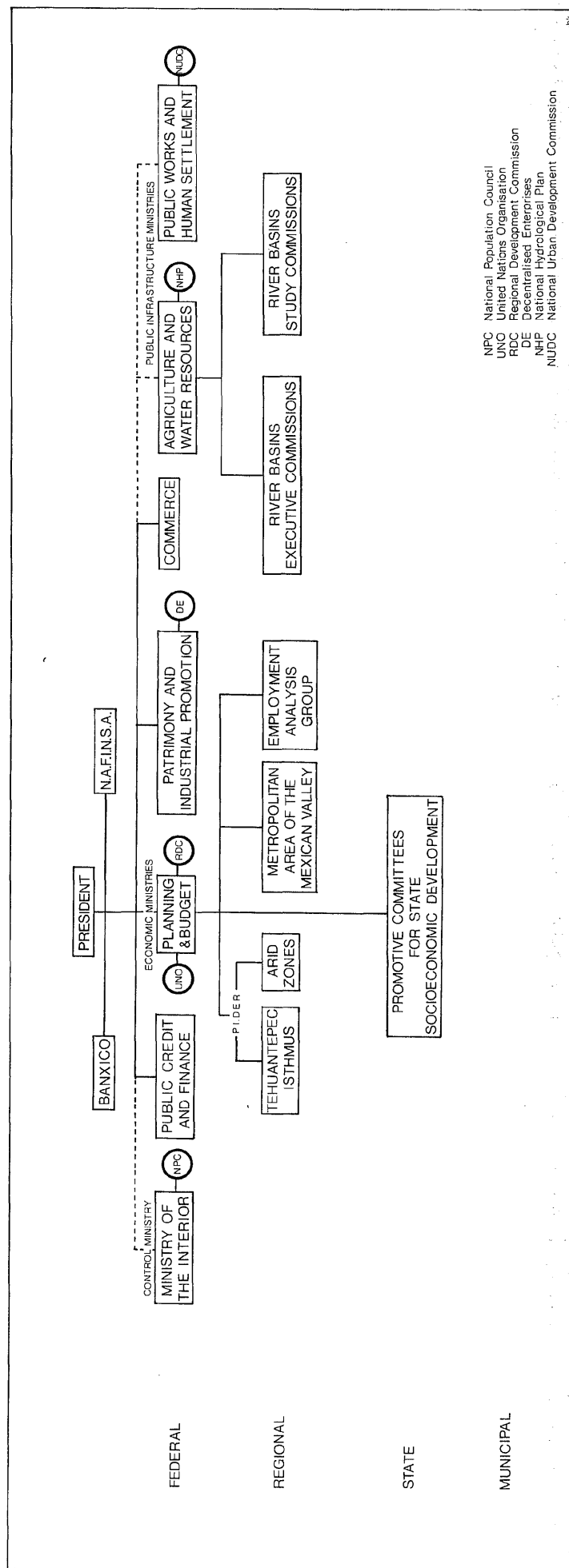
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
10. Educational Programmes																				
Chontalpa	Regional	x	x			x									x		x			
Tarahumara	"	x	x			x				x							x			
Huichol	"	x	x			x				x							x			
Mezquital	"	x	x			x				x				x			x			
MEXICO : TYPES OF REGIONAL POLICIES (PART 2(ii) : COORDINATION OF REGIONAL POLICY AFTER 1970)																				
1. National Population Council (CNP)	National	x					x						x		x					
2. National Coordinating Commission of Ports	Regional																			
	PWS & NS	x				x														
3. Regional Development Direction	National/Regional																			
	SPP	x				x			x					x	x			x	x	x
4. National Commission of Regional Development	National/Regional																			
	INTER-SEC	x	x			x			x					x	x			x	x	x

# SOURCES:

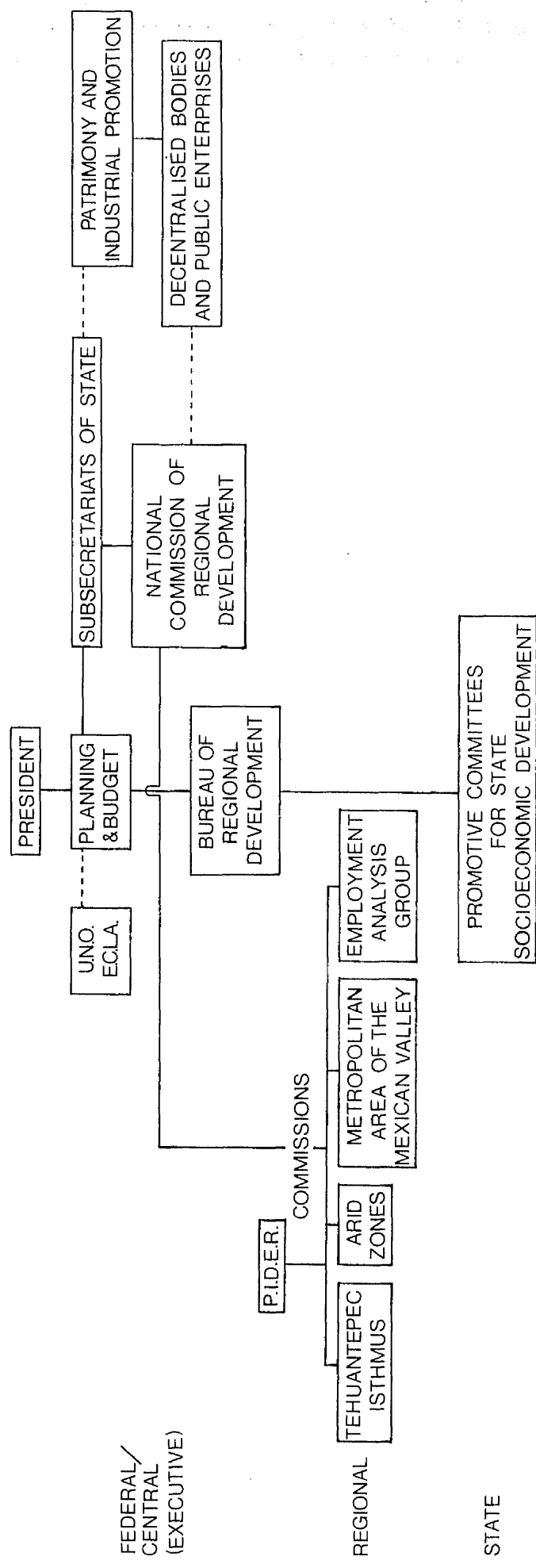
NAVARETTE, I. 1974. LAVELL, A.M. 1970. UNIKEL, L. 1975.

\* Classification of Regional Policies are based on STHOR, W. (op. cited). Regional Development in Latin America, 1972.

- 1 Abbreviations are given by: WRS - Water Resources Secretariat. SPP - Planning and Programming Secretariat. NAFINSA - National Finance S.A. PWS - Public Works Secretariat. FPSC - Finance and Public Credit Secretariat. ISTSA - Industrial syderurgic "Las Truchas" S.A. (Decentralised enterprise). INTER S - Intersecretariat. IM - Interior Ministry. NS - Navy Secretariat.



DIA. 3.1 MAIN BODIES INVOLVED IN REGIONAL PLANNING AT DIFFERENT MEXICAN GOVERNMENT LEVELS.



FEDERAL/  
CENTRAL  
(EXECUTIVE)

REGIONAL

STATE

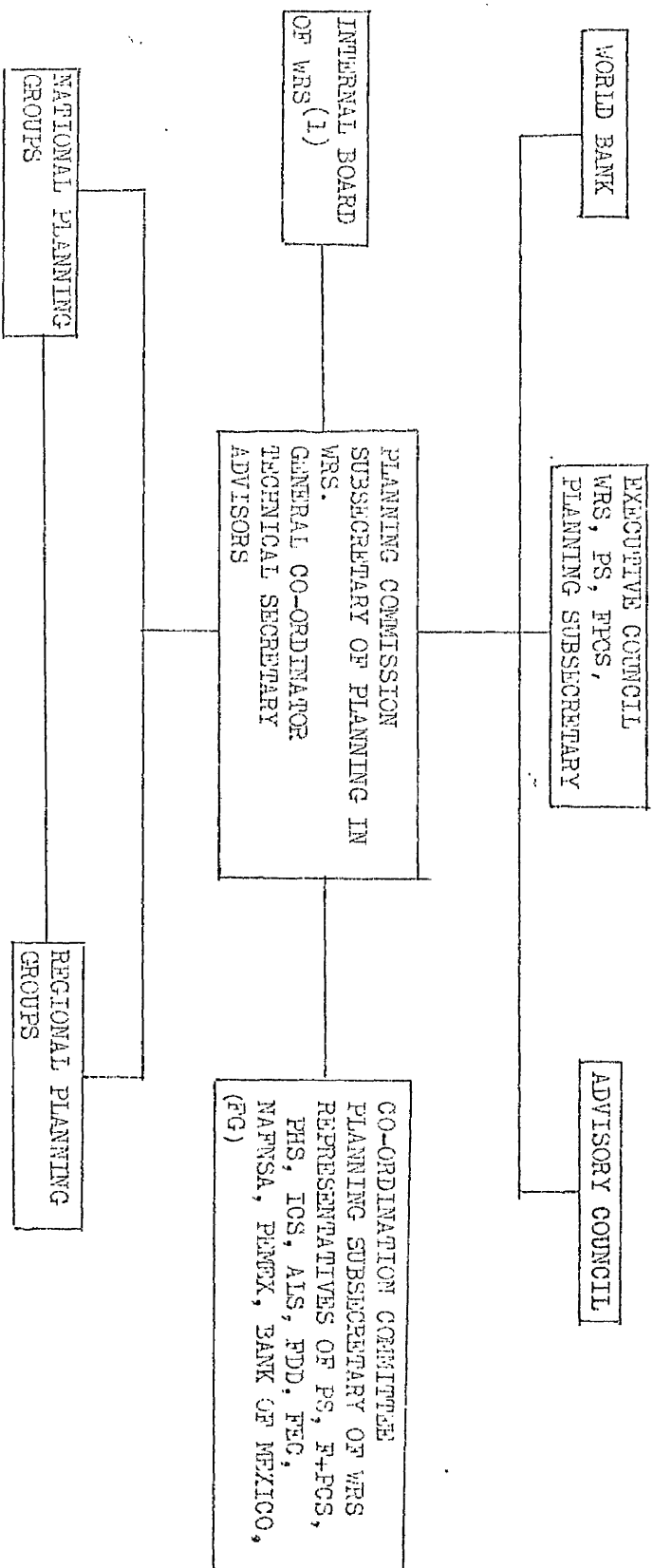
MUNICIPAL  
(DISTRICT)

(ECLA : Economic Commission for Latin America)

DIA.3.2 ORGANISATION FOR REGIONAL PLANNING BY THE MINISTRY OF PLANNING AND PROGRAMMING.



DIAGRAM NO. 3.3 STRUCTURE OF NATIONAL HYDROLOGICAL PLAN



- FHC - Federal Electricity Commission
- FDD - Federal District Department
- FC - Credit Trust
- AIS - Agriculture and Livestock Secretariat
- FROS - Finance and Public Credit Secretariat
- IOS - Industry and Commerce Secretariat
- PS - Secretariat of the Presidency
- WRS - Water Resources Secretariat
- FHS - Public Health Secretariat
- MF - National Finance

1. Integrated by the General Finance Director, the (Treasury) "Oficializa Mayor", the Secretaries and the General Directors of WRS.

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### CONCLUSIONS

At the present, there is no well defined theory of inter-regional development which covers positive, normative and control aspects. The existing theories have to be adapted to the structural features of developing economies. Contemporary regional growth models combined with models of spatial organisation have evolved into a consistent theory of polarised development which has proved its relevance for regional development. This approach requires to be integrated with income inequality models, in particular the centre-periphery model, to provide the main foundations for the elaboration of a definite theory in this discipline.

In developing countries, where the pressures for achieving national development are related to reducing deep regional inequalities, the centre-periphery theory provides the most important tool, in policy and planning implementation. Adaptation of this theory, however, requires besides of a more accurate economic framework, the incorporation of socio-political variables for the specific aims of regional and national development and according to defined ideologies. In this context, considering the institutional and ideological features of some Latin American countries, regional planning without obstructing the national development process is quite feasible. Essentially, this requires a reorganisation of public sectors with a clear demarcation of goals, regionalisation and selection of policies, and instruments in a consistent framework of development planning. The promotion of growth poles and decentralisation of decision-making represent relevant policies to be applied through adequate coordinating mechanisms of planning in these economies. The impact of inter-regional policies and planning using techniques such as cost-benefit analysis should include equity considerations having established a centre-periphery framework in official regionalisation and having devised the relevant policies to be undertaken.

Regional and national development planning should be incorporated using the guidelines provided by an inter-regional development model (such as that of Tinbergen) and within a stages process providing a decisive spatial decentralisation with efficient coordinating mechanisms. The model and its planning implementation however require to appraise sociopolitical variables mainly related to improvement of national income distribution. Mexico presents a good example of a developing country which has achieved a surprising economic growth, though this has been accompanied by a severe concentration and inequity in national income distribution, together with deep regional disparities. The trends of regional disequilibria and the national spatial characteristics up to 1970, confirms Williamson's hypothesis and income inequality models, especially Friedman's centre periphery. The existence of a main central core with 2 metropolitan subcores corresponds to the characteristic features of Friedman's "transitional economies" in a second stage of the regional development process. Since the results belong to an inter-regional approach, one should mention the relative socioeconomic improvement of intermediate states in relation to the wealthiest ones. There is an urgent requirement however, to consider the need for regional and national equity in order to continue with the national development process.

Mexican regional policy and planning have been linked to the overall national strategy emphasising national growth and efficiency. This explains the utilisation of a physical agricultural approach through river basins and a national-industrial policy with neglect of spatial effects. The former represented the most important strategy at a regional level, considering public investment and the first attempt to decentralise administration through executive commissions. Although this policy contributed to the national and regional growth requirements, its effects in terms of economic decentralisation and improvement of patterns of inter and intraregional equity were negligible. The policy also preserved

the centralised character of the public sector and made regional autonomy on the side of the Commissions impossible. This situation made the regional participation of the states governments in the framework of a federalist system, insignificant. National and regional development planning have not existed in the public sector and instead sectoral economic programming together with particular efforts made in regional hydrological planning, have filled this gap. After 1970, changes in the public sector and coordinative and research efforts towards regional planning were introduced. The most important problem however is setting up national-regional coordinating mechanisms with administrative decentralisation which eliminate the traditional overlapping of functions. Inter-regional policy should be directed to control and incentive measures to decentralise the decision-making process, through a deliberate public policy of expenditure and investment in peripheral regions. Importance must be given to the incorporation of an inter-regional development model with policy and planning implications in the public sector. There is a need to consider sociopolitical variables in the planning process to achieve decentralisation in response to peripheral pressures though preserving national economic growth.



M.LITT. THESIS

REGIONAL PLANNING IN DEVELOPING  
COUNTRIES WITH SPECIAL REFERENCE  
TO MEXICO.

STATISTICAL APPENDIX

AUGUST, 1978.

## STATISTICAL APPENDIX

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MEXICO : TYPES OF REGIONAL POLICIES\* (PART 1 : UP TO 1970)

POLICY	SPATIAL IMPACT	INSTITUTION					GUIDANCE SYSTEM					MAJOR ORIENTATION (5)															
		NAME <sup>1</sup>	F	R	S	M	FORM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
RIVER BASINS  missions:  Loapan  as  Alva  Merite  O Valley  O  lapala-Sant  SOCAL INDUS- TRIAL  Tax Relief						Executive Organisations	Organisations for Coordination, Appraisal or Study of Programmes	Non-Institutionalised Programmes	Regional Guidance	Cooperative Regional/ National Guidance	National Guidance	Bi- or Multi-National Guidance	Decision Making of	Depressed Area Development	Settlement Agricultural Based	Settlement Mineral Resource Based	Metropolitan Area Development	Consolidation of other Development Areas	New Growth Pole Development	Border Area Development	River Basin Development	Agricultural	Industrial	Agroindustrial	Urban		
							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	Regional	WPS	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
	"	"					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
	"	"					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
	"	"					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
	"	"					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
	"	"					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
	"	"					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
	"	"					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
National	NAFINSA	x					x																				

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
National Tax Relief		X			X								X	X				X		
Industrial Zoning	Regional	"	X		X								X	X				X		
Southern Frontier	"	"	X												X					
Urban Fringe & Rural Zones	"	"	X															X		
REGIONAL PLANS																				
Investment	Regional	SPP/ INTER S	X		X								X	X						
Port	"	"	X		X													X		
Alpine	"	"	X		X								X	X				X		
Coastal	"	"	X		X													X		
Tourism	"	"	X		X													X		
Agriculture	"	"	X		X													X		
Mining	"	"	X		X													X		
State Industrial Development	States	NAFINSA	X		X								X					X		
Industrial Promotion	"	"	X		X								X					X		
Newly Promoted Industrial Parks Cities	"	SPS/ NAFINSA	X		X								X	X				X		
Urban Development Commission (CODURPA)	Urban	PWS	X		X								X	X				X		

[illegible]





Table No.2.1

## Socioeconomic Indicators of Latin American Countries

	Total Population (Thousands of Inhabitants)	Density (Inhab./ sq. km.)	Percentage of Public		Fiscal Income of Central Government (% of GDP)	Expenditure in Education (Central Government)	GDP Per Capita (Prices of 1960) Dollars	Annual Growth Rate of GDP (Constant Prices)	Price Index (Annual Growth Rate)	Manufacturing as Average % of GDP 1960-1969	Capital/ Product Ratio 1950-1962
			Urban Population %	1970	1971	1971	1973	1973	1973	1960-1969	1950-1962
Argentina	25,384	9.1	66.4		5.7	16.3 <sup>b</sup>	1,141	4.8	60.4	33.7	0.169
Bolivia	5,410	4.9	22.7		7.5	16.8	210	5.4	29.7 <sup>e</sup>	12.7	0.339
Brazil	109,730	12.8	38.5		10.2	6.5 <sup>b</sup>	447	11.4	15.3	23.3	0.359
Colombia	25,890	22.8	43.1		9.3	16.5	407	7.3	23.1	17.9	0.290
Costa Rica	1,994	39.3	32.2		12.0	25.4	569	3.9	-	17.6	0.278
Cuba	9,528	83.2	45.2		-	-	-	-	-	-	-
Chile	10,621	14.0	54.6		20.9	18.6	610	-4.1	352.8	25.4	0.285
Ecuador	7,090	25.1	32.9		10.3	22.5	388	12.7	13.0 <sup>f</sup>	16.4	0.365
El Salvador	4,108	192.0	18.1		10.4	31.3	324	4.0	5.5	15.8	0.418
Guatemala	6,129	56.3	17.7		7.3	18.3	383	7.9	13.9	11.8	0.437
Haiti	5,888	211.8	7.0		5.4	11.3 <sup>c</sup>	87	5.8	22.7	13.1	-
Honduras	3,037	27.2	15.6		10.8	21.3	216	3.3	3.2	14.1	0.318
Mexico	59,204	30.0	35.3		7.9	24.3 <sup>b</sup>	744	7.5	11.3	20.4	0.381
Nicaragua	2,318	17.9	25.3		8.6	18.0	344	2.7	-	11.2	0.321
Panama	1,676	22.2	37.5		12.9	22.7	717	5.9	7.5	15.6	0.444
Paraguay	2,628	6.4	22.5		9.6	14.4	315	5.8	13.4	17.9	0.265
Peru	15,326	11.8	33.4		14.4	20.7	418	5.3	9.5	19.9	0.275
Rep. Dominicana	5,118	105.0	27.7		15.6	15.0 <sup>d</sup>	299	8.9	15.1	13.0	0.224
Uruguay	3,060	16.4	70.2		12.4	26.0 <sup>d</sup>	681	1.0	97.0	21.2	0.235
Venezuela	12,213	13.4	56.7		15.8	18.3	935	8.6	4.4	12.2	0.277
Total	316,352	15.8	40.0		-	-	-	-	-	-	-
Other Countries	4,062	19.3	-		-	-	-	-	-	-	-

Table No.21 (cont.)

a	Urban population in cities over 20,000 inhabitants	d	1970
b	1972	e	Urban, Sao Paulo
c	1972-1973	f	Variations in a period of 8 months

Source: Economic Study of Latin America, 1973, ECLA, UND, Third Part: The Social Change in Latin America in the beginning of the 70s. A study of the Economic and Social Classification of the Latin American countries. Economic Bulletin for Latin America, 1970.

