REGIONAL PLANNING FOR TARGET POPULATIONS: A SPATIAL INTERPRETATION OF THE REDISTRIBUTION WITH GROWTH MODEL

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Hierdie artikel demonstreer hoe, gesien in die konteks van Ontwikkelende Lande, 'n beleid vir streekontwikkeling die doelstellings van beide streekgroei en verhoogde intrastreekgelykheid kan inkorporeer. Die meganisme om albei doelwitte te akkommodeer word deur die skakelingseienskappe van die streekekonomie uitgelig. Sover as wat dit streekgroei betref, kan die verwagte invloed van die streekvermenigvuldigingsfaktor bepaal word deur die ruimtelike kenmerke van die skakelingstruktuur van die ekonomiese aktiwiteite waaraan voorkeur gegee word deur die streekbeleid, te analiseer. Sover dit interstreekgelykheid aanbetref kan gepoog word om die intraregionale verspreidingsimpak van streekbeleid te voorspel, deur die identifisering van welke ekonomiese groepe verbind is aan die betrokke groeisektor.

Die teoretiese basis van dié artikel is die Herverspreiding Met Groei model van ontwikkelingsekonome – wat beklemtoon dat die beleid wat gevolg word spesifieke behoeftige groepe duidelik moet identifiseer. Die analise van skakelingsimpakte op groei en verspreiding gedurende die drie stadiums van die vermenigvuldigingsproses, bied 'n meganisme aan om die doelstellings van streekgroei en gelykheid te kan kombineer, asook om die wedersydse gelykstellings tussen hulle te identifiseer.

1. INTRODUCTION

Since the 1950s regional planners have been much concerned with interregional inequality. The levels of regional unemployment, per capita incomes, and the direction of migration have become the customary criteria of regional distress. Yet in many respects interregional measures of inequality obscure the frequently more pressing intraregional distributional issues. The relevance of such issues to regional policy design and evaluation is evident from the fact that, for example,

> when growth centre policies have increased the average growth rate of peripheral regions (and thereby reduced interregional disparities) *intra*regional disparities of living levels usually have increased. This means that *growth centres have essentially led to a shift of disparities from the interregional to the intraregional level*, but rarely seems to have led to an overall reduction in spatial disparities in living levels. (Stohr and Todtling, 1978:102; emphasis in original)

The intent of this paper is to develop a mode of regional policy formation which considers both *inter* and *intra*regional distributional concerns, and which makes explicit the trade-offs between them. The means of addressing both concerns is found in the linkage structure of a region's economy. On the one hand, through analysing the linkage structure of the economic activities favoured by regional policy, one can ascertain the policy's likely regional multiplier impacts. It is presumed that one objective of regional policy is to maximize regional multiplier impacts, that is, regional growth. On the other hand, through identifying which economic groups (in terms of activities and income levels) are linked to the relevant sector of growth, one can attempt as well to predict the intraregional distributional impact of regional policy. It is presumed that a second objective of regional policy is to minimize intraregional inequality. A focus on the above two objectives elicits which policies will contribute most to regional growth, to regional equality, and to information regarding the trade-offs between them.

The paper is derived from regional multiplier and linkage analysis, and the "Redistribution With Growth" (RWG) model of development economists. The first two influences have widely recognised relevance in the literature on regional policy (Brownrigg, 1971; Hamilton, 1974; Pred, 1975, 1976; Stewart, 1976; Weiss, 1978). Where this paper makes a contribution is in pointing out how these influences may be combined with the RWG model to pursue the two objectives noted. The RWG model represents the recognition by economists that growth in Less Developed Countries (LDCs) frequently does not benefit their impoverished majorities. In response, the model embodies the goal of targeting the benefits of growth to a nation's poverty groups, and suggests how this may be accomplished (Chenery, et al., 1974; Frank and Webb, 1977).