TABLE NO. 2.2

GENERAL TYPES OF REGIONAL POLICIES

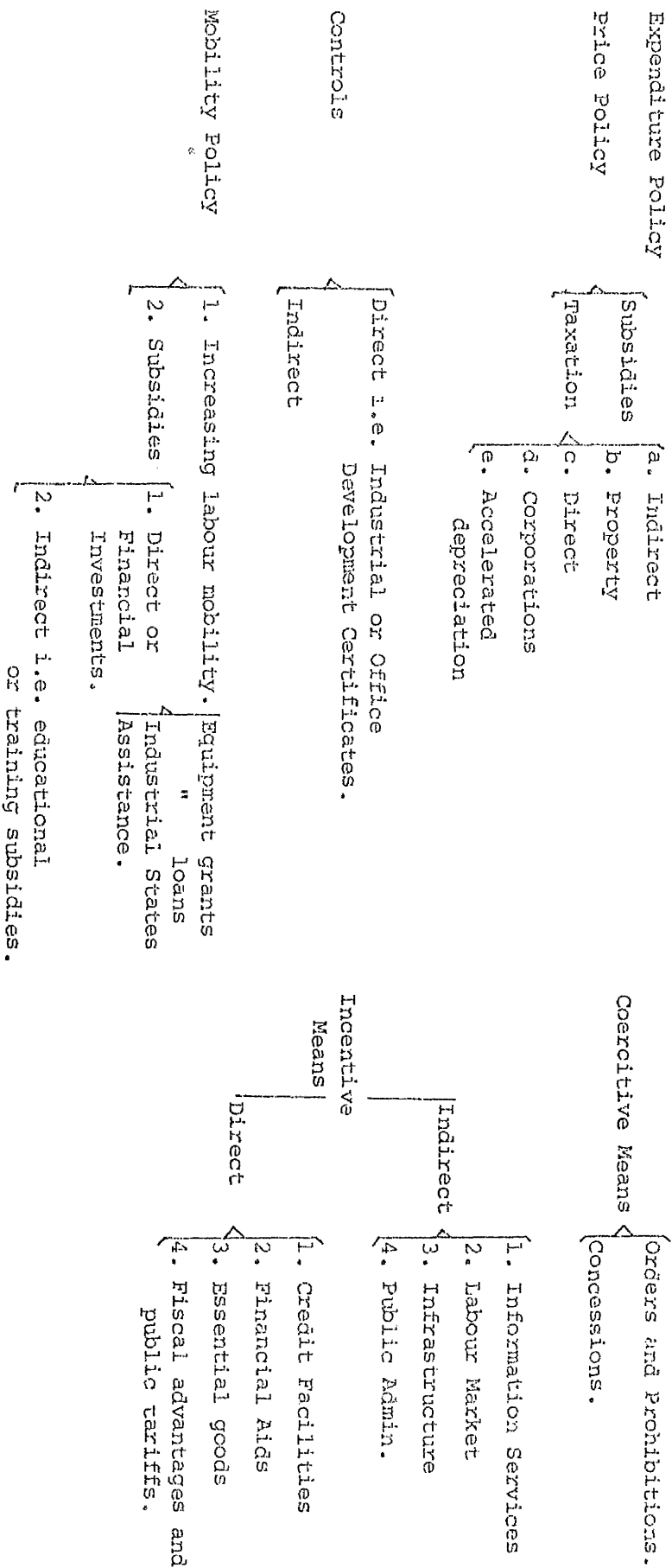
<u>CRITERIA</u>		<u>TYPES</u>		<u>DEVELOPING CONTEXT</u>	
A. Models of Regional Growth and Development.	1. - locational and Spatial Organization Policies. 2. - Neoclassical and Regional Growth Policies. 3. - Export-Base Policies. 4. - Polarized Development Policies. 5. - Center-Periphery Policies.			1. Depressed area policies. 2. Land Settlement and Resource Frontier Policies. 3. Growth Pole Policies. 4. Policies for the decentralisation of Decision Making.	(1)
B. Goals	1. - Interregional. 2. - Intraregional or Monoregional. 3. - Microregional.				(2)
C. Orientation	1. - Workers to the Work. 2. - Work to the Workers.				
D. Contents	1. - Welfare. 2. - Infrastructure. 3. - Employment. 4. - Migration.		<u>DPA</u> <u>V</u> <u>GSC</u>		(3)
E. Instrumental (Fiscal)	1. - Coercitive. 2. - Consultative. 3. - Incentive.				(4)
F. General	1. - Development Poles. 2. - Fiscal Policies. 3. - Industrial Decentralization. 4. - Mobility Policies.				

SOURCE:

- (1) Chapter 1.  
(2) Kuklinsky, (1972).

TABLE NO. 2.3

GENERAL INSTRUMENTS OF REGIONAL POLICY



SOURCES: WILSON, 1964, STILLWELL, 1972, ERICH, F, 1967.

TABLE 2.4.

REGIONAL POLICY INSTRUMENTS FOR A DEVELOPING CONTEXT

1. SUPPLY	a. Returns and Costs of Factors		c. Factor transfers.	
	b. Information on Factors		d. Regional Training	
	Subsidies	Infrastructure	Investments	Subsidies
	Wage Premium	Duty Free Imports	Banks, Inventions, Research	
	Tax Exemptions			
	Natural Resources		Promotion	
	Regional Employment		Integration of Migrants	
	Investment Opportunities		Incorporation of Innovations	
2. DEMAND	a. Demand for Consumption and Investment	Welfare Payments		
		Public Works		
		Federal Supply Contracts		
		Infrastructure		
3. ECONOMIC		Urban Infrastructure Investments	Regional Savings	
		Zoning	Levies (Out-transfers of	
		Transport and Communications Investment	Factor Returns, Export of	
		Technological Assistance	Source Resources)	
			Regional Bonds	
4. SOCIOPOLITICAL		Promotion of Social Structures	Integration of Minorities	
			Delegation of Decision	
			Making Powers	

SOURCE : Stohr, Walter, 1972.

Table 3.1

Internal Gross Product by Sectors, 1970-1976, at Current Prices<sup>1</sup>

	1970		1972		1974		1976				
	Sectoral Share (Mill Pesos)	%	Sectoral Share (Mill Pesos)	%	Sectoral Share (Mill Pesos)	%	Sectoral Share (Mill Pesos)	%			
	A.G.R. 2		A.G.R.		A.G.R.		A.G.R.				
Primary Sector	53,066	12.6	1.2	58,478	11.4	28.1	94,609	11.6	16.9	124,390	10.2
Secondary Sector	135,531	32.4	7.5	168,028	32.8	19.7	276,483	34.0	25.1	425,909	34.9
Tertiary Sector	230,103	55.0	10.0	285,794	55.8	20.2	442,608	54.4	23.0	670,501	54.9
Total S.N.P.	418,700	100		512,300	100		813,700	100		1,220,800	100

<sup>1</sup> Source: Adapted from Mexico's Bank (1977), Annual Report 1976, Mexico, D.F.<sup>2</sup> A.G.R. - Annual Growth Rate

Table 3.2

Family Income Distribution by Deciles, 1950, 1958, 1963  
(pesos of 1958)

Deciles (10% of Families)	Monthly Average Income (1958 Prices)				Income by Groups			
	1950	1958	1963	By Deciles	1950 Accumulated	By Deciles	1958 Accumulated	By Deciles
I	258	297	315	2.7	2.7	2.22	2.22	1.96
II	325	375	356	2.4	6.1	2.80	5.02	4.17
III	363	441	518	3.8	9.9	3.29	8.31	7.39
IV	421	516	598	4.4	14.3	3.85	12.16	11.11
V	460	608	738	4.8	19.1	4.54	16.70	15.70
VI	526	789	834	5.5	24.6	5.52	22.22	20.89
VII	669	842	1,056	7.0	31.6	6.29	28.51	27.46
VIII	823	1,147	1,592	8.6	40.2	8.57	37.08	37.36
IX	1,033	1,820	2,049	10.8	51.0	13.59	50.67	50.10
X	4,687	6,605	8,025	49.0	100.0	49.33	100.00	100.00
5.0	1,693	2,866	3,724	8.8	8.8	10.70	10.70	11.58
5.0	7,679	10,339	12,324	40.2	49.0	38.63	49.33	49.90
Total	957	1,339	1,608	100.0	-	100.00	-	100.00

<sup>1</sup> Each decile represents 510,500 families for 1950; 640,510 for 1958; and 732,960 for 1963.

<sup>2</sup> The last 10% of families at the top of income scale was divided in 2 parts of 5% each.

Source: Navarrete, I. Income Distribution in Mexico: Tendencies and Projection to 1980. The Mexican Economy, Selection by Solis, L. F.C.E., Mexico 1973.

TABLE 3.3 MEXICAN REGIONALIZATION

<u>MAIN REGIONS</u>	<u>STATES</u>	<u>AVERAGE ECONOMIC REGIONS</u>
1. NORTHWEST:	5	17
Baja California		
Baja California Sur.		
Sonora		
Sinaloa		
Nayarit		
2. NORTH:	5	25
Chihuahua		
Cochuila		
Durango		
Zacatecas		
San Luis Potosi		
3. NORTHEAST:	2	10
Nuevo Leon		
Tamaulipas		
4. CENTRAL-WEST:	5	11
Jalisco		
Aguascalientes		
Colima		
Michoacan		
Guanajuato		
5. CENTRAL-EAST	7	15
Queretaro		
Mexico		
Federal District		
Morelos		
Hidalgo		
Tlaxcala		
Puebla		
6. SOUTH:	3	14
Guerrero		
Oaxaca		
Chiapas		
7. EAST	2	7
Veracruz		
Tabasco		

Contd. ...



TABLE 3.3 MEXICAN REGIONALIZATION (Contd.)

<u>MAIN REGIONS</u>	<u>STATES</u>	<u>AVERAGE ECONOMIC REGIONS</u>
8. YUCATAN PENINSULE	3	9
Campeche		
Yucatan		
Quintana Roo.		
	<u>32</u>	<u>108</u>

SOURCE:

Bassols, A. Economic Geography of Mexico. Trillas, Edit.  
Mexico, 1975.

Table 3.4

International Comparison of Inter-Regional Income Inequalities  
(Average Dispersion in Each Group)  
1960-1970

Development <sup>1</sup> Class	$V_w$		$V_{uw}$		$M_w$		$\Delta V_w$	
	1960	1970	1960	1970	1960	1970	1960	1970
Group I	.139	-	.155	-	11.72	-		
Group II	.252	-	.215	-	20.14	-		
Group III	.335	-	.323	-	28.96	-		
Group IV	.464	-	.447	-	38.06	-		
Mexico								
Estimates <sup>3</sup> A	.37	.52	.34	.52	34.0	48.0	+ .15	
B	.63	.87	.45	.62	48.0	63.0	+ .24	
C	.812	-	.974	-	63.3	-		
D	.656	-	1.248	-	54.40	-		
Group V	.292	-	.333	-	22.3	-		
Group VI	.556	-	.627	-	29.6	-		
Group VII	.275	-	.580	-	19.4	-		

Source: Adapted from J.E. Williams on "Regional Inequality and the Process of National Development" Economic Development and Cultural Change XII, Part 2, July 1965, Table I p.12.

<sup>1</sup> Countries can be classified into one of seven levels of development on the basis of their per capita income. Mexico and another five countries belong to group IV of this classification. Kuznets, S., op.cit., Economic Development and Cultural Change, Supplement, July 1957, Table 9, pp.8-11.

<sup>2</sup> These measures of inequality take the following definition:

$V_w$  measures the dispersion of regional income per capita relative to the national average, while each regional deviation is weighted by the share of national population; the higher the  $V_w$  the greater the size

Table 3.4 (cont.)

of geographic income differentials.

$$V_w = \sqrt{\frac{\sum (y_i - \bar{y})^2}{\bar{y}}}$$

$V_{uw}$  is a less useful measure since it is unweighted and so is determined partly by arbitrary political definitions of regional units (whose numbers vary considerably between countries)

$$V_{uw} = \sqrt{\frac{\sum (y_i - \bar{y})^2}{N \bar{y}}}$$

To prevent the inequality measures being unnecessarily sensitive to a few extreme deviations in regional per capita income the results are checked by summing the differentials to the first power, signs disregarded

$$M_w = \frac{\sum_i \left( (y_i - \bar{y}) f_i \right)}{\bar{y} n} \times 100$$

where  $f_i$  = population of the  $i^{\text{th}}$  region

$n$  = national population

$y_i$  = income per capita of  $i^{\text{th}}$  region

$\bar{y}$  = national income per capita

$n$  = number of regions

- <sup>3</sup> Estimates A) Regional gross product according to Bassols, B. (1975) Classification of eight economic macroregions. Industrial agricultural, commerce and service census (1970) of Bureau of Statistics, Secretariat of Industry and Commerce. Also Carrillo, R., "An Empirical Test on Inter-regional Planning", Rotterdam University Press (1970) for Estimation of State and Regional Gross Product of 1960.
- B) Regional gross product based upon official political definition of 32 states - from Census op.cit.

Table 3.4 (cont.)

- C) State gross product, defined by Bank of Commerce.
- D) State gross product, as defined by Secretariat of the Presidency.

Table 3.5

Mexico: Intraregional Disequilibrium Indexes (1960-1970)

	$V_w$		$V_{uw}$		$M_w$		$\Delta V_w$	Size 1000 sq. Km.	
	1960	1970	1960	1970	1960	1970		%	
Inter-regional (International)	.37	.52	.34	.52	.34	.48	+.15	100	
Intraregional									
(I) North West	.25	.26	.26	.29	.22	.24	+.01	21.2	419.0
(II) North	.34	.34	.33	.62	.31	.46	0.00	33.3	656.2
(III) North East	.08	.59	.08	.59	.08	.58	+.51	7.3	144.4
(IV) Central West	.20	.39	.21	.32	.18	.36	+.19	9.2	181.6
(V) Central East	.62	.45	.60	.55	.61	.40	-.17	5.0	98.5
(VI) South	.25	.15	.12	.15	.13	.14	-.10	11.8	233.1
(VII) East	.15	.22	.25	.35	.10	.16	+.07	4.9	92.5
(VIII) Yucatan	.02	.07	.03	.12	.01	.04	+.05	7.2	192.2

Source: Statistical Census of Population for 1960 and 1970

Statistical Census of Industry for 1960 and 1970

Statistical Census of Agriculture for 1960 and 1970

Statistical Census of Commerce for 1960 and 1970

and Williamson: Regional Inequalities in the Process of Economic Development, op. cited.

TABLE NO. 36

SOCIO-ECONOMIC DEVELOPMENT INDEXES FOR STATES AND CHANGES IN THEIR RELATIVE POSITION.  
1940-1970

STATE 1940	INDEX	RANGE	STATE 1960	INDEX	RANGE	STATE 1970	INDEX
1 Distrito Federal	4.712	1	1 Distrito Federal	7.439	1	1 Distrito Federal	8.816
2 Baja California Norte	2.323	2	2 Baja California Norte	4.862	2	2 Nuevo Leon	6.456
3 Coahuila	0.174	3	3 Nuevo Leon	4.577	3	3 Baja California Norte	5.463
4 Nuevo Leon	0.029	4	4 Sonora	3.249	4	4 Sonora	5.135
5 Chihuahua	-0.633	5	5 Coahuila	3.001	5	5 Coahuila	4.907
6 Sonora	-0.735	6	6 Tamaulipas	2.284	6	6 Baja California Sur	4.349
7 Tamaulipas	-0.946	7	7 Chihuahua	1.730	7	7 Aguascalientes	3.923
8 Aguascalientes	-0.978	8	8 Baja California Sur	1.628	8	8 Tamaulipas	3.898
9 Colima	-1.475	9	9 Aguascalientes	1.534	9	9 Chihuahua	3.739
10 Baja California Sur	-1.658	10	10 Sinaloa	0.782	10	10 Mexico	3.645
11 Durango	-1.665	11	11 Morelos	0.478	11	11 Sinaloa	2.779
12 Campeche	-1.760	12	12 Jalisco	0.447	12	12 Jalisco	2.632
13 Yucatan	-1.921	13	13 Mexico	0.419	13	13 Colima	2.141
14 Jalisco	-2.002	14	14 Colima	0.264	14	14 Morelos	2.062
15 Quintana Roo	-2.070	15	15 Veracruz	0.155	15	15 Veracruz	1.911

TABLE NO.3.6 (Contd.)

SOCIO-ECONOMIC DEVELOPMENT INDEXES FOR STATES AND CHANGES IN THEIR RELATIVE POSITION,  
1940-1970

STATE 1940	INDEX	RANGE	STATE 1960	INDEX	RANGE	STATE 1970	INDEX
6 Sinaloa	-2.263	16	Campeche	-0.026	16	Campeche	1.742
7 Morelos	-2.356	17	Durango	-0.064	17	Queretaro	1.609
8 Guanajuato	-2.519	18	Guanajuato	-0.341	18	Guanajuato	1.494
9 Veracruz	-2.585	19	Yucatan	-0.516	19	Durango	1.490
0 Queretaro	-2.589	20	Nayarit	-0.805	20	Tabasco	1.311
1 Nayarit	-2.624	21	Michoacan	-0.957	21	Yucatan	1.204
2 Michoacan	-2.864	22	Queretaro	-0.982	22	San Luis Potosi	0.683
3 San Luis Potosi	-2.943	23	San Luis Potosi	-0.994	23	Puebla	0.620
4 Hidalgo	-3.055	24	Puebla	-1.068	24	Michoacan	0.610
5 Mexico	-3.116	25	Tabasco	-1.414	25	Hidalgo	0.523
6 Zacatecas	-3.124	26	Guaxcala	-1.427	26	Nayarit	0.376
7 Guaxcala	-3.221	27	Hidalgo	-1.492	27	Guaxcala	0.234
8 Puebla	-3.308	28	Zacatecas	-1.750	28	Zacatecas	-0.287

TABLE NO. 36 (Contd.)

SOCIO-ECONOMIC DEVELOPMENT INDEXES FOR STATES AND CHANGES IN THEIR RELATIVE POSITION,  
1940-1970

STATE 1940	INDEX	RANGE	STATE 1960	INDEX	RANGE	STATE 1970	INDEX
Tabasco	-3.654	29	Quintana Roo	-1.882	29	Quintana Roo	-0.320
Chiapas	-3.792	30	Chiapas	-2.566	30	Guerrero	-0.400
Guerrero	-3.924	31	Guerrero	-2.577	31	Chiapas	-1.037
Oaxaca	-4.150	32	Oaxaca	-2.950	32	Oaxaca	-1.226

NOTES:

Directorate of Planning Formulation, WRS; Agricultural, livestock and Fjidal Census, ICS; Statistical Annuaries ICS; General Bureau of Power Supply ICS; General Census of Population, ICS; National Plans of Agriculture, livestock and Forestry, AIS; Gross States Product, Commerce Bank, S.A. (Where WRS is the Water Resources Secretariat, ICS is Industry and Commerce Secretariat and AIS is Agriculture and Livestock Secretariat).



TABLE NO.3.7

SOME MEASURES OF SOCIO-ECONOMIC CONCENTRATION IN THE FEDERAL DISTRICT OF MEXICO, 1930-71

INDEXES		1930	1940	1950	1960	1965	1967	1970	1971
Percentage of Total National Population		7.4	8.9	11.8	13.9	14.6	-	16.4(a)	-
"	" " Public Investment (b)	-	-	-	-	19.9	23.1	26.1	23.0
"	" " Urban Migration	-	-	49.1(b)	42.0(b)	-	-	-	-
"	" " Active Population	-	9.4	12.5	15.5	-	-	-	-
"	" " National Employment in Services (c)	-	32.5	34.2	36.7	-	-	-	-
"	" " " Commerce (c)	-	24.9	26.9	28.8	-	-	-	-
"	" " " Manufacturing Industry	28.0	-	28.6	37.5 (47.2) (d)	36.4 (45.4) (d)	-	-	-
"	" " Value of Manufacturing Product	24.6	-	30.3	35.4 (49.4) (d)	33.9 (45.5) (d)	-	-	-
"	" " Total National Bank Deposits (e)	-	-	-	-	43.6	-	-	-
"	" " " Private Bank Deposits	-	-	-	-	-	43.6	-	-
"	" " National Bank Loans (f)	-	-	-	-	60.6	-	-	-
"	" " Investment in Higher Education	-	-	-	-	62.6	-	-	-

TABLE NO.3.7 (Contd.)

SOME MEASURES OF SOCIO-ECONOMIC CONCENTRATION IN THE FEDERAL DISTRICT OF MEXICO, 1930-71

INDEXES	1930	1940	1950	1960	1965	1967	1970	1971
Percentage of Total GNP	-	31.5	29.7	34.7	36.2(a)	-	-	-
GNP Per Capita	-	7922 (2252) (g)	8375 (3340) (g)	10,963 (4413) (g)	-	-	-	-
Welfare Index (n) (National Ranking)	-	1	1	1	-	-	-	-

SOURCE: Lavelle, A.M. "Regional Industrialization in Mexico; Some Policy Considerations." Regional Studies, Vol. 6, 1972. Pergamon Press, G.B.

NOTES: (a) Estimated from preliminary data.

(b) Refers to migration in the previous 10 years.

(c) Percentages refer to the Federal District and those adjacent municipalities of the State of Mexico that are part of the built up area of the "City of Mexico".

(d) Percentages refer to the Federal District plus the major adjacent municipalities of the State of Mexico, i.e., Tlalnepantla, Ecatepec, Cuautitlan, Naucalpan, Tultitlan.

(e) Includes Sight, Time and Saving deposits.

(f) " Direct Investments, Loans, Open Credits, Mortgages, Capital and Reserves.

(g) National Average.

(h) Welfare Index calculated from the following variables; Urban Population, Population Wearing Shoes, Bread-eating Population, Literacy, Sanitary Facilities in Houses. Principal Component Analysis was used to derive the indices.

Table 3.8

Regional Urban and Rural Population Densities in 1960

Regions	Area		Urban		Rural		Total		Density thousands inhab/ sq. km.	Urban		Rural		Total
	Abs.	%	Abs.	%	Abs.	%	Abs.	%		%	%	%		
I North West	419,049	21.2	1,371	7.8	2,613	7.2	2,613	7.5	419.0	52.5	47.5	100.0	100.0	
II North	656,194	33.3	2,152	12.3	4,762	15.1	4,762	13.6	656.2	45.2	54.8	100.0	100.0	
III North East	144,384	7.3	1,372	7.8	2,103	4.2	2,103	6.0	144.4	65.2	34.8	100.0	100.0	
IV Central West	181,634	9.2	3,234	18.5	6,438	18.6	6,438	18.4	181.6	50.2	49.8	100.0	100.0	
V Central East	98,490	5.0	6,853	39.1	10,826	23.1	10,826	31.0	98.5	63.3	36.7	100.0	100.0	
VI South	233,076	11.8	1,023	5.3	4,125	18.9	4,125	11.8	233.1	24.8	75.2	100.0	100.0	
VII East	97,476	4.9	1,211	6.9	3,224	21.7	3,224	9.2	97.5	37.6	62.4	100.0	100.0	
VIII Yucatan Pen.	142,241	7.2	489	2.8	832	2.0	832	2.4	142.2	58.8	41.2	100.0	100.0	
Total	1,972,547	100.0	17,705	100.0	34,923	100.0	34,923	100.0	1,972.5	50.1	49.9	100.0	100.0	

Source: General Census of population 1960 and 1970 and Bassols, B.A.. "Economic Geography of Mexico", 1975, Mexico City.

TABLE NO. 3 9

REGIONAL URBAN AND RURAL POPULATION IN 1970 AND INCREASES IN RELATION TO 1960.

REGIONS	URBAN		RURAL		TOTAL (THOUSANDS OF PEOPLE)	DENSITY (THOUSANDS INHABIT. Sq. Km.)		URBAN		RURAL		TOTAL
		%		%			%		%		%	
I. Northwest	2,415	8.5	7.5		3,908	8.1		61.3		38.2		100
II. North	3,054	10.8	14.0		5,900	12.2		51.8		48.2		100
III. North East	2,302	8.1	4.3		3,151	6.5		73.0		27.0		100
IV. Central West	4,896	17.3	17.9		8,470	17.6		67.8		32.2		100
V. Central East	11,353	<u>40.1</u> (23.5)	<u>23.0</u> (1.1)		15,932	<u>33.0</u> (14.2)		<u>71.2</u> (4,585.7)		28.8		100
VI. South	1,548	5.5	<u>18.2</u>		5,182	10.8		29.9		<u>70.1</u>		100
VII. East	2,055	7.2	12.7		4,584	9.5		44.8		<u>55.2</u>		100
VIII. Yucatan Peninsula	686	2.4	2.1		1,098	2.3		<u>62.5</u>		37.5		100
TOTAL	28,309	100.0	100.0		48,225	100.0		58.7		41.3		100

TABLE NO. 3.9 (Contd.)

## REGIONAL URBAN AND RURAL POPULATION IN 1970 AND INCREASES IN RELATION TO 1960.

REGIONS	GROWTH ANNUAL AVERAGE RATE 1960-1970			TOTAL POPULATION Δ 1960-1970		TOTAL URBAN POPULATION Δ 1960-1970	
	URBAN %	RURAL %	TOTAL %	ABSOLUTE	%	ABSOLUTE	%
I. Northwest	<u>7.6</u>	<u>2.0</u>	<u>4.9</u>	1,295	9.7	1,044	9.8
II. North	4.2	.72	2.4	1,138	8.5	902	8.5
III. North East	6.8	1.6	<u>5.0</u>	1,048	7.9	930	8.8
IV. Central West	<u>7.8</u>	1.1	3.1	2,032	15.3	-	15.7
V. Central East	6.6	1.5	4.7	5,106	38.4	4,500	42.4
VI. South	5.1	1.7	2.6	1,057	7.9	525	4.9
VII. East	7.0	<u>2.5</u>	4.2	1,360	10.2	844	8.0
VIII. Yucatan Peninsula	4.0	2.0	3.2	266	2.0	197	1.9
TOTAL	6.2	1.6	3.8	<u>13,302</u>	100.0	<u>10,604</u>	100.0

SOURCE: General Census of population 1960 and 1970 and Bassols, B.A., "Economic Geography of Mexico," 1975, Mexico City.

TABLE NO.3.10

## REGIONAL NET DOMESTIC PRODUCT PER SECTOR - 1960

SECTORS	PRIMARY		SECONDARY		TERTIARY		GOVERNMENT		TOTAL						
	Regional Of Product Nat. (Mill. Pesos)	Of Regional Prod. %	Regional Of Product Nat. (Mill. Pesos)	Of Regional Prod. %	Regional Of Product Nat. (Mill. Pesos)	Of Regional Prod. %	Regional Of Product Nat. (Mill. Pesos)	Of Regional Prod. %	Regional Of Product Nat. (Mill. Pesos)	Of Regional Prod. %					
I	899	3.9	29.2	708	1.7	23.0	1,348	1.9	43.6	122	2.0	4.0	3,077	2.2	100
II	3,789	16.3	32.4	3,112	7.7	26.6	4,534	6.2	36.8	262	4.3	2.2	11,697	8.2	100
III	2,942	12.7	41.1	813	2.0	11.3	3,255	4.5	45.5	147	2.4	2.0	7,158	5.0	100
IV	3,189	13.7	5.1	21,152	52.5	33.7	34,351	47.3	54.8	3,973	65.3	6.3	62,665	44.1	100
V	2,976	12.8	18.3	3,590	8.9	22.1	9,277	12.8	57.2	368	6.0	2.3	16,212	11.4	100
VI	1,530	6.6	12.1	4,824	12.0	38.3	6,039	8.3	47.9	203	3.3	1.6	12,600	8.9	100
VII	4,561	19.7	27.5	4,213	10.4	25.3	7,414	10.2	44.5	465	7.6	2.8	16,674	11.7	100
VIII	3,306	14.2	27.2	1,868	4.6	15.4	6,415	8.8	52.9	543	8.9	4.5	12,132	8.5	100
ALL	23,212	100.0	16.3	40,286	100.0	28.3	72,633	100.0	51.1	6,086	100.0	4.3	142,216	100.0	100.0

Table 3.11

## Regional Gross Product Per Sector

1970

	Primary		Secondary		Tertiary		Total		Size				
	Regional Product (Mill. Pesos)	Of Nat. Prod. %	Regional Product (Mill. Pesos)	Of Nat. Prod. %	Regional Product (Mill. Pesos)	Of Nat. Prod. %	Regional Product (Mill. Pesos)	Of Nat. Prod. %	Of Reg. Prod. %	Relative to Country %			
I	6794	21.3	27.8	10954	5.1	44.8	6685	10.2	27.4	24433	7.9	100	21.2
II	5199	16.3	17.1	20354	9.6	66.8	4892	7.4	16.1	30445	9.8	100	33.3
III	2382	7.5	6.8	26273	12.4	74.7	6515	9.9	18.5	35170	11.3	100	7.3
IV	6163	19.3	19.2	19093	9.0	59.4	6897	10.5	21.4	32153	10.4	100	9.2
V	3967	12.4	2.4	122679	57.7	75.6	35674	53.4	21.6	162320	52.3	100	5.0
VI	3126	9.8	43.4	2094	1.0	29.1	1977	3.0	27.5	7197	2.3	100	11.8
VII	3691	11.6	23.7	9103	4.3	58.4	2799	4.3	17.9	15593	5.0	100	4.9
VIII	588	1.8	17.6	1855	0.9	55.7	889	1.3	26.7	3332	1.1	100	7.2
Total	31913	100		212404	100		65728	100		310045	100		100

Source: Official Economic Census for 1970; Agricultural, Industrial, Services and Commerce Census. General Bureau of Statistics, Ministry of Industry and Commerce.

Table 3.12

Regional and State Per Capita Gross Product, 1960

REGIONS	POPULATION		Share of National Population %	Gross Product (Mill Pesos)	State Average		Gross Product Per Capita (Pesos)	$\frac{SPI}{NPI}$ (%)	$\frac{SPI}{NPI}$ (%)
	Absolute (000's)	%			Gross Product Per Capita (Pesos)				
NORTH WEST	2,613	100.0	7.5	12,132			4,642.9	100.0	114.0
Northern California	520	19.9		3,323	6,390.6			137.6	
Lower California	682	3.1		348	4,246.3			91.4	
Sonora	783	30.0		4,083	5,213.9			112.3	
Sinaloa	838	32.1		3,283	3,917.8			84.4	
Nayarit	390	14.9		1,095	2,807.9			60.5	
NORTH	4,762	100.0	13.6	16,674			3,501.4	100.0	86.0
Chihuahua	1,227	25.8		5,703	4,648.2			132.7	
Coahuila	908	19.1		4,442	4,892.4			139.7	
Durango	761	16.0		2,515	3,305.0			94.4	
Zacatecas	818	17.2		1,496	1,828.8			122.2	
San Luis Potosi	1,048	22.0		2,517	2,401.9			52.2	



Table 3.12 (cont.)

REGIONS	Absolute (000's)	POPULATION		Share of National Population	Gross Product (Mill Pesos)	State Average		Gross Product Per Capita (Pesos)	SPI <sup>1</sup> RPI (%)	RPI <sup>1</sup> NPI (%)
		%				Gross Product Per Capita (Pesos)				
NORTH EAST	2,103	100.0		6.0	12,600			5,991.6	100.0	147.1
Nuevo Leon	1,079	51.3			6,971	6,460.5			107.8	
Tamaulipas	1,024	48.7			5,630	5,497.5			91.7	
CENTRAL WEST	6,437	100.0		18.4	16,212			2,518.6	100.0	61.8
Jalisco	2,443	37.9			7,424	3,038.9			120.6	
Aguascalientes	243	3.8			721	2,965.0			117.7	
Coima	164	2.5			518	3,158.5			125.4	
Michoacan	1,852	25.8			3,356	1,182.2			71.9	
Guanajuato	1,735	26.9			4,194	2,417.1			96.0	
CENTRAL EAST	10,826	100.0		31.0	62,665			5,788.4	100.0	142.1
Queretaro	355	3.3			918	2,585.1			44.7	
Mexico	1,898	17.5			5,950	3,134.7			54.1	
Federal District	4,871	45.0			47,549	9,761.6			168.6	
Morelos	386	3.6			1,146	2,967.6			51.3	
Hidalgo	995	9.2			2,030	2,039.7			35.2	
Tlaxcala	347	3.2			629	1,813.2			31.3	
Puebla	1,974	18.2			4,445	2,251.8			38.9	

Table 3.12(cont.)

Regional and State Per Capita Gross Product, 1960

REGIONS	POPULATION			Gross Product (Mill Pesos)	State Average Gross Product Per Capita (Pesos)	Gross Product Per Capita (Pesos)	SPI <sup>1</sup> RPI (%)	RPI <sup>1</sup> NPI (%)
	Absolute (000's)	%	Share of National Population %					
SOUTH	4,125	100.0	11.8	7,158		1,735.2	100.0	42.6
Guerrero	1,187	28.0		2,328	1,961.3		113.6	
Oaxaca	1,727	41.9		2,545	1,473.8		84.9	
Chiapas	1,211	29.3		2,284	1,886.3		108.7	
EAST	3,224	100.0	9.2	11,697		3,628.0	100.0	89.1
Vera-Cruz	2,728	84.6		10,523	3,857.7		106.3	
Tabasco	496	15.4		1,173	2,365.1		65.2	
YUCATAN	833	100.0	2.4	3,077		3,694.2	100.0	90.7
Campeche	168	20.2		638	3,796.4		102.8	
Yucatan	615	73.8		2,262	3,677.7		99.5	
Q. Roo	50	6.0		178	3,554.0		96.2	
NATIONAL TOTAL	34,923		100.0	142,216				
							National Average	
							4,072.3	

Source: General Census of Population, 1960 and Carrillo-Arreola, "An Empirical Test on Inter-Regional Planning" for Estimates of State Gross Product, Rotterdam University Press, 1970.

<sup>1</sup> SPI - State Per Capita Income; RPI - Regional Per Capita Income; NPI - National Per Capita Income

TABLE NO.3.13

REGIONAL AND STATE PER CAPITA GROSS PRODUCT  
1970

REGIONS	POPULATION			Gross Product (Mill. Pesos)	Gross Product Per Capita (Pesos)	State Average Gross Product Per Capita (Pesos)	SPI/RPI %	RPI/NPI %
	Absolute (000's)	%	Share of Nat. Pop. %					
<u>CENTRAL</u>	3,998	100.0	8.1	24,433		6,232	100.0	97.2
Northern California	870	22.3		6,586	7,570.1		121.1	
Lower California	128	3.3		1,075	8,398.4		134.3	
Sonora	1,099	28.1		8,482	7,717.9		123.4	
Baja California	1,267	32.4		6,322	4,989.7		79.8	
Baja Sur	544	13.9		1,968	3,617.6		57.9	
<u>WEST</u>								
NTH	5,900	100.0	12.2	30,445		5,160.2	100.0	80.3
Chihuahua	1,613	27.3		8,868	5,497.8		106.5	
Durango	1,115	18.9		12,237	10,974.9		212.7	
Sinaloa	939	15.9		3,484	3,710.3		71.9	
Coahuila	952	16.1		1,740	1,827.7		35.4	
San Luis Potosi	1,282	21.7		4,116	3,210.6		62.2	

TABLE NO.3.13(Contd.)  
REGIONAL AND STATE PER CAPITA GROSS PRODUCT  
1970

REGIONS	POPULATION			Gross Product (Mill. Pesos)	Gross Product Per Capita (Pesos)	State Average Gross Product per Capita (Pesos)	SPI/RPI %	RPI/NPI %
	Absolute (000's)	%	Share of Nat. Pop. %					
<u>NORTH EAST</u>	3,151	100.0	6.5	35,170		11,161.5	100.0	173.6
Nuevo Leon	1,695	53.8		29,197	17,225.4		154.3	
Tamaulipas	1,457	46.2		5,973	4,099.5		36.7	
<u>CENTRAL WEST</u>	3,470	100.0	17.6	32,153		3,796.1		59.0
Tlalisco	3,297	38.9		18,357	5,567.8		146.7	
Aguaascalientes	338	4.0		1,202	3,556.2		93.7	
Xolima	241	2.8		778	3,228.2		85.0	
Michoacan	2,324	27.4		4,623	1,989.2		32.4	
Guanaajuato	2,270	26.8		7,193	3,168.7		83.5	

TABLE NO. 3.13 (Contd.)  
REGIONAL AND STATE PER CAPITA GROSS PRODUCT  
1970

REGIONS	POPULATION		Gross Product (Mill. Pesos)	Gross Product Per Capita (Pesos)	State Average Gross Product Per Capita (Pesos)	SPI/RPI %	RPI/APT %
	Absolute (000's)	% Share of Nat. Pop. %					
CENTRAL EAST	15,532	100.0	33.0	162,320	10,188.3	100.0	158.5
Queretaro	486	3.0		2,646	5,444.4	53.4	
Mexico	3,833	24.0		43,710	11,403.6	111.9	
Federal District	6,874	43.1		97,745	14,219.5	139.6	
Morelos	616	3.9		2,611	4,238.6	41.6	
Hidalgo	1,194	7.5		4,453	3,729.5	36.6	
tlaxcala	421	2.6		923	2,192.4	21.5	
Puebla	2,508	15.7		9,632	3,840.5	37.7	
SOUTH	5,182	100.0	10.8	7,197	1,388.8	100.0	21.6
Guerrero	1,597	30.8		2,385	1,493.4	107.5	
Oaxaca	2,015	38.9		2,279	1,131.0	81.4	
Chiapas	1,569	30.3		2,533	1,614.4	116.2	

TABLE NO. 3.13 (Contd.)  
REGIONAL AND STATE PER CAPITA GROSS PRODUCT  
1970

REGIONS	POPULATION		Gross Product (Mill. Pesos)	Gross Product Per Capita (Pesos)	State Average Gross Product Per Capita (Pesos)	SPI/RPI %	RPI/NPI %
	Absolute (000's)	% Share of Nat. Pop. %					
EAST	4,387	100.0	9.5	15,593	3,401.6	100.0	52.9
Vera Cruz	3,815	83.2		14,264	3,789.9	109.9	
Tabasco	768	16.8		1,329	1,730.5	50.9	
YUCATAN	1,098	100.0	2.3	3,332	3,034.6	100.0	47.2
Campeche	252	22.9		835	3,313.5	109.2	
Yucatan	758	69.0		2,279	3,006.6	99.1	
Q. Roo	88	8.1		218	2,477.3	81.6	
NATIONAL FIGURE	48,225	100.0		310,045	6,429.1		

SOURCE: General Population Census of 1970, Official Economic Censa of Mexico for 1970: Industrial, Agricultural, Service and Commerce. From General Bureau of Statistics and Ministry of Industry and Commerce, Mexico..

Table 314

Regional Gross Product per Capita in terms of National Averages and Population Densities

(1960 - 1970)

Above Average										Below Average									
Regions	Gross Product per Capita		Population		Size	Density (Inhabit/sq. km.)	Regions	Gross Product per Capita		Population		Size	Density (Inhabit/sq. km.)						
	1960	1970	1960	1970				1960	1970	1960	1970			1960	1970				
North-West	114	97 <sup>1</sup>	7.5	8.1	21	1970 9.3	North	86	80	13.6	12.2	33	1970 9.0						
North-East	147	174	6.0	6.5	7.3	21.8	Central-West	62	59	18.4	17.6	9	46.6						
Central-East	142	158	31.0	33.0	5.0	161.8	South	43	22	11.8	10.8	12	22.2						
							East	89	53	9.2	9.5	5	47.0						
							Yucatan Peninsula	91	47	2.4	2.3	7	7.7						

<sup>1</sup> This region registered an average gross product per capita for 1970

NATIONAL CROSS PRODUCT BY DISTRICT SECTORS  
(MILLION PESOS)

REGIONS	CROSS STATE PROD. (1965)		AGRICULTURAL OUTPUT (1960)		MINING 1 (1965)		FISHING (1963)		CATTLE RAISING (1000/units 1960)	
	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	
Northwest	10.5	3,441.639	24.0	311.4	6.99	440.203	61.3	2,278	12.8	
I. North	10.1	1,767.206	12.3	3,178.6	71.48	.384	0.1	3,802	21.5	
II. Northeast	10.1	1,036.666	7.2	2.2	0.04	28.272	3.9	959	5.3	
V. Central West	10.0	2,559.202	17.8	123.3	2.78	5.558	0.7	3,217	18.2	
Central East (Fed. District)	45.8 (35.5)	1,336.820	9.3	261.8	5.88	.590	0.1	1,646	9.1	
I. South	3.8	1,764.650	12.3	83.4	1.87	61.021	8.5	2,322	13.2	
II. East	8.1	2,040,268	14.2	487.5	10.96	152.196	21.2	3,042	17.7	
III. Yucatan	1.6	409.357	2.9	-	-	30.179	4.2	403	2.2	
TOTAL	100.0	14,355.808	100.0	4,448.2	100.0	719.003	100.0	17,669	100.0	

1. Production, benefit and concentration of iron mining, non-iron, charcoal, graphite and sulphur.



TABLE NO. 3.15 (contd.)

REGIONAL GROSS PRODUCT BY DIVERSE SECTORS  
(MILLION PESOS)

REGIONS	INDUSTRIAL OUTPUT (1965)		SERVICES (1965)		COMMERCE (1965)		TOTAL TERTIARY SECTOR	
	ABSOLUTE	%	ABSOLUTE (A)	%	ABSOLUTE (B)	%	ABSOLUTE (A+B)	%
I. Northwest	5,954	5.0	1,196.1	6.1	8,211.5	11.1	9,407.6	10.1
II. North	23,675	20.1	2,252.5	11.4	9,006.6	12.2	11,259.1	12.0
III. Northeast	1,693	1.4	852.2	4.3	3,150.9	4.3	4,003.1	4.3
IV. Central West	9,487	8.1	1,444.0	7.3	7,834.5	10.6	9,278.5	9.9
V. Central East (Fed. District)	67,740	57.5	12,132.0	61.4	36,400.5	49.4	48,532.5	51.9
VI. South	1,547	1.3	840.6	4.2	2,688.9	3.9	3,729.5	4.0
VII. East	6,443	5.5	822.3	4.1	5,163.4	7.0	5,985.7	6.4
VIII. Yucatan	1,262	1.1	227.8	1.2	1,092.5	1.5	1,320.3	1.4
TOTAL	117,801	100.0	19,767.5	100.0	73,748.0	100.0	93,515.5	100.0

SOURCE: Statistical Annuary of United States of Mexico, 1965-1967; Statistical Agenda 1967-1968: Official Economic Census 1961, 1965 and 1970: Agriculture, Mining, Fishing Industrial Services and Commerce. General Geography of Mexico, Parts I and IV, Tamayo, Jorge. Statistical Yearbook, UNO, 1967. Regionalisation based on Bassols, A. (op. cited) 1975.

Table 3.16

States' Welfare Indicators, 1960

States	General Level	Mortality	Literacy	Teachers/ Pupil Ratio	Drinking Water	Minimum Salary	Social Security	Sugar Consumption	Electricity	Gasoline	Motor Vehicles
(Each figure represents percentages of the national averages)											
Northern California	204	160	145	103	127	284	80	118	145	362	500
Federal District	188	124	145	158	215	145	295	175	212	193	221
Sonora	157	106	128	148	97	185	70	158	153	254	269
Nuevo Leon	144	136	139	130	115	166	211	143	109	153	196
Lower California	148	123	138	219	92	121	72	152	145	191	224
Panamaulipas	166	134	132	117	123	102	195	129	97	149	178
Coahuila	136	108	130	120	132	135	149	139	154	129	167
Chihuahua	147	103	128	110	104	135	160	128	263	171	170
Queretaro	70	83	62	73	81	73	50	94	52	33	48
Guanajuato	65	82	77	68	76	89	26	63	77	50	44
Tabasco	70	95	102	120	45	115	29	102	7	54	34
Michoacan	72	115	83	70	90	416	13	74	73	48	39
Zacatecas	56	107	105	73	70	83	11	43	6	33	29

Table 3.16 (cont.)

States' Welfare Indicators

States	General Level	Mortality	Literacy	Teachers / Pupil Ratio	Drinking Water	Minimum Salary	Social Security	Sugar Consumption	Electricity	Gasoline	Motor Vehicles
(Each figure represents percentages of the national averages)											
Guerrero	53	115	55	72	75	77	16	73	24	48	22
Tlaxcala	60	83	97	94	65	102	0	35	34	49	39
Hidalgo	65	74	71	91	84	73	9	35	119	50	43
Chiapas	52	91	61	57	80	64	41	65	6	28	25
Oaxaca	43	75	64	66	65	71	8	44	4	25	12

Source: Hamartine Yates, Regional Development in Mexico, 1960, Mexico City.