There appear to be three explanations for the regional planner's apparent disregard for intraregional distribution. The first is that the regional planner's *raison d'etre* and primary analytical distinction is spatial. The second is that this focus has been supported in the literature by the hitherto predominant "trickle-down" theories of growth. These theories deal with the sectoral, geographic, and interclass spread of growth impacts, and argue that the spread is concomitant with economic development. The third is that policies which focus on speeding up the geographic, but not the interclass, spread of growth reflect the likelihood that a nation's poverty groups are divided ethnically, regionally, and by mode of production; and so do not constitute an effective political lobby (Bell, 1974). Regional differences, on the other hand, "are in centre stage in distributive battles in almost all countries" (Frank and

Webb, 1977:17). These explanations do not justify the neglect of distributional issues. Trickle-down theories are presently in disrepute amongst many development economists and geographers, and deservedly so.[1] The insights gained from development economics can be used by regional planners to develop a policy-repertoire which contains explicit distributional elements.

Amongst a minority of regional planners dealing with Less Developed Countries there is a move towards the development of "selective closure" and "bottom up" policies. These include the effort to satisfy basic needs, and to this extent embody a concern with intraregional distribution. A recent book edited by Stohr and Taylor (1981) is likely to be influential in this area. However, selective closure policies usually have limited application. For example, those of Stohr and Palme (1977) apply to the less developed and geographically distant regions of a Less Developed Country. It is intended that the mode of regional policy formulation presented below should have wider application.

In review, the focus on the RWG model, regional multipliers and linkage structure describes the present bifurcation in regional planning goals. One goal is to overcome poverty within a region. The other is to reduce interregional inequality. What this paper suggests is how the goals may be included during regional policy formation. To this end the paper has four parts, plus a short conclusion. These address the spatial breakdown of the RWG model; discuss the role of the spatial characteristics of linkage networks in determining the location of growth effects; describe the regional multiplier; and offer a policy synthesis which integrates RWG policies with the attempt to maximize regional growth. Where empirical examples are helpful, reference is made to Kenya. The intended context of the paper is that of LDCs.

It will be argued that the optimum regional policy is one which is in accordance with national sectoral growth emphases, which has mechanisms through which the productivity of the poor in the relevant sector can be directly stimulated, and which maximizes regional multiplier impacts.

2. THE REDISTRIBUTION WITH GROWTH MODEL AND SPACE

The RWG model has been prompted by the failure of growth in LDCs to ease the struggle for survival of the poorer segments of their populations. The maldistribution of the benefits of growth is described by the following example taken from Ahluwalia and Chenery (1974:40). If the population of a "typical" LDC is allocated to one of five quintiles according to income level, the share of each group in the nation's GNP would be much as follows:

Quintile	1	2	3	4	5	Total
Share in Total Income	53	22	13	7	5	100%

The example reveals that measures of growth of GNP are essentially measures of the growth of income of a country's wealthiest 40 percent of the population. This group earns 75 percent of the national income. The same measures of growth do not imply the relief of poverty among the poorer segments of the population.

The RWG model focusses specifically on a nation's poverty groups, and is concerned with absolute poverty. The focus on absolute and not relative poverty is justified by the fact that the most pressing problem in LDCs is the struggle by many merely to survive. The central features of the RWG model are the identification of poverty groups in terms of their incomes and subsectors of economic activity; the formation of policies which will promote the growth of these subsectors; and the specification within these policies of how the output of poverty groups is to be stimulated. The second feature reflects the belief of RWG advocates that the poor will not be reached by the trickle-down effects of growth in other sectors. Policy has to directly promote the growth of the subsectors in which the poor are located. The third feature reflects the point that the benefits of growth in a specific subsector (or region) will be more than proportionately captured by the elite in that subsector (or region) (Bell, 1974). Consequently, policy has to look to the position of poverty groups within their relevant subsector.[2]

A good example of the identification of poverty groups is provided by Table 1.

Table 1 *Poverty in Kenya in 1974 (1 000's)*

	Below Poverty Line	Above	Total	Household Poverty Line[4]
Pure Pastoralists	615	110	725	4 285
Pastoralists who farm	25	50	75	2 700
Migrant farmers	110	90	200	2 000
Landless with poor occupations	210	210	420	1 900
Landless with good occupations	–	245	245	–
Smallholder population	2 990	7 350	10 340	2 000
Nairobi population	20	680	700	2 150
Other urban population	40	660	700	2 150
Gap farms	–	270	270	–
Large farms	–	20	20	–
	4 210	10 085	14 295	

Source: Collier and Lal, 1980:2

The table identifies the sectoral and subsectoral location of Kenya's labour force, and the proportion of the labour force within each subsector which is below the poverty line. The table reveals that poverty in Kenya is predominantly a rural problem, and that it is concentrated among the poorer smallholders, the pastoralists, the landless with poor occupations, large farm squatters, and migrant farmers. The solution thus appears to reside in improving the access of the poor to land, increasing their productivity through extension and related services, and increasing the processing and export of agricultural produce.[3]

Finally, the precision of the RWG model in identifying poverty groups and in suggesting policies is enhanced if spatial distinctions are introduced. Economic activities are not uniformly distributed over space. They cluster due to natural factors – resource base, rainfall, the incidence of disease . . . ; and to historical factors – the accumulation of past decisions in the location of agglomeration economies and infrastructure. The economic activities in a region, the occupations of that region's poverty groups, and the potential for increasing their productivity, will be regionally distinct. By the largely self-evident introduction of space, the RWG model identifies what policies should be applied to whom, and where. In effect, in a LDC regional context the RWG model stresses the most pressing aspect of intraregional inequality, that of absolute poverty.

3. THE SPATIAL CHARACTERISTICS OF LINKAGE NETWORKS

The second concern of this paper, the reduction of interregional inequality, involves growth in the backward regions. At any point in time the regional incidence of growth reflects the location of the growing sectors of the nation's economy, and the degree of spread of growth reflects the spatial characteristics of the linkage structure of these sectors. This assertion reveals that regional growth may well be a sectoral problem. Different sectoral growth emphases benefit different regions. It is a simple next step to claim that a backward region is one which is not well-endowed with fast-growing sectors, and whose economic activities have minimal links to these sectors. In the attempt to better integrate the economies of such backward regions with the national economy, regional planners have advocated public investment in social overhead capital in the backward region, and incentives to attract private investment to the region. However, such policies usually fail to emphasize sufficiently a central issue, the extent to which the economic activities being targeted by regional policy are, or can be, linked to the region's economy and the economic activities of its inhabitants.

The term "linkage" has been used in numerous ways. These include approaches emphasizing "lateral", "product" and "interorganizational" linkages. The variety of uses reflects the complex interconnectivity of economic operations. In this paper only the most commonly used linkages are examined, namely backward, forward and final demand linkages. Backward and forward linkages correspond to the indirect stage of multiplier impacts, and final demand linkages to the induced stage. Through the analysis of the spatial characteristics of the linkages of a nation or region's rapidly growing firms or economic sectors, one can better predict the location of the multiplier impacts and hence the areas of growth.

The spatial characteristics of the linkage structure of a firm are determined by the firm's sophistication and product mix relative to the region in which it is located, and by the size and policies of the firm. With regard, firstly, to economic sophistication, the inputs into the production process, and the markets served, become highly differentiated with increasing levels of economic sophistication. Thus the more sophisticated the activity is, or the less diverse the region's economy, the more likely it is that the activity will involve reference to extraregional input sources and markets. Extraregional backward linkages represent regional multiplier leakages. The types of economic activities which most contribute to regional growth are those which are matched to the regional economy. "Matching" means being able to establish local linkages, or being able to induce structural changes in the regional economy so as to create local linkages.

Secondly, with regard to size, many firms are now big enough to have internalized the benefits of agglomeration economies. For example, they provide their own marketing, financial and repair services. Moreover, they frequently are vertically integrated, or have well-established input-output relationships with other large firms. The result is that material and information linkages occur among branches of the firm, and not from those branches to local enterprises located in the city or region in which the branch is located. The linkage flows of large firms occur within their "organizational space" (the term is Lasuen's, 1969). The implications of this concern are illustrated by the following two points. Stewart (1976) has described how large external investors in Ireland avoided the creation of local backward linkages, and primarily served an export market. Secondly, French growth centre policy was based on the assumption that growth is induced by large firms, and was intended to attract investment from these firms (Prudhomme, 1974). However, the location of a branch plant in a growth centre is precisely the type of investment which maximizes extraregional linkages.