TABLE NO. 317

## MONTHLY INCOMES OF REGIONAL ACTIVE POPULATION

(PESOS 1970)

REGIONS	UNTIL 599 %	600-999 %	5000-14999 %
Northwest	32.9	30.8	2.7
North	57.0	20.9	1.3
Northeast	36.5	29.0	2.8
Central West	58.9	17.8	1.3
Central East (Federal District)	38.1 (18.5)	24.3 (28.6)	3.0 (4.5)
South	81.0	9.3	0.6
East	64.1	15.9	1.1
Yucatan Peninsula	70.5	15.3	0.8
TOTAL	49.9	21.8	2.0

SOURCE:

General Census of Population, 1970.  
General Bureau of Statistics, Ministry of  
Industry and Commerce.

TABLE NO. 3.18

## REGIONAL SELECTIVE INDICATORS

REGIONS	IRRIGATED LAND 1966 (HAS.)	%	ROADS (1963) (Km)	%	LICENSE VEHICLES (1964)	%	RAILWAYS 1970 (Km)	%	LITERACY <sup>1</sup> (1960)	%	SUGAR CONSUMPTION (1967) (TONS)	%
Northwest	1,027,445	48.8	4,772	14.1	97,359	14.3	3,194	13.1	482,355	4.6	120,658	8.0
North	279,973	13.3	6,192	18.3	87,983	12.9	7,328	30.0	965,348	9.1	195,665	12.9
E. Northeast	316,545	15.0	3,037	9.0	25,714	3.8	1,574	6.4	274,592	2.6	72,076	4.8
Central West	254,077	17.0	5,257	15.6	71,624	10.5	4,021	16.5	2,404,472	22.7	256,639	16.9
Central East (Fed. District)	95,687	4.5	4,051	12.0	361,427	51.4	3,448	14.1	2,725,432	25.8	527,462	34.8
South	107,750	5.1	3,182	9.4	17,831	2.6	1,559	6.4	2,077,617	19.6	135,535	8.9
East	28,050	1.3	3,104	9.2	20,861	3.0	2,287	9.4	1,423,580	13.5	171,456	11.3
I. Yucatan	-	-	4,172	12.4	10,209	1.5	989	4.0	219,767	2.1	35,697	2.4
TOTAL	2,109,527	100.0	33,767	100.0	683,008	100.0	24,400	100.0	10,573,163	100.0	1,516,208	100.0

1. Population older than 6 years old.

TABLE NO. 2.18 (Contd.)

## REGIONAL SELECTIVE INDICATORS

REGIONS	STATE GROSS INCOME 1970		STATE INVESTMENT 1970		ELECTRIFICATION (POPULATION) 1965		POWER SUPPLY <sup>2</sup> 1965 (THOUSANDS OF KILOWATTS)		SOCIAL SECURITY (BENEFICIARIES)	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	%	%	ABSOLUTE	%
I. Northwest	1,382.0	7.9	188.3	7.5	2,070.1	8.4	654.1	12.2	715.6	10.7
II. North	1,016.7	5.8	194.2	7.7	3,256.3	13.2	1,160.6	21.6	581.6	8.7
III. Northeast	1,058.5	6.0	155.4	6.2	1,854.0	7.5	224.1	4.2	737.1	11.0
IV. Central West	1,702.8	9.7	142.5	5.7	4,602.1	18.7	236.8	15.6	783.6	11.7
V. Central East (Fed. District)	11,112.3	63.3	1,675.9	67.0	9,566.9	38.9	1,492.2	27.8	3,075.5	46.0
VI. South	462.7	2.6	61.1	2.4	1,086.0	4.4	439.0	8.2	166.9	2.5
VII. East	567.8	3.2	24.1	1.0	1,606.0	6.5	502.6	9.3	524.1	7.8
VIII. Yucatan	237.9	1.3	61.1	2.4	581.6	2.4	59.6	1.1	96.0	1.4
TOTAL	17,540.7	100.0	2,502.7	100.0	24,613.0	100.0	5,369.0	100.0	6,680.3	100.0

2. Total installed capacity.

## SOURCES:

Statistical Annuary of United States of Mexico, 1967. Statistical Agenda 1967-68; Official Economic Census 1961, 1965 and 1970. Agriculture, Mining, Fishing, Industrial, Services and Commerce. General Bureau of Statistics, Ministry of Industry and Commerce. General Geography of Mexico, Parts I and IV, Tlaxcala, J.

TABLE 3.19

INTERNATIONAL COMPARISON OF MEXICO IN TERMS OF URBANIZATION LEVELS, 1900-1960.

COUNTRIES	URBANIZATION LEVELS <sup>1</sup>				COUNTRIES	RATES OF URBANIZATION <sup>5</sup>					
	1900 <sup>2</sup>	ORDER	1940 <sup>3</sup>	ORDER		1960 <sup>4</sup>	ORDER	1900-40	ORDER	1940-60	ORDER
Japan	11.5	6	49.0	2	71.9	1	Venezuela	0.87	8	4.13	1
England and Wales	58.5	1	67.9	1	69.3	2	Peru	2.01	2	3.25	2
Chile	23.4	3	36.2	4	54.7	3	Mexico	<u>1.64</u>	3	<u>3.07</u>	3
Venezuela	12.6	5	19.6	6	47.2	4	Brasil	0.92	7	2.95	4
U.S.A.	26.0	2	42.5	3	46.9	5	India	0.77	9	2.48	5
Greece	15.0	4	26.5	5	37.3	6	Chile	0.95	6	2.04	6
Mexico	<u>9.3</u>	8	<u>18.4</u>	7	<u>34.7</u>	7	Japan	3.10	1	1.39	7
Peru	5.5	10	14.2	9	26.9	8	Greece	1.39	4	1.61	8
Brasil	9.6	7	15.3	8	28.1	9	U.S.A.	1.20	5	0.49	9
India	5.6	9	8.2	10	13.6	10	England and Wales	0.37	10	0.10	10
World Average	9.2		18.2		27.1			1.64		1.96	

## SOURCE:

Durand, J. and Pelaez, C. "Characteristics of Urbanization in Latin America" from Kyler, C. (Ed.) "Components of Demographic Change in Latin America", Milbank Memorial Foundation, New York, 1965, Vol. 43, No. 4.

United Nations, "Urbanization, Economic and Social Change" from a Seminar on Urbanization at Pittsburgh University, U.S.A., 1965.

United Nations Demographic Year Book, 1960, 1962 and 1963.

Breese (op.cit.) Tables 2, 6 and 7.

1. The Urbanization level is measured by the proportion of urban population who live in an area of at least

2. Data on Brasil is of 1890, on Venezuela - 1891, on Chile - 1895, on Peru - 1896 and on India - 1891.
3. Data on England and Wales is attained by linear extrapolation of 1931, 1951 data. That on U.S.A. is an approximation based on Durand and Pelaez study (op.cit.). The data on Venezuela is of 1941, and the figures of India include Pakistan. The World Average is derived by assuming urban populations grew at the same rate between 1940-50 and 1950-60.
4. The data on Peru, Venezuela, Greece and England and Wales was of 1961.
5. Urbanization rate equals the average annual increase in urbanization levels. Numerically it is expressed as 
$$R_u = \frac{2(N_1 - N_0)}{N_1 + N_0} \cdot \frac{K}{n}$$
 where  $R_u$  = Urbanization Rate,  $N_1, N_0$  = Urbanization Levels at end and beginning of period respectively,  $n$  = Number of Years in the period and  $K$  = Constant (equal 100 numerically).



TABLE NO. 3.20

INTERNATIONAL COMPARISON OF MEXICO IN TERMS OF PRIMACY INDEXES<sup>1</sup> FOR TWO AND FOUR CITIES, 1950

LATIN AMERICA COUNTRIES	PRIMACY INDEXES		OTHER COUNTRIES	PRIMACY INDEXES	
	2 CITIES	4 CITIES		2 CITIES	4 CITIES
Latin America	3.6	2.9	The World	2.7 <sup>2</sup>	2.0
Uruguay	12.4	5.7	France	10.2	3.3
Guatemala	10.3	5.3	Denmark	7.7	3.2
Argentina	9.3	3.9	Austria	7.4	2.9
Mexico	7.2	2.9	U.K.	4.0	1.5
Chile	5.9	2.4	U.S.S.R.	1.9	1.3
Peru	5.0	4.6	U.S.A.	2.5	1.0
Venezuela	2.9	1.6	China	2.5	0.9
Brazil	1.2	0.8	India	1.5	0.8
Colombia	1.8	0.7	Canada	1.3	0.6

SOURCE:

Davis, K., op. cit., p.376.

1. See notes on Table (3.21)

TABLE 3.21

MEXICAN PRIMACY INDEXES FROM TWO TO TEN CITIES, 1900-1970

PRIMACY INDEXES 1	1900	1910	1920	1930	1940	1950	1960	1970
2 (Cities)	4.4	3.9	4.3	5.7	6.5	7.2	6.1	6.1
4 "	1.7	1.6	1.9	2.4	2.7	2.9	2.7	2.8
6 "	1.2	1.1	1.3	1.7	2.0	2.2	2.1	2.2
8 "	0.9	0.9	1.1	1.4	1.6	1.3	1.8	1.9
10 "	0.8	0.8	0.9	1.2	1.4	1.6	1.6	1.7

SOURCE:

UNIKEL, (1975).

1. This is derived from the expression:-

$$I_{P(n)} = \frac{P_1}{P_2 + P_3 + \dots P_n}, \text{ where } P_1, P_2, P_3 \text{ and } P_4$$

are the population of cities of order 1, 2, 3 and 4

respectively.

Table 3.22

Historical development of Mexican Growth-Poles

Growth pole rank	Growth pole's name and state of location	Growth-pole population as a percentage of the total national population					
		1900	1930	1940	1950	1960	1965
1	Mexico City (Fed. District)	3.975	6.217	7.369	10.035	13.947	14.641
2	Guadalajara, Jalisco	0.742	1.085	1.166	1.461	2.109	2.342
2	Monterrey, Nuevo Leon	0.455	0.801	0.946	1.292	1.709	1.756
3	Puebla, Puebla	0.683	0.693	0.704	0.819	0.827	0.726
3	Ciudad Juarez, Chihuahua	0.058	0.239	0.248	0.475	0.793	0.972
3	Mexicali, N.B. California	0.014	0.041	0.095	0.250	0.805	0.703
3	Merida, Yucatan	0.316	0.573	0.503	0.554	0.489	0.469
4	Leon, Guanajuato	0.462	0.419	0.377	0.475	0.746	0.734
4	Torreón, Coahuila/G. Palacio	0.229	0.543	0.515	0.677	0.796	0.6
4	Tampico, Tam./Cd. Madero	0.330	0.542	0.562	0.524	0.504	0.493
4	San Luis Potosí, S.L.P.	0.448	0.447	0.392	0.487	0.458	0.554
4	Veracruz, Veracruz	0.235	0.409	0.364	0.392	0.440	0.385
4	Tijuana, N.B. California	0.001	0.068	0.083	0.232	0.474	0.625
4	Chihuahua, Chihuahua	0.223	0.275	0.289	0.337	0.430	0.570
4	Aguascalientes, Agcs	0.367	0.375	0.418	0.362	0.362	0.338
4	Morelia, Michoacan	0.273	0.241	0.225	0.245	0.439	0.305
Total population (10 <sup>6</sup> )		13.6	16.6	19.7	25.8	36.0	42.7
Σ		8.802%	12.968%	14.256%	18.617%	25.328%	26.379%

Sources: Carrillo, R., An Empirical Test on Interregional Planning. A linear Programming Model For Mexico. Rotterdam University Press, 1970. In this work, one can observe the foundations of this classification, pp.44.

Table 3.23

Regional Net Migration in Mexico, 1930-1970

	1930-1940		1940-1950	
	Immigration	Outmigration	Immigration	Outmigration
I North West	+57,655	14.4	+97,235	10.6
II North				
III North East	+46,729	11.2	+210,955	23.0
IV Central West				
V Central East	+225,577	56.3	+606,128	66.4
VI South				
VII East	+64,664	16.1		
VIII Yucatan Pen.	+5,999	1.5		
Total	+400,622	100.0	+916,318	100.0

# Regional Net Migration in Mexico, 1930-1970

Source: Census of Population for 1930-1940-1950-1960-1970. General Bureau of Statistics, Ministry of Industry and Commerce.

TABLE NO.3.24

TOTAL, NATURAL AND SOCIAL GROWTH OF URBAN POPULATION<sup>1</sup> OF MAIN  
ATTRACTION CITIES, 1960-1970<sup>2</sup>

CITIES	TOTAL GROWTH		NATURAL GROWTH		SOCIAL GROWTH		
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	% <sup>5</sup>
Urban Total	8,433,178	100	5,683,699	67.4	2,749,479	32.6	100
Mexico City	3,445,123	100	1,956,594	56.8	1,488,529	43.2	54.1
Guadalajara	570,155	100	354,300	62.1	215,855	37.8	7.9
Puebla	207,768	100	114,618	55.2	93,150	44.8	3.4
Tijuana	188,594	100	96,240	51.0	93,354	49.0	3.4
Leon	169,571	100	86,094	50.8	83,477	49.2	2.0
Acapulco	129,886	100	56,817	43.7	73,069	56.3	2.7
Monterrey	396,404	100	331,164	83.5	65,240	16.5	2.4
Cuernavaca	90,269	100	35,435	39.3	54,833	60.7	2.0
Ciudad Juarez	152,789	100	102,908	67.4	49,881	32.7	1.8
Poza Rica	60,786	100	19,717	32.4	41,069	67.6	1.5
Semi Total <sup>3</sup>	5,411,345	100	3,153,888	58.3	2,257,457	41.7	82.1
Other Urban Areas <sup>4</sup>	3,021,833	100	2,529,811	83.7	492,022	16.3	17.9

SOURCE:

Extended from General Bureau of Statistics, Demographic Statistical Office and General Population Census, 1960-1970.

1. This is a net increase and corresponds to those areas which were urban by 1970. With respect to those cities with "Urban Areas" the population of 1970 of the localities which integrated those areas in 1960 were considered. Therefore the increases in total and social populations should be slightly underestimated.
2. See Note 1 of Table (2.1).
3. These are the ten cities of greatest positive migration in the country.
4. These include those other "Attraction Cities" who have balanced migratory flows but have an annual average increase in population of between 0.0-0.5%.
5. Percentage of net national migration.

Table 3.25

Regional Federal Public Investment by Sectors

1965-1969

(Millions of Pesos)

Regions	Total		Public Investment Per Capita		Industrial		Social Welfare		Transport and Communications		Agricultural and Fishing Promotion		Military Expenditure	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
I North West	8,618.0	9.9	2.20		1,443.1	4.1	1,314.1	6.0	3,352.3	17.1	2,478.9	27.8	29.6	1.5
II North	9,408.7	10.6	1.59		3,577.3	10.3	1,178.0	5.4	2,750.7	14.0	1,845.8	20.7	56.9	3.0
III North East	8,781.0	10.1	2.79		5,895.4	17.0	966.4	4.4	1,044.3	5.3	836.8	9.4	38.1	2.0
IV Central West	8,205.8	9.4	.97		3,323.3	9.6	1,028.4	4.7	2,958.9	15.1	854.1	9.6	40.7	2.1
V Central East	29,516.6	33.9	1.85		5,875.4	16.9	15,610.7	71.3	5,121.2	26.1	1,223.2	13.7	1,686.1	88.4
VI South	5,012.9	5.8	0.98		2,291.3	6.6	672.6	3.1	1,420.4	7.2	601.7	6.7	26.9	1.4
VII East	15,445.5	17.7	3.36		11,914.6	34.3	720.8	3.3	2,074.0	10.6	720.2	8.1	15.9	.8
VIII Yucatan Pen.	2,018.3	2.3	1.84		398.5	1.1	387.0	1.8	870.7	4.4	348.6	3.9	23.5	1.2
Total	87,006.8	100.0	1.80		34,718.9	100.0	21,878.0	100.0	19,592.5	100.0	8,909.7	100.0	1,907.7	100.0

Source: Ministry of the Presidency; Direction of Public Investment; Federal Public Investment 1965-1969. Regionalisation based on Bassols, A., Economic Geography of Mexico, Trillas, Ed. Mexico, January 1975.

TABLE NO.3.26 (Contd.)

ACTIVE ECONOMIC REGIONAL POPULATION (1970)

REGIONS	PRIMARY		SECONDARY		TERTIARY		TOTAL	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
I. Northwest	484,475	46.8	193,430	18.7 <sup>1</sup>	356,867	34.5	1,034,771	100.0
II. North	737,772	50.0	315,270	21.4 <sup>1</sup>	422,260	28.6	1,475,302	100.0
III. Northeast	229,369	26.3	294,566	33.7 <sup>2</sup>	349,664	40.0	873,600	100.0
IV. Central West	1,055,149	48.8	523,268	24.2 <sup>3</sup>	580,880	26.9	2,159,297	100.0
V. Central East	1,238,713	27.0	1,538,349	33.4 <sup>3</sup>	1,842,725	40.0	4,609,787	100.0
VI. South	977,402	74.7	142,185	10.9	187,665	14.4	1,307,252	100.0
VII. East	704,997	59.0	211,312	18.0 <sup>2</sup>	280,433	23.0	1,196,742	100.0
VIII. Yucatan	173,837	58.0	49,804	17.0	74,664	25.0	298,306	100.0
TOTAL	6,120,269	47.0	2,367,746	18.0	4,467,041	35.0	12,955,057	100.0

SOURCE: General Population Census, 1970. Bureau of Statistics. ICS. Secretariat of Industry and Commerce.

1. It includes miner workers. 2. It includes oil workers. 3. It includes oil and miner workers.



TABLE NO. 3.26

## ACTIVE ECONOMIC REGIONAL POPULATION (1970)

REGIONS	ACTIVE POPULATION TO NAT. POP.		REGIONAL ACTIVE POPULATION		PRIMARY		SECONDARY		TERTIARY	
	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE
I. Northwest	2.1	1,034,771	8.0	484,473	8.7	193,430	5.9	356,867	8.7	
II. North	3.1	1,475,302	11.4	737,772	13.2	315,270	9.6	422,260	10.3	
III. Northeast	1.8	873,600	6.7	229,369	4.1	294,566	9.0	349,664	8.5	
IV. Central West	4.6	2,159,297	16.7	1,055,149	18.9	523,268	16.0	580,880	14.2	
V. Central East	9.5	4,609,787	35.6	1,228,713	22.0	1,538,349	47.1	1,842,725	45.0	
VI. South	2.7	1,307,252	10.1	977,402	17.5	142,185	4.3	187,665	4.6	
VII. East	2.5	1,196,742	9.2	704,997	12.6	211,312	6.5	280,433	6.8	
VIII. Yucatan	0.6	298,306	2.3	173,837	3.1	49,804	1.5	74,664	1.8	
TOTAL	26.9	12,955,057	100.0	5,591,712	100.0	3,268,184	100.0	4,095,158	100.0	

Table 3.27

Gross Product per Sectors in Core, Subcores and Periphery. 1960-1970 (Millions of Pesos)

Regions	Total		Primary		Secondary		Tertiary			
	1960	1970	1960	1970	1960	1970	1960	1970		
	Abs. %	Abs. %	Abs. %	Abs. %	Abs. %	Abs. %	Abs. %	Abs. %		
I Core (CE)	62,665	44.1 162,320	52.3 159	3,189	13.7 3,967	12.4 21,152	52.5 122,679	57.7 34,351	47.3 35,074	53.4
II Peripheral Subcentres (CM-NE)	28,813	20.3 67,323	21.7 134	4,507	26.5 8,545	26.8 8,419	20.9 45,366	21.4 15,316	21.1 13,412	20.4
III Periphery	50,738	35.6 80,402	26.0 58.5 15,516	59.8 19,401	60.8 10,715	26.6 44,359	20.9 22,966	31.6 17,242	26.2	
Total Country	142,216	100.0 310,045	100.0 118	23,212	100.0 31,913	100.0 40,286	100.0 212,404	100.0 72,633	100.0 65,728	100.0

Source: Based on tables 3.10, 3.11.

Table 3.27(cont.)

Gross Product per Sectors in Core, Subcores and Periphery. 1960-1970 (Millions of Pesos)

Total Gross Product Per Capita						Per Capita Output per Worker							
Regions	1960		1970		$\Delta \frac{60}{70}$	Primary		Secondary		Tertiary		Total	
	Abs.	%	Abs.	%		Abs.	%	Abs.	%	Abs.	%		
I Core	5,788.4	142.1	10,188	158.5	76.0	3,228	56	79,765	123	19,031	119	35,210	147
I Peripheral Subcentres (CM-NE)	3,373.9	82.8	55,793	90.1	72.0	6,655	117	55,460	85	14,421	90	22,197	93
I Periphery	3,261.4	80.1	3,889	60.5	20.1	6,303	110	48,639	75	13,042	81	15,136	63
Total Entry	4,072.3	100.0	64,291	100.0	57.9	5,707	100	64,995	100	16,051	100	23,932	100

Table 3.28

Some Indicators in Core, Subcores and Peripheral Regions

	Population 1970		(Economic Active Population) 1970						Employment	
	Total %	Urban %	Primary Abs. %	Secondary Abs. %	Tertiary Abs. %	Total Abs. %				
I. Core (CE)	33	40.1	1,229	22	1,538	47	1,843	45	4,610	35.6
II Peripheral Subcentres (CW-NE)	24.1	25.4	1,284	23	818	25	930	23	3,033	23.4
III Periphery	42.9	34.5	3,078	55	912	28	1,322	32	5,312	41.0
Total	100.0	100.0	5,592	100	3,268	100	4,095	100	12,955	100.0

Source: Based on Tables 3.8, 3.9, 3.26.