The goal of regional growth is best served by those activities which maximize local linkages, and therefore which maximize regional multiplier impacts.

4. THE REGIONAL MULTIPLIER

The multiplier describes the impact of a given net investment on a given economy. Regional net investment has three effects. It adds to regional output. It results in factor payments and so increases regional income. It also creates additional employment opportunities. The multiplier process works through three stages. The direct stage reflects the jobs, income and output created by the initial investment itself. The indirect stage reflects the backward and forward linkage effects of the investment on other economic activities. The induced stage incorporates final demand linkages as the increased incomes created by the first two stages expand demand and so induce growth throughout the rest of the economy. The extent to which additions to income are translated into

demand depends on the prevailing marginal propensity to consume, or conversely, the marginal propensity to save from those additions.

Multipliers are frequently conceived of as having two forms: the Type 1 and Type 2 multipliers (Miernyk, 1965). Type 1 multipliers include the direct and indirect stages, and Type 2 multipliers include all three stages. The calculation of regional multipliers is elegantly done if the appropriate input-output tables are available, but such tables typically are not regionally disaggregated, especially in LDCs. In the absence of input-output data various formulae have been proposed. The formula used below is an adaptation of that suggested by Brownrigg (1971).

As regards the Type 1 multiplier, and with reference to the regional income multiplier, the change in regional income resulting from an investment in the region is indicated by

$$\Delta Yr = kr(J1 + J2)$$

where

- ΔYr = change in regional income
- kr = the value for the regional multiplier
- J1 = the initial investment, consisting of the capital outlay in setting up and equipping the project
- J2 = the continuing flow of income arising from the project

The calculation of the value of the kr assumes that the level of other investment, government expenditure, and regional exports remain constant; and then attempts to determine the various leakages during the multiplier process.

$$kr = \frac{1-L}{1-c(1-td-u)(1-m-ti)}$$

where

- L = direct first stage multiplier leakages
- c = the proportion of additional income consumed
- td = direct taxation
- u = the decline of transfer payments, or in LDCs of urban-rural remittances, with rising levels of regional income
- m = regional imports
- ti = indirect taxation

Generally, the smaller and less economically diverse the region's economy the greater regional imports will be, and so the smaller kr will be.

In order to derive the Type 2 multiplier the effect of induced investment has to be included. Hence

$$\Delta Yr = kr(J1 + J2 + I)$$

where

- I = induced investment

In a review of studies of the regional multiplier, Brownrigg (1971) concludes that the value of the Type 2 multiplier in the United Kingdom ranges from 1.24 to 1.54. These figures are higher than they would be in a peripheral region of a LDC, unless the economic activity concerned is extremely "basic". However, the mode of determination of the variables, and even the formula to be used, are still subject to debate. The calculations are beset with problems deriving from the data requirements, the assumptions made, and the expertise required. These problems are especially prohibitive in LDC s. Consequently the author has suggested a simpler means of estimating regional multiplier impacts through the use of linkage analysis; a means, moreover, which enables one to simultaneously ascertain the distributional effects of the regional policy under consideration.

5. MULTIPLIER STAGES, LINKAGE ANALYSIS AND THE RELIEF OF POVERTY

As noted, the goals are twofold: to maximize regional multiplier impacts, and to promote the productive involvement of poverty groups in the relevant economic activity. Given a number of regional policy alternatives, each should be evaluated in terms of the extent to which the goals can be realised.

With regard to the position of poverty groups, the income of any household derives from access to "a variety of assets: land, privately owned capital, access to public capital goods, and human capital embodying various degrees of skills" (Ahluwalia and Chenery, 1974:43). If the poverty groups are to be able to participate in, and to benefit from, growth, then their "access situation" will have to be improved.