Table 3.28 (cont.)

Some Indicators in Core, Subcores and Peripheral Regions

Regions	Roads 1963 %	Railways 1970 %	Vehicles %	Power <sup>1</sup> supply (Thousands of kw) 1965 %	Illiteracy 1960 %	Immigration 1960-1970 %	Outmigration
	km						
I Core (CE)	12	14.1	51.4	27.8	25.8	57.3	-
II Peripheral Subcentres (CW-NE)	24.6	22.9	14.3	19.8	25.3	(NE) 23.1	(CW) 17.3
III Periphery	63.4	-	63	52.4	48.9	(NW) 19.6	82.7
Total	100.0	-	100.0	100.0	100.0	100.0	100.0

TABLE NO. 3.29

REGIONAL FEDERAL PUBLIC INVESTMENT BY SECTORS 1965-69 (MILL. PESOS)  
(Central Cores, Subcores and Periphery)

REGIONS	TOTAL		INDUSTRIAL		SOCIAL WELFARE		TRANSPORT AND COMMUNICATIONS		AGRICULTURAL AND FISHING PROMOTION		MILITARY EXPENDITURE	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
Core (Central East)	29,516.6	33.9	5,675.4	16.9	15,610.7	71.3	5,121.2	26.1	1,223.2	13.7	1,666.1	83.4
Subcore (North East)	8,781.0	10.1	5,695.4	17.0	966.4	4.4	1,044.3	5.3	836.2	9.4	38.1	2.0
Subcore (Central West)	8,205.8	9.4	3,323.3	9.6	1,028.4	4.7	2,958.9	15.1	854.1	9.6	40.7	2.1
TOTAL Subcores	16,986.8	19.5	9,218.7	26.6	1,994.8	9.1	4,003.2	20.4	1,690.3	19.0	78.8	4.1
Periphery	40,503.4	46.5	19,624.8	56.5	4,272.5	19.5	10,467.5	53.4	5,995.2	67.3	152.8	8.0
National Total	87,006.8	100.0	34,718.9	100.0	21,878.0	100.0	19,592.5	100.0	8,909.7	100.0	1,907.7	100.0

SOURCE:

Ministry of the Presidency; Director of Public Investment, Federal Public Investment, 1965-1969.

TABLE NO. 3.30

## ALLOCATION OF PRIVATE AND PUBLIC INVESTMENT IN CENTRAL CORE AND PERIPHERIES

	National Investment Bank 1940-1950. Investment and Credit Allocation. 1)	1959-61 Total Government Direct Investments. 2)	1959-61 Public Institutions and Enterprises. 2)	1960 Total Domestic Reproducible Capital Stock. 3)
	%	%	%	%
North	37.0	26.0	18.3	18.8
Core	60.0	54.6	72.6	70.6
South	3.0	19.4	9.1	10.6
TOTAL	100.0	100.0	100.0	100.0

\* The North includes regions III and IV. The Core includes regions I, II, VI, VII and VIII. The South comprises regions V, IX and X. (Following a 10 region classification).

## SOURCES:

1. National Investment Bank stands for Nacional Financiera, S.A. It is based on Carrillo, A. "Economic Development of Mexico", Mexico's Bank, 1950; pp. 59-60.
2. It includes the Federal Government, the Federal District government and all state and municipalities' direct investments. "Mexico, 1925-1963 Federal Public Investment, Secretariat of Presidency, Direction of Public Investments, 1964, p. 131.
3. Carrillo, R. (opus cited). 1970.

TABLE NO. 3. 31

STATES' PROPORTIONS IN REGIONAL NET DOMESTIC PRODUCT PER SECTOR

REGIONS	PRIMARY		SECONDARY		TERTIARY		GOVERNMENT		TOTAL	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
(MILLIONS OF PESOS)										
1960										
I. NORTHWEST	3,305.6	100.0	1,868.1	100.0	6,415.6	100.0	542.7	100.0	12,132.0	100.0
1. Northern California	553.3	16.7	505.3	27.2	2,063.7	32.2	197.8	36.4	3,320.1	27.4
2. Lower California	91.3	2.8	68.4	3.7	152.7	2.4	35.8	6.6	348.2	2.9
3. Sonora	1,305.3	39.5	512.0	27.4	2,089.9	32.5	176.3	32.5	4,082.5	33.6
4. Sinaloa	947.7	28.7	645.2	34.5	1,589.0	24.8	101.2	18.6	3,283.1	27.1
5. Nayarit	408.0	12.3	134.2	7.2	521.3	8.1	31.6	5.8	1,095.1	9.0
II. NORTH	4,581.0	100.0	4,223.6	100.0	7,413.9	100.0	465.4	100.0	16,673.9	100.0
6. Chihuahua	1,509.8	32.9	1,476.3	35.0	2,493.6	33.6	223.6	48.0	5,703.3	34.2
7. Coahuila	663.8	14.5	1,516.5	36.0	2,157.0	29.1	105.0	22.6	4,442.3	26.6
8. Durango	1,406.2	26.3	448.0	10.6	817.1	11.0	43.8	9.4	2,515.1	15.1
9. Zacatecas	635.0	13.9	199.7	4.7	631.2	8.5	30.1	6.5	1,496.0	9.0
10. S.L. Potosi	566.2	12.3	573.1	13.6	1,315.0	17.7	62.9	13.5	2,517.2	15.1
III. NORTHEAST	1,530.0	100.0	4,828.4	100.0	6,039.0	100.0	203.0	100.0	12,600.4	100.0
11. Nuevo Leon	485.3	31.7	2,697.6	55.9	3,716.3	61.5	71.5	35.2	6,970.9	55.3
12. Tamaulipas	1,044.5	68.3	2,130.8	44.1	2,322.7	38.5	131.5	64.8	5,629.5	44.7



TABLE NO.3.31 (Contd.)

STATISTICAL PROJECTIONS IN REGIONAL NEW DOMESTIC PRODUCT PER SECTOR

REGIONS	1960 (MILLIONS OF PESOS)									
	PRIMARY		SECONDARY		TERTIARY		GOVERNMENT		TOTAL	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
V. CENTRAL WEST	2,976.6	100.0	3,590.3	100.0	2,277.2	100.0	368.3	100.0	16,212.4	100.0
13. Jalisco	1,146.5	38.5	1,769.3	49.3	4,396.9	47.4	111.3	30.2	7,424.0	45.8
14. Aguascalientes	129.6	4.3	126.8	3.5	435.3	4.7	28.2	7.8	720.5	4.4
15. Colima	155.1	5.2	63.3	1.8	263.7	2.8	35.9	9.7	518.0	3.2
16. Michoacan	953.0	32.0	435.5	12.1	1,855.8	20.0	111.9	30.4	3,356.2	20.7
17. Guanajuato	592.4	19.9	1,195.4	33.3	2,325.5	25.1	80.4	21.8	4,193.7	25.9
VI. CENTRAL EAST	3,189.3	100.0	21,152.5	100.0	34,350.8	100.0	3,972.9	100.0	62,665.4	100.0
18. Queretaro	296.1	9.3	134.2	.6	466.9	1.3	20.5	.5	912.7	1.5
19. Mexico	785.1	24.6	3,009.1	14.2	2,008.4	5.8	147.0	3.7	5,949.6	9.5
20. Fed. District	204.0	6.4	16,225.8	76.7	27,528.1	80.1	3,590.9	90.4	47,548.8	75.9
21. Morelos	195.9	6.1	240.9	1.1	650.6	1.9	58.1	.1	1,145.5	1.8
22. Hidalgo	587.5	18.4	469.9	2.2	940.7	2.7	31.5	.8	2,029.5	3.2
23. Tlaxcala	179.3	5.6	147.9	.7	260.3	.8	21.7	.5	629.2	1.0
24. Puebla	941.4	29.5	924.7	4.4	2,475.8	7.2	103.2	2.6	4,445.1	7.1
I. SOUTH	2,941.8	100.0	813.3	100.0	3,254.8	100.0	147.8	100.0	7,157.7	100.0
25. Guerrero	886.2	30.2	238.0	35.4	1,084.7	33.3	67.2	45.5	2,328.1	32.5
26. Oaxaca	958.1	32.9	344.2	42.3	1,197.0	36.8	36.0	24.3	2,545.3	35.6
27. Chiapas	1,085.5	36.9	181.1	22.3	973.1	29.9	44.6	30.2	2,284.3	31.9

TABLE NO.3.31 (Contd.)

## STATES' PROPORTIONS IN REGIONAL NET DOMESTIC PRODUCT PER SECTOR

REGIONS	1960 (MILLIONS OF PESOS)							
	PRIMARY		SECONDARY		TERTIARY		GOVERNMENT	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
VII. EAST	3,788.8	100.0	3,111.7	100.0	4,534.0	100.0	262.3	100.0
28. Veracruz	3,407.4	89.9	2,786.1	89.5	4,118.5	90.8	211.7	80.7
29. Tabasco	381.4	10.1	325.6	10.5	415.5	9.2	50.6	19.3
VIII. YUCATAN PENINSULA	898.9	100.0	708.1	100.0	1,348.2	100.0	122.1	100.0
30. Campeche	169.1	18.8	144.0	20.3	292.7	21.7	32.0	26.2
31. Yucatan	664.7	73.9	527.4	74.5	1,005.8	6.8	63.9	52.3
32. Q. Roo	65.1	7.2	36.7	5.2	49.7	3.7	26.2	21.4
	23,212.0		40,286.0		72,633.5		6,084.5	
								142,216.0

## SOURCE:

Carrillo, A. An Empirical Test on Interregional Planning. A Linear Programming Model for Mexico. Rotterdam University Press, 1970.

TABLE NO. 3. 32

STATES PROPORTIONS IN REGIONAL GROSS PRODUCT PER SECTOR, 1970 (Mills. Pesos)

REGIONS	PRIMARY		SECONDARY		TERTIARY		TOTAL	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
NORTH WEST	6,794	100.0	10,954	100.0	6,685	100.0	24,433	100.0
Northern California	669	10.1	3,490	21.9	2,407	36.0	6,565	26.9
Sonora	2,802	41.2	3,530	32.2	2,150	32.2	8,482	34.7
Sinaloa	2,328	34.3	2,396	21.9	1,598	23.9	6,322	25.9
Nayarit	760	11.2	921	8.4	287	4.3	1,968	8.0
NORTH	5,199	100.0	20,354	100.0	4,892	100.0	30,445	100.0
Chihuahua	1,992	38.3	5,068	24.9	1,808	36.9	8,868	29.1
Coahuila	986	19.0	9,722	47.8	1,529	31.2	12,237	40.2
Durango	873	16.8	2,152	10.6	659	9.4	3,494	11.4
Zacatecas	682	13.1	702	3.4	356	7.3	1,740	5.7
S.L. Potosi	666	12.8	2,710	13.3	740	15.1	4,116	13.5
NORTH EAST	2,382	100.0	26,273	100.0	6,515	100.0	35,170	100.0
Nuevo Leon	813	24.1	24,800	91.3	4,384	67.3	29,997	83.0
Tamaulipas	1,569	65.9	2,273	8.7	2,131	32.7	5,973	17.0

TABLE 10.3.32 (Cont'd.)

STATES PROPORTIONS IN REGIONAL GROSS PRODUCT PER SECTOR, 1970 (Mills. Pesos)

REGIONS	PRIMARY		SECONDARY		TERTIARY		TOTAL	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
CENTRAL WEST	6,163	100.0	19,093	100.0	6,897	100.0	32,153	100.0
Jalisco	2,277	36.9	12,042	63.1	4,058	58.5	18,357	57.1
Aguascalientes	208	3.4	692	3.6	302	4.4	1,202	3.4
Colima	314	5.1	267	1.4	197	2.9	778	2.4
Michoacan	1,788	29.0	1,859	9.7	976	14.2	4,623	14.4
Oaxaca/Juato	1,576	25.6	4,233	22.2	1,384	20.1	7,193	22.4
CENTRAL EAST	3,967	100.0	122,679	100.0	35,074	100.0	162,320	100.0
Querevaro	271	6.8	2,076	1.7	299	0.9	2,646	1.6
Mexico	1,011	25.5	39,711	32.4	2,988	8.5	43,710	26.9
Federal District	391	9.9	68,112	55.5	29,242	83.4	97,745	60.2
Morelos	307	7.7	1,788	1.5	516	1.5	2,611	1.6
Hidalgo	701	17.7	3,339	2.7	413	1.2	4,453	2.7
Tlaxcala	167	4.2	660	0.5	96	0.3	923	0.6
Puebla	1,119	28.2	6,993	5.7	1,520	4.3	9,632	5.9

TABLE NO.3.32 (Contd.)

STATES PROPORTIONS IN REGIONAL GROSS PRODUCT, PER SECTOR, 1970 (Mills. Pesos)

REGIONS	PRIMARY		SECONDARY		TERTIARY		TOTAL	
	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%	ABSOLUTE	%
SCUTL	3,126	100.0	2,094	100.0	1,977	100.0	7,197	100.0
Guerreño	746	23.9	537	25.6	1,102	55.7	2,385	33.1
Oaxaca	972	31.1	904	43.2	403	20.4	2,279	31.7
Chiapas	1,408	45.0	653	31.2	472	23.9	2,533	35.2
EAST	2,691	100.0	9,103	100.0	2,799	100.0	15,593	100.0
Vernacruz	3,092	83.8	8,768	96.3	2,404	85.9	14,264	91.3
Tahasco	699	16.2	335	3.7	395	14.1	1,329	8.5
YUCATAN	588	100.0	1,855	100.0	889	100.0	3,332	100.0
Campeche	138	23.5	545	29.4	152	17.1	835	25.1
Yucatan	397	67.5	1,229	66.3	653	73.5	2,279	68.4
Q. Roo	55	9.0	881	4.4	84	9.4	218	6.5
NATIONAL TOTAL	31,913		212,404		65,728		310,045	

SOURCE: Industrial, Agricultural, Commerce and Services Census, 1970.

TABLE NO.3.33

SOME INDICATORS OF REGIONAL GROSS PRODUCT PER CAPITA<sup>1</sup> IN TERMS OF NATIONAL AVERAGES

BOVE AVERAGE NATIONAL GROSS PRODUCT PER CAPITA		URBAN POPULATION PARTICIPATION		URBAN POPULATION RATE. ANNUAL GROWTH		ROADS 1963 Km		RAILWAYS (Km) 1970		ILLITERACY 1960 %		LICENSES VEHICLES (1964) %		IRRIGATED LANDS (HRS.) 1966 %	
REGIONS		1970 %		%		%		%		%		%		%	
North West		61.8		7.6		14.1		13.1		4.6		14.3		48.8	
North East		73.0		6.8		9.0		6.4		2.6		3.8		15.0	
Central East		71.2		6.6		12.0		14.1		25.8		51.4		4.5	

1. The classification relates to 1970's figures. See Table No.

SOURCES:

Based on Table 314, and Statistical Annuary of United States of Mexico, 1967. Statistical Agenda 1967-68;  
General Bureau of Statistics, Ministry of Industry and Commerce. General Geography of Mexico, Parts I and IV,  
Tameyo, J.

TABLE NO.3.33(Contd.)

SOME INDICATORS OF REGIONAL GROSS PRODUCT PER CAPITA<sup>1</sup> IN TERMS OF NATIONAL AVERAGES

BELOW AVERAGE NATIONAL GROSS PRODUCT PER CAPITA	URBAN POPULATION		URBAN POPULATION		ROADS		RAILWAYS		ILLITERACY		LICENCES		IRRIGATED LANDS	
	PARTICIPATION		RATE - ANNUAL		1963		(km)		1960		(1964)		(H.S.)	
	1970		%		km		%		%		%		%	
REGIONS														
North	51.8		4.2		18.3		30.0		9.1		12.9		13.3	
Central West	67.8		7.8		15.6		16.5		22.7		10.5		12.0	
South	29.9		5.1		9.4		6.4		19.6		2.6		5.1	
East	44.8		7.0		9.2		9.4		13.5		3.0		1.3	
Yucatan Peninsula	62.5		4.0		12.4		4.0		2.1		1.5		-	

1. As previous page.

SOURCES: " "

TABLE NO.4.1

## GEOGRAPHICAL DISTRIBUTION OF FACTORIES GRANTED

TAX RELIEF IN MEXICO, 1940 - 64. \*

1940 - 1950

<u>Areas</u>	<u>Number of Factories</u>	<u>% of Factories</u>	<u>Employment</u>	<u>% of Employment</u>
Totals	570	100.0	49304	100.0
Centre	409	71.8	31061	63.0
North	91	16.0	12095	24.5
Pacific North	35	6.1	2517	5.1
Gulf Coast	30	5.2	3270	6.7
Pacific South	5	0.9	361	0.7

1957 - 1961

<u>Areas</u>	<u>Number of Factories**</u>	<u>% of Factories</u>	<u>Employment**</u>	<u>% of Employment</u>
Totals	-	100.0	-	100.0
Centre	-	72.5	-	53.1
North	-	18.7	-	34.8
Pacific North	-	4.3	-	1.9
Gulf Coast	-	3.0	-	4.9
Pacific South	-	1.5	-	5.3

1959 - 1964

<u>Areas</u>	<u>Number of Factories</u>	<u>% of Factories</u>	<u>Employment</u>	<u>% of Employment</u>
Totals	167	100.0	14743	100.0
Centre	122	73.1	10365	70.3
North	30	18.0	2981	20.2
Pacific North	8	4.8	596	4.0
Gulf Coast	6	3.6	646	4.4
Pacific South	1	.6	149	1.0

\* Exclusive of 1950 - 1957.

\*\* No data available.

SOURCES: 1940 - 1950 - Lopez Malo, op. cit., p.213.  
 1957 - 1961 - Vazquez Tercero - 'Industrial Promotion in Mexico, Mexico, 1962.  
 1959 - 1964 - 'Records of activities 1959-64 - Ministry of Industry and Commerce.



TABLE NO.42

THE LAW OF NEW AND NECESSARY INDUSTRY: GEOGRAPHICAL  
DISTRIBUTION OF COMPANIES GRANTED EXEMPTIONS, 1959-64.

a. Number of Plants

<u>State</u>	<u>Total</u>	<u>Auto</u>	<u>Basic Metals</u>	<u>Chem. Prod.</u>	<u>Machinery</u>	<u>Electrical</u>	<u>Metals</u>	<u>Food</u>	<u>Others</u>
Total	167	24	13	29	6	18	23	9	45
Federal Dist.	48	7	2	5	-	10	7	3	14
Mexico	50	7	6	7	5	5	7	-	13
Nuevo Leon	21	7	-	4	-	3	3	1	3
Jalisco	6	-	-	-	1	-	3	-	2
Veracruz	5	-	1	2	-	-	-	-	-
Puebla	5	-	2	-	-	-	-	-	3
Others	32	3	2	9	-	-	3	5	10

b. Investment (in millions of pesos)

<u>State</u>	<u>Total</u>	<u>Auto</u>	<u>Basic Metals</u>	<u>Chem. Prod.</u>	<u>Machinery</u>	<u>Electrical</u>	<u>Metals</u>	<u>Food</u>	<u>Others</u>
Total	2,539.2	228.3	447.5	788.8	39.6	96.1	297.7	20.7	620.1
Federal Dist.	285.6	29.9	13.0	9.6	5.7	29.3	109.1	6.6	82.4
Mexico	603.8	104.1	68.9	114.8	29.2	36.3	40.5	-	210.6
Nuevo Leon	283.5	81.2	-	49.9	4.0	30.5	45.5	4.0	72.2
Jalisco	43.4	-	-	-	0.7	-	27.5	-	15.1

TABLE NO.4.2 (Contd.)

THE LAW OF NEW AND NECESSARY INDUSTRY: GEOGRAPHICAL DISTRIBUTION  
OF COMPANIES GRANTED EXEMPTIONS, 1959-64.

	<u>State</u>	<u>Total</u>	<u>Auto</u>	<u>Basic Metals</u>	<u>Chem. Prod.</u>	<u>Machinery</u>	<u>Electrical</u>	<u>Metals</u>	<u>Food</u>	<u>Others</u>
Veracruz		452.5	-	212.5	226.3	-	-	13.7	-	-
Puebla		73.1	-	61.2	-	-	-	-	-	11.9
Others		784.3	13.1	91.9	389.2	-	-	61.4	10.1	218.6
c. <u>Employment</u>										
Total		14,743	2,641	1,530	1,380	656	1,306	2,426	577	4,227
Federal Dist.		3,275	679	89	106	75	550	686	101	989
Mexico		5,030	836	365	178	368	457	1,012	-	1,814
Nuevo Leon		2,321	995	-	172	195	299	468	120	72
Jalisco		333	-	-	-	18	-	120	-	195
Veracruz		646	-	174	392	-	-	80	-	-
Puebla		828	-	724	-	-	-	-	-	104
Others		2,410	131	178	532	-	-	160	356	1,053

SOURCE: General Bureau of Industries, Ministry of Industry and Commerce.

REGIONAL DISTRIBUTION OF CREDITS GIVEN BY  
'El Fondo de Garantia', 1953-69.

a. 1953 - 1961

<u>State</u>	<u>No. of Factories</u>		<u>No. of Credits</u>		<u>Value of Credits*</u>	
	<u>Absolute</u>	<u>%</u>	<u>Absolute</u>	<u>%</u>	<u>Absolute</u>	<u>%</u>
Totals	2294	100.0	3959	100.0	708.6	100.0
Federal Dist.	1232	53.7	2206	55.7	410.2	57.9
Mexico	131	5.7	268	6.8	70.6	10.0
Nuevo Leon	158	6.9	248	6.3	47.5	6.7
Guanajuato	169	7.4	281	7.1	37.3	5.3
Jalisco	88	3.8	137	3.5	22.2	3.1
Oaxaca	146	6.4	241	6.1	6.9	1.0
Puebla	51	2.2	80	2.0	19.1	2.7
San Luis F.	49	2.1	84	2.1	8.8	1.2
Coahuila	39	1.7	59	1.5	11.8	1.7
Sinaloa	24	1.0	89	1.0	7.8	1.1
Tamaulipas	21	.9	32	.8	8.6	1.2
Chihuahua	14	.6	32	.6	7.7	1.1

b. 1953 - 1965 (December)

<u>State</u>	<u>No. of Factories</u>		<u>No. of Credits</u>		<u>Value of Credits*</u>	
	<u>Absolute</u>	<u>%</u>	<u>Absolute</u>	<u>%</u>	<u>Absolute</u>	<u>%</u>
Totals	3559	100.0	6438	100.0	1313.1	100.0
Federal Dist.	1729	48.6	3237	50.3	689.2	52.5
Mexico	242	6.8	530	8.2	180.9	13.8
Nuevo Leon	226	6.4	373	5.8	78.6	6.0
Guanajuato	277	7.8	527	8.2	69.7	5.3
Jalisco	145	4.1	225	3.5	42.9	3.3
Puebla	73	2.1	141	2.2	37.1	2.8
Chihuahua	53	1.5	79	1.2	20.7	1.6
Sonora	84	2.4	112	1.7	20.9	1.6
Coahuila	62	1.7	94	1.5	20.2	1.5
Morelos	19	.5	40	.6	14.6	1.1
Tamaulipas	33	.9	52	.8	13.1	1.0

c. 1953 - 1969 (June)

<u>State</u>	<u>No. of Factories</u>		<u>No. of Credits</u>		<u>Value of Credits*</u>	
	<u>Absolute</u>	<u>%</u>	<u>Absolute</u>	<u>%</u>	<u>Absolute</u>	<u>%</u>
Totals	4927	100.0	9262	100.0	2038.9	100.0
Federal Dist.	2035	41.3	4053	43.8	954.9	46.8
Mexico	346	7.0	788	8.5	303.7	14.9
Jalisco	332	6.7	537	5.8	121.5	6.0
Guanajuato	364	7.4	750	8.1	119.2	5.8
Nuevo Leon	283	5.7	474	5.1	112.6	5.5
Puebla	105	2.1	200	2.2	56.8	2.8
Sonora	138	2.8	218	2.4	38.6	1.9
Chihuahua	114	2.3	167	1.8	35.2	1.7
Coahuila	91	1.8	142	1.5	32.6	1.6
Sinaloa	152	3.1	219	2.4	27.0	1.3
Veracruz	75	1.6	116	1.3	24.6	1.2
Morelos	23	.5	56	.6	25.2	1.2
Aguascalientes	41	.8	77	.8	23.6	1.2

\* In Millions of pesos.

SOURCE: Calculated from information given in El Mercado de Valores, 1960-1969.

TABLE NO.4.4

## SHARE OF WRS IN THE VALUE OF NATIONAL AGRICULTURAL PRODUCTION

1950-1973

(MILLIONS OF PESOS)

Period	TOTAL			TOTAL WRS			IRRIGATION DISTRICTS			IRRIGATION UNITS FOR RURAL DEVELOPMENT		
	Current Pesos	Pesos of 1960	%	Current Pesos	Pesos of 1960	%	Current Pesos	Pesos of 1960	%	Current Pesos	Pesos of 1960	%
1950	6 693.0	10 830.0	100.0	1 504.0	2 433.7	22.47	1 504.0	2 433.7	22.47	N.A.	N.A.	-
1960	16 399.2	16 399.2	100.0	4 873.2	4 873.2	29.71	4 491.2	4 491.2	27.38	382	382.0	2.53
1965	29 202.3	23 493.4	100.0	8 155.8	6 561.4	27.92	7 570.8	6 090.8	25.92	585	470.6	2.00
1966	30 202.3	24 396.0	100.0	8 235.2	6 652.0	27.26	7 630.2	6 193.3	25.26	605	488.7	2.00
1967	30 991.6	24 231.1	100.0	8 301.4	6 683.8	28.40	8 173.4	6 390.5	26.37	631	493.3	2.05
1968	31 496.9	24 359.6	100.0	10 148.6	7 846.9	32.22	9 192.6	7 109.5	29.18	956	739.4	3.04
1969	31 687.4	23 789.3	100.0	10 470.3	7 860.6	33.04	9 286.3	6 971.7	29.30	1 184	888.9	3.74
1970	32 712.5	23 266.4	100.0	11 800.9	8 393.2	36.07	10 525.9	7 486.4	32.17	1 275	906.8	3.90
1971	35 546.5	24 823.0	100.0	12 740.6	8 697.1	35.84	11 405.6	7 964.8	32.08	1 335	932.3	3.76
1972 <u>1/</u>	36 604.8	24 376.0	100.0	12 530.9	8 653.9	35.50	11 347.9	7 836.9	31.00	1 183	817.0	3.23
1973 P	43 340.0	N. D.	100.0	18 631.0	N. D.	42.90	15 855.0	N. D.	36.58	2 776	N. D.	6.40

TABLE NO.4.4 (Contd.)

## SHARE OF WRS IN THE VALUE OF NATIONAL AGRICULTURAL PRODUCTION

1950-1973

(MILLIONS OF PESOS)

Period	TOTAL			TOTAL WRS			IRRIGATION DISTRICTS			IRRIGATION UNITS FOR RURAL DEVELOPMENT		
	Current Pesos	Pesos of 1960	%	Current Pesos	Pesos of 1960	%	Current Pesos	Pesos of 1960	%	Current Pesos	Pesos of 1960	%
ANNUAL INCREASES												
1950-60	9.4	4.2		12.5	7.2		11.6	6.3		-	-	
1960-65	12.2	7.5		10.9	4.8		11.0	6.3		8.9	4.3	
1965-70	2.3	-0.2		7.7	5.1		6.8	4.2		16.9	14.0	
1970-73	9.7	-		16.4	-		14.6	-		29.0	-	

1/ Provisional

P Preliminary

N.A. Not available

SOURCE: General Bureau of Agricultural Economy. Ministry of Agriculture and Livestock. Agricultural Statistics of Irrigation Districts, WRS.

TABLE NO.4.5

PROFITABILITY OF IRRIGATED AND NON-IRRIGATED AREAS

Years	IRRIGATION DISTRICTS				REST OF THE COUNTRY		
	Cropped Area (Thousands of Ha.)	Value of Crops (Millions of Pesos).	Profitability (Pesos by Ha.)	Cropped Area (Thousands of Ha.)	Value of Crops (Millions of Pesos).	Profitability (Pesos by Ha.)	
1960	2 062	4 946	2 399	10 274	11 453	1 115	
1961	1 912	6 300	3 295	10 654	8 795	826	
1962	1 813	6 566	3 622	11 017	14 301	1 298	
1963	2 060	6 297	3 057	11 773	17 444	1 482	
1964	2 104	7 930	3 769	12 600	18 959	1 505	
1965	2 076	8 223	3 961	12 722	19 659	1 545	
1966	2 133	8 284	3 864	13 006	20 266	1 560	
1967	2 626	8 909	3 393	12 263	22 063	1 801	
1968	2 825	10 270	3 635	12 176	21 227	1 743	
1969	3 027	10 545	3 484	11 009	21 142	1 920	

TABLE NO. 45 (Contd.)

PROFITABILITY OF IRRIGATED AND NON-IRRIGATED AREAS

Years	IRRIGATION DISTRICTS			REST OF THE COUNTRY		
	Cropped Area (Thousands of Ha.)	Value of Crops (Millions of Pesos).	Profitability (Pesos by Ha.)	Cropped Area (Thousands of Ha.)	Value of Crops (Millions of Pesos).	Profitability (Pesos by Ha.)
1970	3 010	11 975	3 978	12 118	22 224	1 834
1971	3 026	12 903	4 264	12 654	22 097	1 983
1972	3 161	11 392	3 604	12 689	28 608	2 255
1973	3 386	14 762	4 360	13 390	25 738	1 922

SOURCES:

Orive, A. "Irrigation in Mexico". Grijalbo, Editorial, S.A. Mexico, D.F. 1970. Table 18.  
 Water Resources Ministry. Reports of Activities.  
 Ministry of Agriculture and living stock. Reports of Activities.

TABLE NO.4.6

## REGIONAL AGRICULTURAL PRODUCTION IN IRRIGATION DISTRICTS IN SEASONAL PERIODS 1973-1974.

	Harvested Area	%	Value of Harvests	%	Value of Harvests \$/ha.	National Average %
North Pacific	1 427 178	49.5	12 764'676 018.00	56.2	8 953.01	113.0
Central North	290 225	10.1	2 939'847 861.00	12.9	10 129.54	128.0
Northeast	473 646	16.4	2 098'145 190.00	9.2	4 429.77	56.0
Central	643 195	22.3	4 695'276 549.00	20.6	7 299.92	92.0
South	48 094	1.7	246'756 220.00	1.1	5 130.14	65.0
TOTAL In The Districts	2 882 338	100.0	22 764'701 838.00	100.0	7 897.99	100.0

SOURCE:

Annual Agricultural Statistics. WRS. Mexico City.



Table 4.7

Share of Irrigation Districts and Rural Development Units in Total Crop Land, (1950-1973)

(Thousands of Hectares)

Year	Total %	Total WRS %	Irrigation Districts %	Irrigation Units for Rural Development %
1950	8,600	1,100	12.79	1,100
1960	11,365	2,046	18.00	1,752
1965	14,707	2,557	17.38	2,167
1966	15,753	2,584	16.40	2,181
1967	14,889	2,601	17.46	2,180
1968	15,002	2,798	18.65	2,350
1969	14,036	3,002	21.38	2,487
1970	14,857	2,992	20.13	2,461
1971	14,413	3,026	20.90	2,452
1972 <sup>1</sup>	14,447	3,132	19.80	2,642
1973 E	14,724	3,353	22.77	2,860
<u>Annual Increases %</u>				
1950-60	1.9	6.4	4.8	-
1960-65	5.3	4.6	4.3	5.8
1965-70	0.2	3.2	2.6	6.4
1970-73	-0.3	3.9	5.1	-2.4

<sup>1</sup> Provisional

E Preliminary estimation

N.A. Not available

Source: Activities Report, WRS

Table 4.3

Allocation of Federal Public Investment

1959 - 1974

(Millions of Pesos)

Years	Total Investment <sup>1</sup>	Promotion		Transport and Communications	Social Benefit	Administration and Defense
		Agricultural	Industrial			
1959-1964	67,360	7,143	23,253	18,746	16,311	1,907
1965-1970	129,817	13,552	51,543	29,239	33,030	2,453
1971	22,559	3,264	9,328	4,589	5,071	307
1972	34,715	4,948	11,461	7,877	9,239	1,170
1973	49,838	7,044	16,222	12,651	13,056	865
1974 <sup>2</sup>	66,410	11,502	21,231	17,448	14,782	1,447
1971-1973	107,112	15,256	37,031	25,117	27,366	2,342
<u>Relative Sharing (%)</u>						
1959-1964	100.0	10.6	34.5	27.8	24.3	2.8
1965-1970	100.0	10.4	39.7	22.5	25.5	1.9
1971	100.0	14.5	41.3	20.3	22.5	1.4
1972	100.0	14.3	33.1	22.7	26.5	3.4
1973	100.0	14.1	32.6	25.4	26.2	1.7
1974	100.0	17.3	32.0	26.3	22.2	2.2
1971-1973	100.0	14.2	34.6	23.4	25.6	2.2

Table 4.8 (cont.)

Allocation of Federal Public Investment  
1959-1974  
(Millions of Pesos)

Years	Total Investment	Promotion Agricultural	Industrial	Transport and Communications	Social Benefit	Administration and Defense
1953-1958						
1959-1964	15.7	10.4	17.2	10.2	26.0	15.5
1959-1964						
1965-1970	11.4	11.3	14.2	7.7	12.5	4.3
1971-1972	53.9	51.6	23.1	71.7	82.2	281.1
1972-1973	43.6	42.4	41.3	60.6	41.3	-26.1
1973-1974	33.2	63.3	57.3	37.9	13.2	61.8

<sup>1</sup> Authorized investment until 1964; from 1965 to 1973 acquired investment

<sup>2</sup> Authorized until August 15th.

Source: Ministry of Presidency, Public Investments Bureau

TABLE NO.4.9

REGIONAL INVESTMENT IN IRRIGATION IN CONSTANT PRICES(THOUSANDS OF PESOS)

REGION	1959 - 1964	%
I		
II	2 734 924.0	36.7
III	335 435.0	4.5
IV	680 456.8	9.1
V	709 637.3	9.5
VI	334 959.5	4.5
VII	73 316.5	1.0
VIII	302 429.8	4.0
IX	1 534 526.8	20.6
X		
XI	54 992.3	0.7
XII	194 124.9	2.6
XIII	497 860.9	6.7
TOTAL	7 452 663.8	100.0

RIVER BASINS : RURAL AND URBAN POPULATION  
1970-2000

(Thousands of people)

BASINS	1 9 7 0			2 0 0 0		
	TOTAL	RURAL	URBAN	TOTAL	RURAL	URBAN
I	474.1	34.4	439.7	2 324.3	27.6	2 296.7
II	128.0	59.0	69.0	499.6	34.2	465.4
III	459.9	115.8	344.1	1 459.2	195.2	1 264.0
IV	169.1	46.8	122.3	462.2	66.8	395.4
V	964.3	375.5	588.8	3 046.0	456.8	2 589.2
VI	1 190.8	739.5	451.3	4 592.4	905.5	3 586.9
VII	799.2	368.3	430.9	2 449.7	670.7	1 779.0
VIII	3 366.2	1 110.1	2 256.1	10 691.1	1 475.1	9 216.0
IX	4 817.3	2 325.4	2 497.9	13 222.1	4 022.7	9 199.4
X	544.8	240.6	304.2	1 599.0	356.6	1 242.4
XI	814.1	358.8	455.3	2 007.5	501.4	1 506.1
XII	5 057.8	2 793.2	2 264.6	13 759.7	4 145.0	9 614.7
XIII	867.7	478.6	389.1	3 561.9	518.0	3 043.9
XIV	725.3	488.7	236.6	1 757.0	715.5	1 041.5
XV	1 109.9	704.1	405.8	2 406.4	1 065.6	1 340.8
XVI	504.9	264.5	240.4	870.9	337.2	533.7
XVII	2 598.4	496.1	2 102.3	8 565.7	608.1	7 856.6
XVIII	334.6	198.5	136.1	911.2	211.0	700.2
XIX	3 331.3	1 846.3	1 485.0	10 827.2	5 091.8	5 735.4
XX	1 729.0	1 207.4	521.6	3 853.0	1 609.0	2 244.0
XXI	2 784.4	1 552.1	1 232.3	5 832.9	1 857.8	3 975.1
XXII	715.4	388.8	326.6	2 595.7	576.5	2 019.2
XXIII	1 675.7	1 201.0	474.7	4 118.9	1 632.9	2 485.3
XXIV	208.9	75.3	133.6	802.8	116.8	686.0
XXV	813.1	284.7	528.4	1 755.5	428.5	1 327.0
XXVI	68.7	45.0	23.7	476.6	90.4	386.2
XXVII	908.3	144.5	763.8	2 853.5	180.3	2 673.2
XXVIII	191.1	100.6	90.5	351.3	163.4	187.9
XXIX	972.8	463.2	509.6	2 362.4	758.0	1 604.4
XXX	1 171.3	642.9	528.4	3 047.8	1 135.2	1 912.6
XXXI	8 885.1	853.9	8 031.2	27 754.9	1 380.0	26 374.9
TOTAL	48 381.5	20 003.6	28 377.9	140 716.7	31 333.6	109 383.1

SOURCE: Statistical Manual of Population in the River Basins. WRS 1972,  
Mexico City.

Table 411

## Sectoral E.A.P. and their Basin Concentration, 1960 and 1970

Sectoral E.A.P. by Basins	Number of Basins	%	
		1960	1970
Total National E.A.P.	30	100	100
Basins, VIII, IX, XII, XIX and XXI	5	58	60
Other Basins	16	42	40
Total agricultural E.A.P.	30	100	100
Basins, VIII, IX, XII, XIX, XXI	5	52	51
Other Basins	15	48	49
Total extractive E.A.P.	30	100	100
Basins, IX, XVII, XIX, XX, XXIII	5	53	62
Other Basins	15	47	38
Total E.A.P. in transformation	30	100	100
Basins VIII, X, XII, XVII	5	74	77
Other Basins	16	26	23
Total E.A.P. in construction	30	100	100
Basins, VII, IX, XII, XVII, XIX	5	67	68
Other Basins	15	33	32
Total E.A.P. in electricity and gas	30	100	100
Basins, VII, IX, XII, XVII, XIX	5	70	66
Other Basins	15	30	34
Total E.A.P. in commerce	30	100	100
Basins, VIII, IX, XXII, XVII, XIX	5	66	66
Other Basins	15	34	34
Total E.A.P. in services	30	100	100
Basins, VIII, IX, XXII, XVII, XIX	5	69	69
Other Basins	15	31	31
Total E.A.P. in government	30	-	100
Basins, VIII, IX, XXII, XVII, XIX	5	-	67
Other Basins	15	-	33
Total E.A.P. in transport	30	100	100
Basins, VII, IX, XXII, XVII, XIX	5	63	65
Other Basins	15	37	35

Source: Statistical Manual of Population in River Basins W.R.S., 1972, Mexico City

PUBLIC EXPENDITURE BY RIVER BASINS COMMISSIONS  
(MILLIONS OF PESOS)

Años	PAPALOAPAN		GRIJALVA		TEPICALCATEPEC (incl. Balsas)		FUERTE	
	Current Prices	Prices of 1980 <sup>a</sup>	Current Prices	Prices of 1980 <sup>a</sup>	Current Prices	Prices of 1980 <sup>a</sup>	Current Prices	Prices of 1980 <sup>a</sup>
1947	7.3	18.6			2.4	5.7		
1948	16.0	35.8			11.5	25.8		
1949	21.0	43.5			14.1	29.3		
1950	37.5	70.9			16.8	31.8		
1951	77.9	122.3			20.7	32.5		
1952	111.6	167.4			27.3	40.9	2.9	3.8
1953	115.1	174.9	5.5	8.4	27.7	42.0	38.0	57.8
1954	99.7	137.6	9.9	13.7	25.7	35.5	111.6	154.0
1955	96.6	117.9	13.6	16.6	32.5	39.6	144.1	175.8
1956	88.9	103.1	26.3	30.5	30.6	35.5	121.9	141.4
1957	89.0	98.8	28.0	31.1	38.3	42.5	60.2	66.8
1958	102.8	110.0	34.8	37.2	33.2	35.5	35.7	38.2
1959	40.8	42.8	24.3	25.5	19.9	20.9	20.0	21.0
1960	24.3	24.3	57.9	57.9	26.6	26.6	32.9	32.9
1961	30.0	29.7	49.4	48.9	10.9	10.8	23.2	23.0

(MILLIONS OF PESOS)

Años	PAPALOAPAN		GRIJALVA		TEPICALCATEPEC (incl. Balsas)		FUERTE	
	Current Prices	Prices of 1960 <sup>a</sup>	Current Prices	Prices of 1960 <sup>a</sup>	Current Prices	Prices of 1960 <sup>a</sup>	Current Prices	Prices of 1960 <sup>a</sup>
1962	21.1	20.5	246.9	239.5	22.3 <sup>b</sup>	21.6	25.3	24.5
1963	23.7	22.5	412.3	391.7	53.9 <sup>b</sup>	51.2	42.0	39.9
1964	20.0	19.8	135.0	129.6	54.4 <sup>b</sup>	52.2	62.2	59.7
TOTAL	1 023.8	1 360.4	1 043.9	1 030.6	468.8	579.9	720.0	838.8

- a. Current Expenditure adapted to the price indexes for public investment. Basic Statistics Manual, Mexico's Bank.
- b. It includes expenditure for all Balsas Commission. For Tepalcatepec Basin, current expenditure in 1962 was 13.9 million exclusively, and 13.8 millions for 1963 and 10.4 millions for 1964.

SOURCE:

Mexico, WRS, Annual Report, several years, and available and published information for different Commissions.



GOALS OF MAIN INSTITUTIONS INVOLVED IN NATIONAL AND  
REGIONAL PLANNING IN MEXICO.

BEFORE 1970

<u>INSTITUTION</u>	<u>GOALS</u>
INVESTMENT PLANNING COMMISSION 1953-1958 (IPC)	<p>To forward the president, annual recommendations for coordinated investment programmes, including an indication of priorities. To assess investment projects and to undertake economic research necessary for public coordination. To estimate the structure and financing of the public budget and the level of national income necessary for development in order to achieve adequate living standards. To integrate the efforts of the private and public sectors, and to devise long and short term plans. The IPC plan had the following income redistribution strategy:</p> <ol style="list-style-type: none"><li>1. Increase consumption of major groups of population.</li><li>2. Make domestic markets more competitive.</li><li>3. Preserve the income levels of higher income groups in order to assure continuation of investment.</li><li>4. To improve personal income distribution without affecting national economic growth.</li></ol>

AFTER 1970

NATIONAL URBAN DEVELOPMENT COMMISSION (CODURPA).	Promotion of growth poles according to their position in the national urban hierarchy.
--	--

EMPLOYMENT ANALYSIS GROUP  
(GEPE) IN MINISTRY OF  
PLANNING AND PROGRAMMING.

In the sphere of urban employment, to lower  
the growth of the 3 large metropolises  
through: a. Discouraging migration, b.  
Setting up a price system for public goods  
and services (water, power supply and transport)  
equivalent to their social cost. c. Promoting  
cities between 50,000 and 500,000 inhabitants.

NATIONAL HYDROLOGICAL  
PLAN (HNP-WRS).

To estimate the needs, availability and  
required infrastructural works for water  
distribution according to different uses.

COMMITTEES FOR THE PRO-  
MOTION OF STATES SOCIO-  
ECONOMIC DEVELOPMENT (1971-  
1975) (PCSSD).

To draw up federal investment programmes at  
states level in order to provide the president  
with the information required for sectoral  
public spending and budget formulation.  
Coordination of the investment expenditure  
of different government bodies and the formu-  
lation of socioeconomic development plans.

NATIONAL POPULATION  
COUNCIL (1973)

To equate the social and economic development  
programmes with the needs of the level and  
distribution of population. It also incorpor-  
ates urban planning and control of interregional  
migration to reduce the concentration of  
population.

GENERAL DIRECTION OF  
REGIONAL DEVELOPMENT  
(1974).

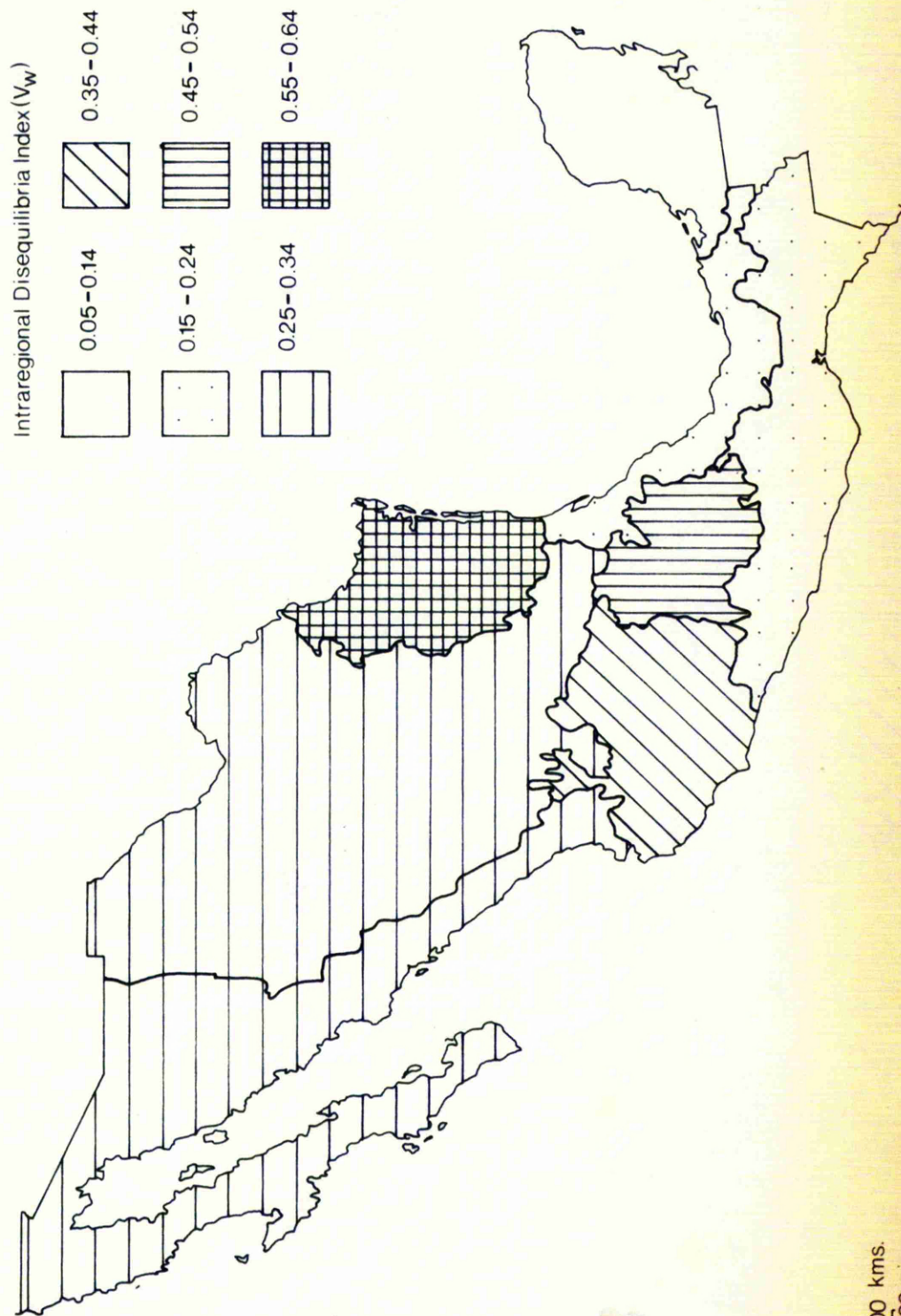
To establish coordinative mechanisms between  
the national, regional and states institu-  
tions in order to make public investment more  
efficient.

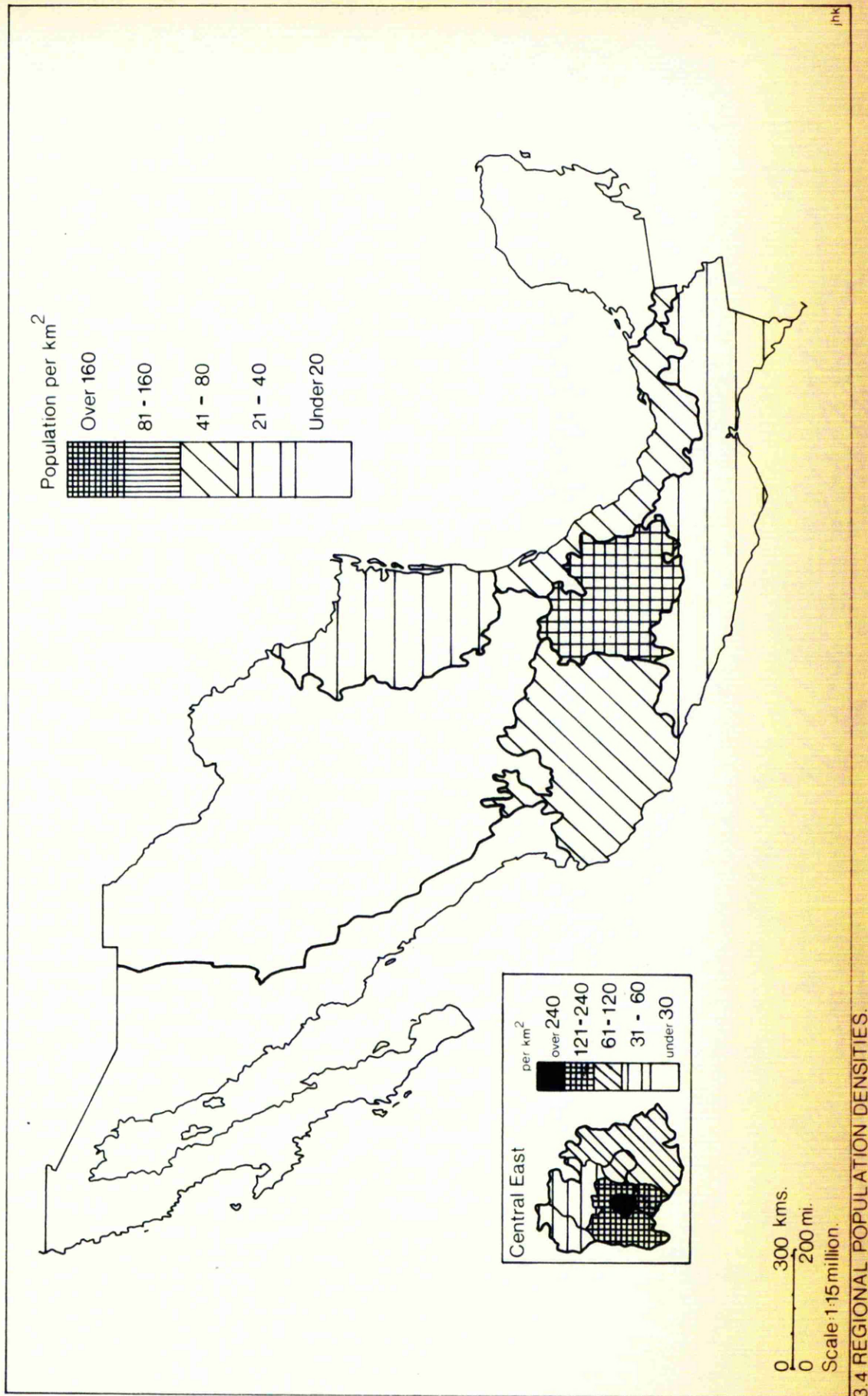
NATIONAL COMMISSION OF  
REGIONAL DEVELOPMENT  
(1975).

To devise development plans for regions which  
comprise 2 or more states (adding a spatial  
dimension to sectoral planning). To coordin-  
ate federal and state public investment so  
that the measures proposed by the PCSSD  
are compatible with the national and regional  
development policies. For this purpose it  
considers a regionalisation of 9 regions  
(with 2 or more federal states).

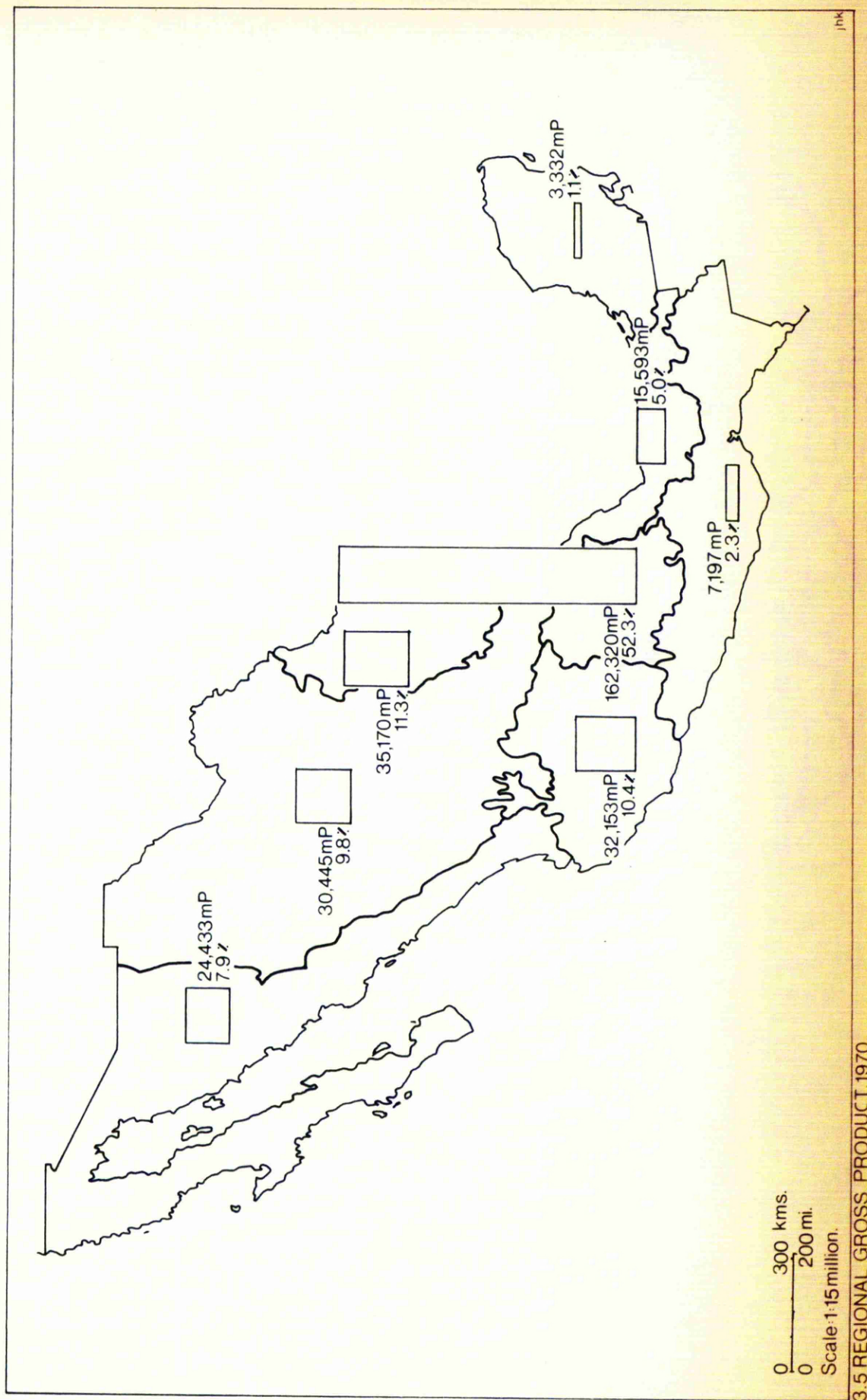
\* Goals 3 and 4 are obviously contradictory.

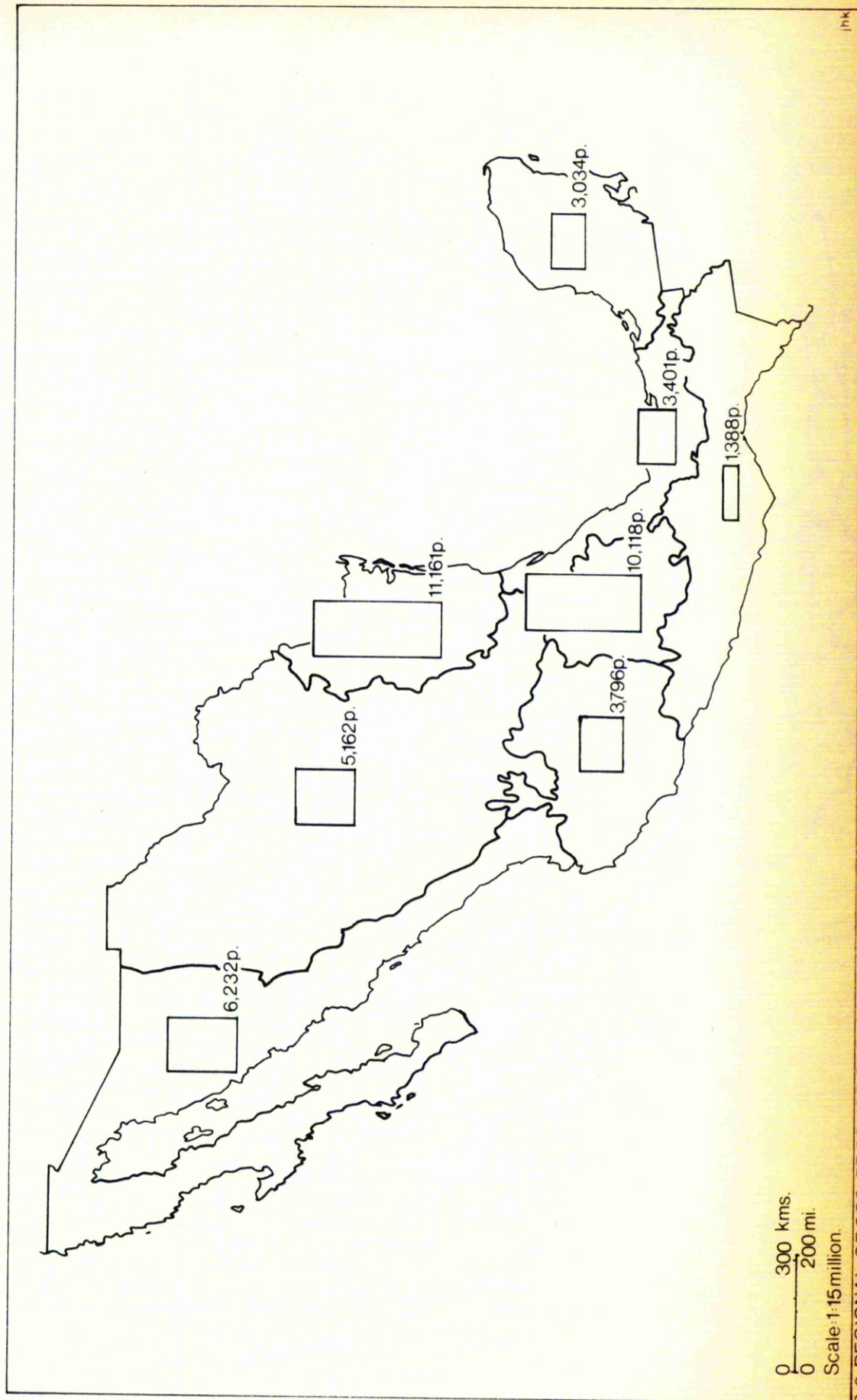
SOURCES : Shaffer, Mutual Adjustment Planning, Syracuse University, 1966.  
Unikel, L., 1975.





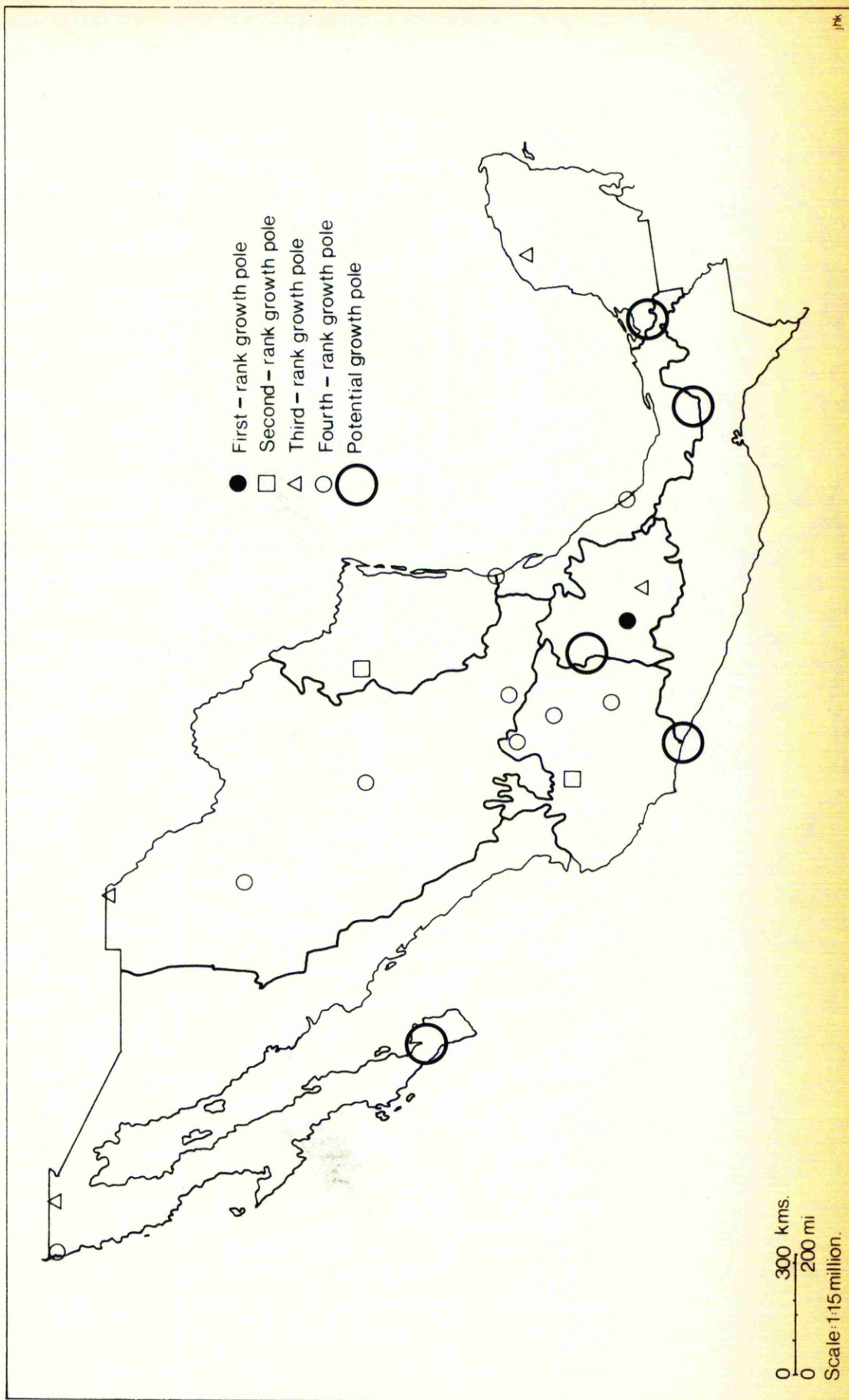




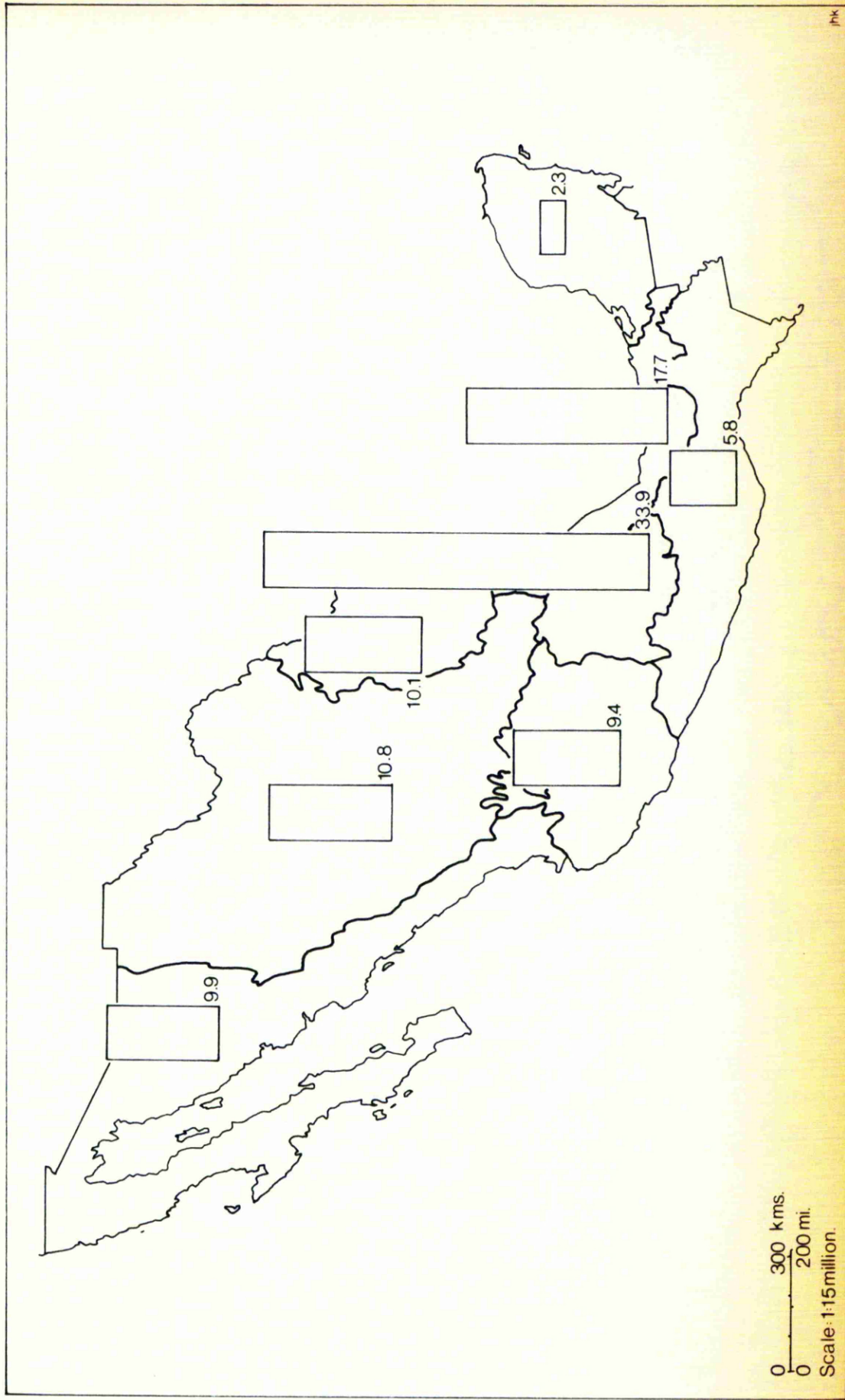


3.6 REGIONAL GROSS PRODUCT PER CAPITA, 1970.



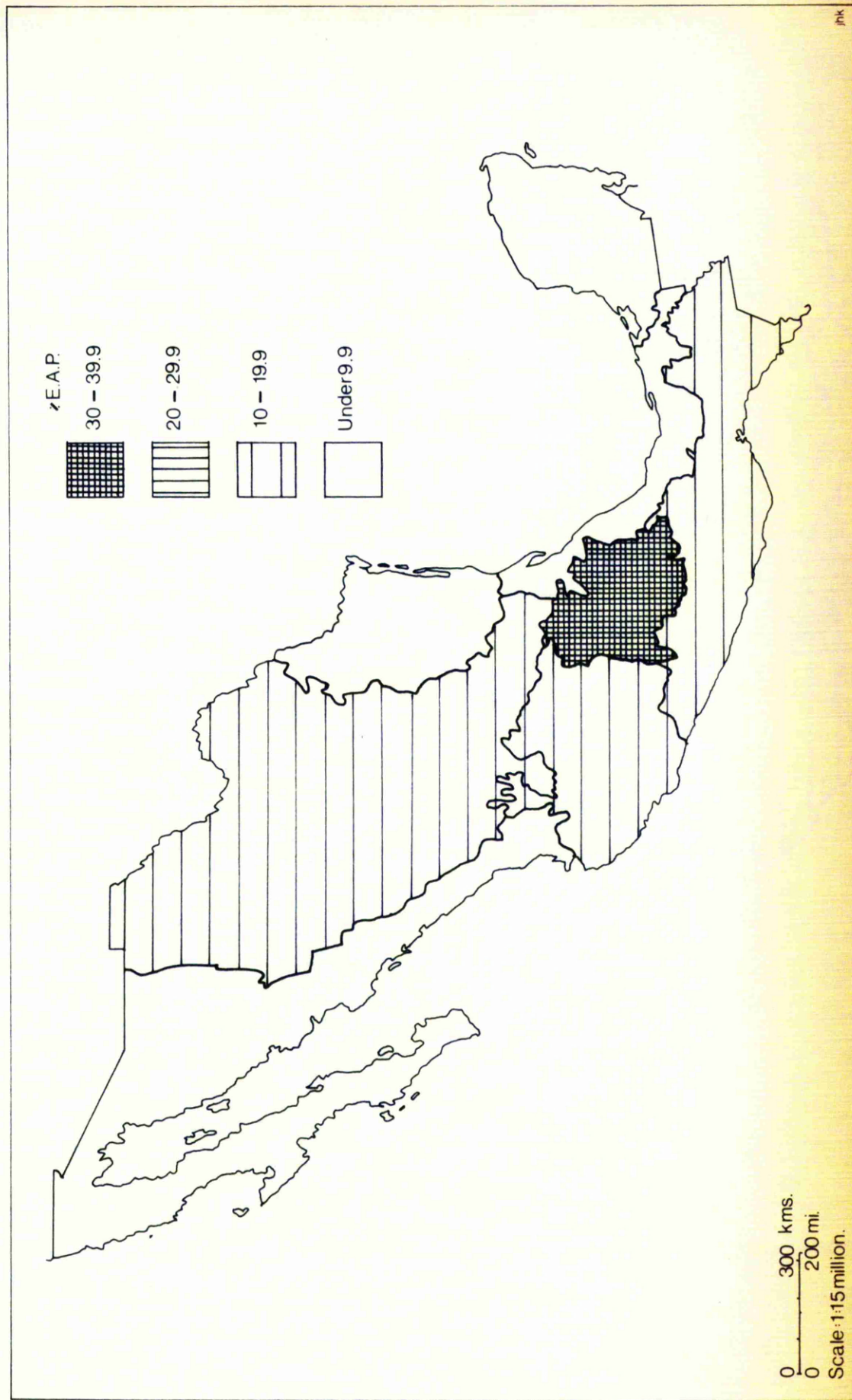


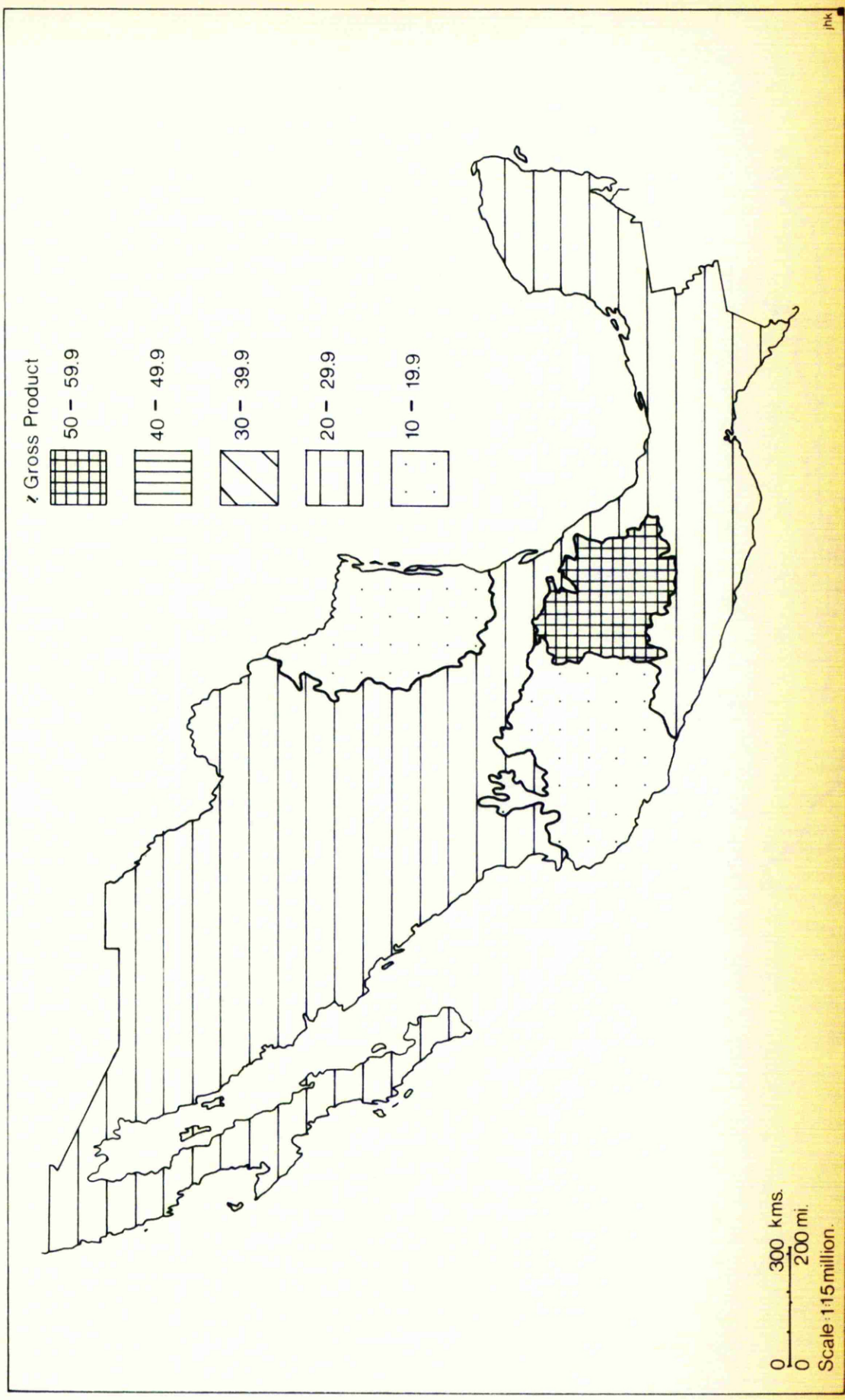




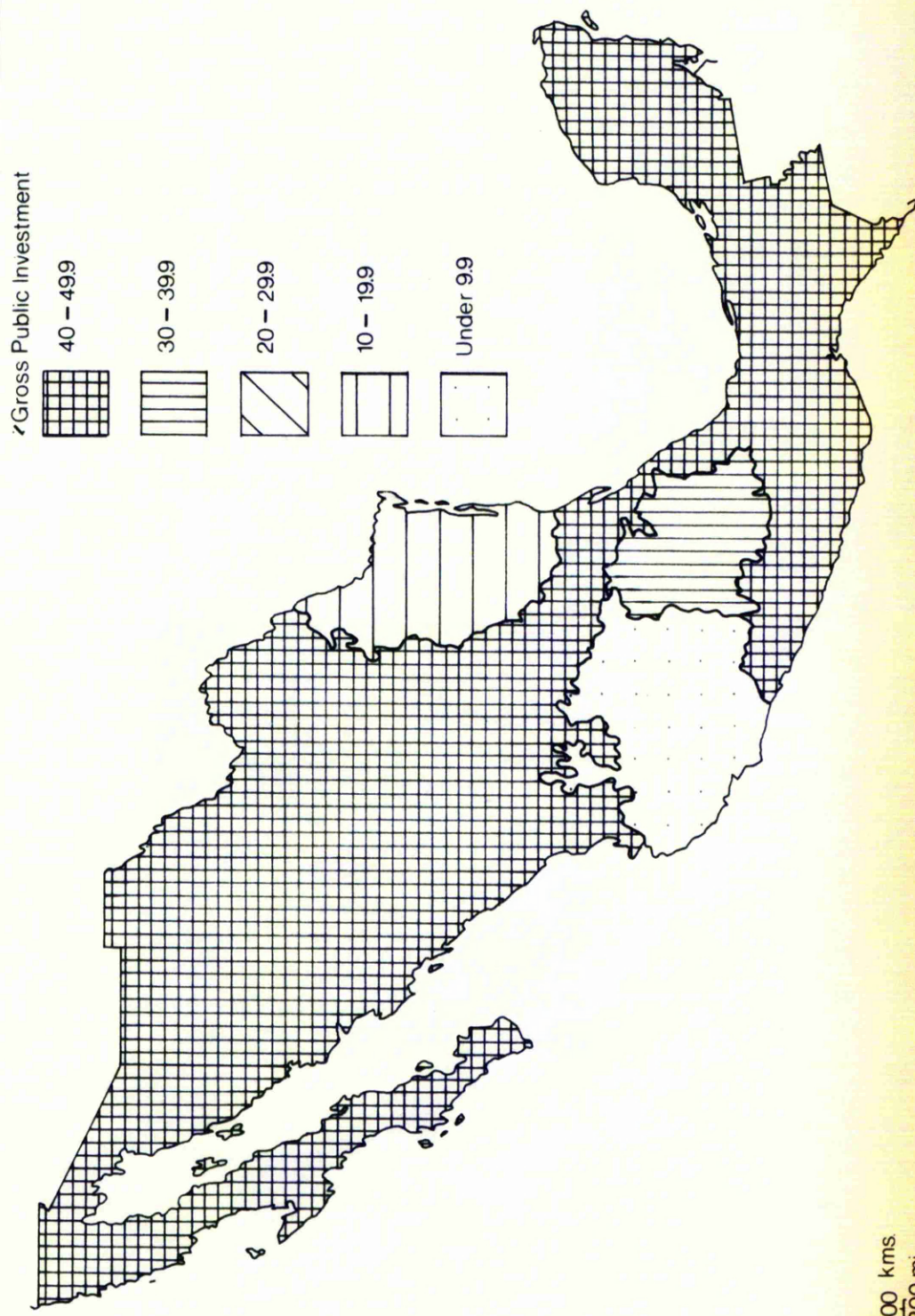
0 300 kms.  
0 200 mi.  
Scale: 1:15 million.

3.8 REGIONAL PUBLIC INVESTMENT, 1965-1969.







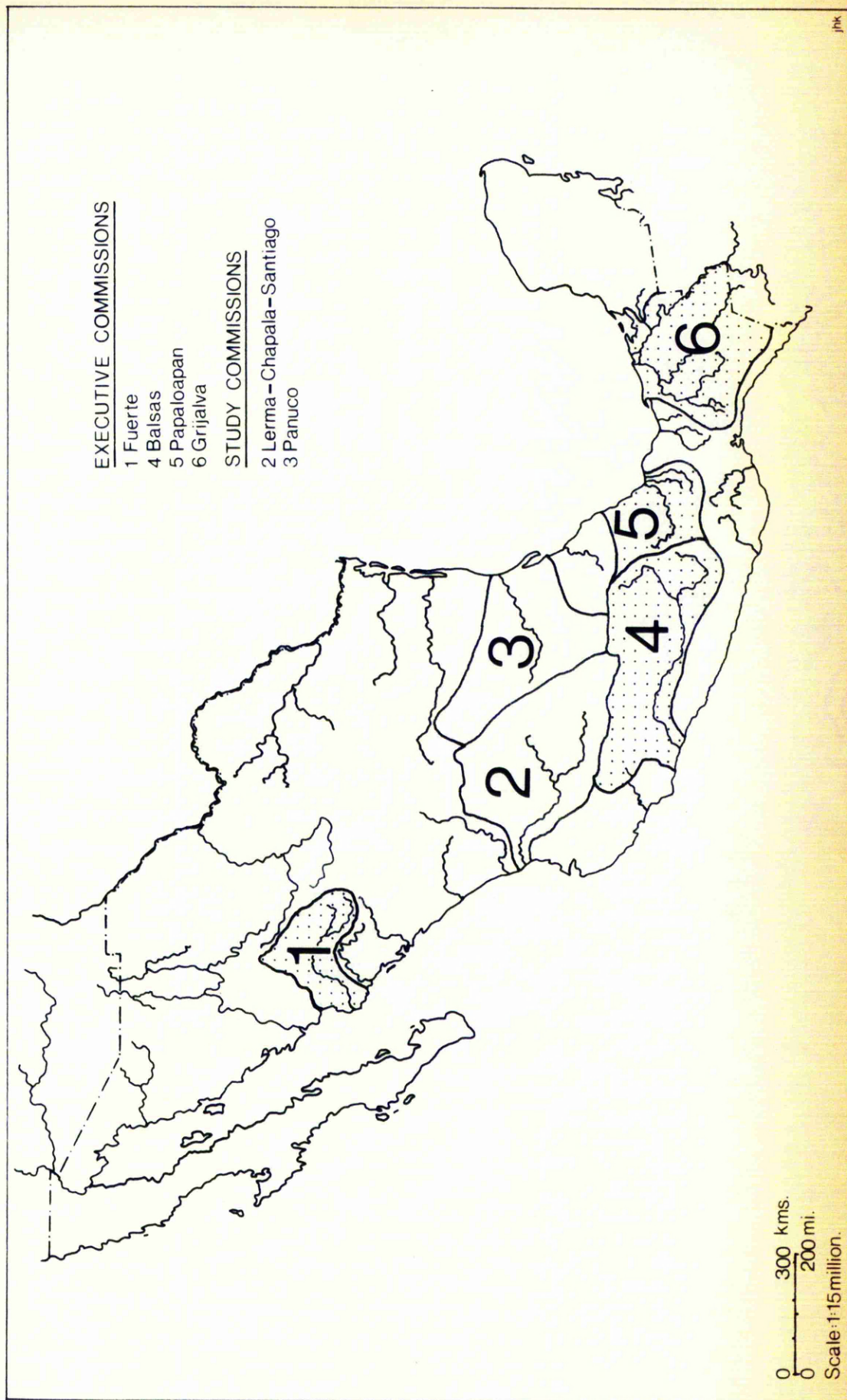


✓ Gross Public Investment

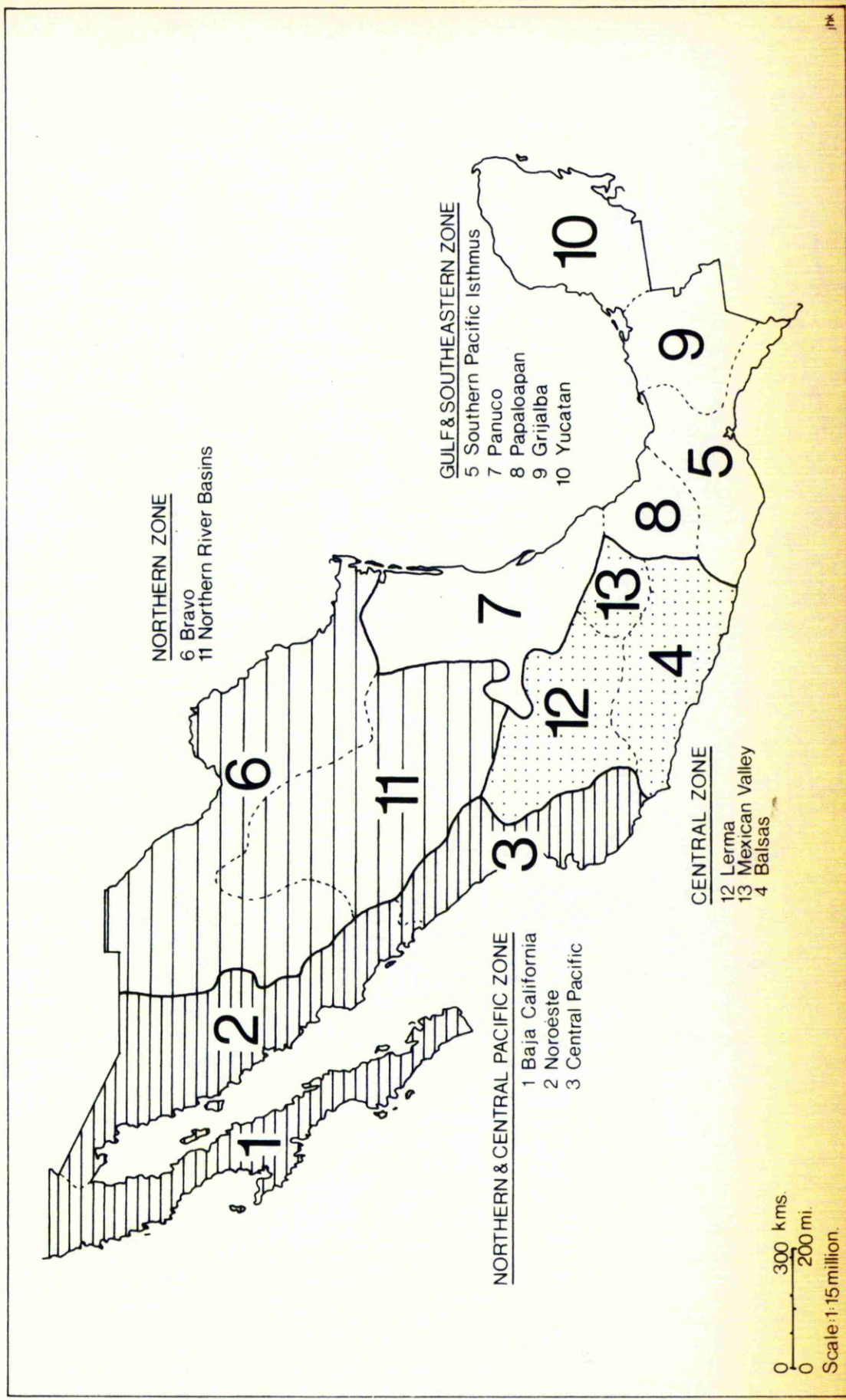
- 40 - 499
- 30 - 399
- 20 - 299
- 10 - 199
- Under 9.9

0 300 kms  
0 200 mi.  
Scale 1:15 million.

3.11 GROSS PUBLIC INVESTMENT IN CORE, SUBCORES AND PERIPHERY, 1965 - 1969.







4.2 REGIONALISATION OF THE NATIONAL HYDROLOGICAL PLAN