The problem is: which areas of growth contribute most to the regional multiplier, which areas of growth allow greater participation by poverty groups, and what are the trade-offs between them. In terms of the multiplier stages, the following points are relevant.

Stage 1. In the direct stage of the multiplier process there are two considerations – which policy alternative has the lowest value for L (as a proportion of the total first stage investment), and which alternative most facilitates the participation of poverty groups?

The value of L can be ascertained through determining the import content of different types of investment programmes, the need for extraregional labour, and the extent to which this labour remits its incomes out of the region.

The participation of poverty groups is possible in two, perhaps three, ways. First, it might be the poverty groups themselves who are undertaking the investment. For example, in the case of smallholders, it might be the poverty groups undertaking the investments in response to government credit and extension service incentives. Second, poverty groups might be employed as a result of the investment. Third, poverty groups, in this case informal sector entrepeneurs, might supply the inputs used in the equipping of the project. However, the informal sector does not necessarily comprise a poverty group (Mazumdar, 1976; Child, 1977). Through any of the sources of benefit to poverty groups, the value of the direct stage to them is the increase in income they obtain.

Stage 2. The indirect stage repeats the familiar injunction, minimize extraregional backward linkages, but maximize the linkages occurring to, and within, poverty groups. Since a policy of selective regional closure is not being advocated, the corresponding injunction to minimize extraregional forward linkages does not apply. If peripheral growth can be stimulated through exports, this is desirable. However, whether regional exports will create significant regional multiplier impacts, and whether the poverty groups will be affected, depends

on the first stage and backward linkage characteristics of the relevant economic activity. Thus forward linkage effects are a central policy issue only to the extent that their determination reveals potential export markets.

In the calculation of regional backward and forward linkages, the attempt to determine what linkages exist, and also what could exist, is facilitated if reference is made to two regions. Surveying the target region will reveal what linkages exist. Surveying a goal region will indicate what local linkages could exist. The latter region should be a more prosperous region, a region wherein there is less poverty, and a region which shares as many descriptive characteristics as possible; for example in terms of mode of production, size of landholdings, access to markets, and the like. A comparison of the target and goal region will identify where the target region can develop local linkage networks.

The calculation of the backward and forward linkages in the target and goal region is relatively simple, as suggested by Hirschman (1958) and Stewart (1976). The relevant firms, farmers, or informal sector entrepeneurs should be surveyed in order to obtain information on the following variables.

$$BLj = \sum_{i=1}^{n} (P\text{-}I)/(O + V)$$

$$FLj = \sum_{i=1}^{n} (O\text{-}o\text{-}E)/(O + V)$$

where

- BL = regional backward linkages
- FL = regional forward linkages
- j = type of economic activity
- n = number of respondents
- P = purchases from other regional industries
- I = regional imports
- O = total output
- V = change in inventories
- E = regional exports
- o = total output of intermediate products consumed within the region

The comparison of BLj and FLj between the two regions will indicate where backward and forward linked activities may be set up, or expanded; and also where regional exports may be promoted.

The determination of whether poverty groups will benefit is possible if an additional question is asked – which economic groups are linked? The comparison of the target and goal regions should indicate where greater participation by poverty groups is possible. But, in addition, the independent assessment of obstacles to poverty group access to the indirectly promoted areas of growth should be undertaken.

Stage 3. The direction of final demand linkages to economic groups will have been determined by the first two stages. Other than for the achievement of greater equality, there are no intrinsic benefits from increasing the consumption of low-income persons. That is, it has frequently been held that the consumption of higher income groups has a greater proportion of imports than that of low income groups (Lewis, 1976; Cline, 1975). The point is usually made with a national level in mind, but applies to regions as well. The intuitive plausibility of this belief is not supported by empirical research. Instead "Capital and import intensity is not systematically higher for luxury goods than for basic goods" (Cline, 1975:395). What this means is that while a programme of redirecting growth so that the poor benefit has many attributes: this approach will, however, not necessarily stimulate local output.

However, extraregional final demand linkages contribute to regional growth and, if they are produced by poverty groups, they will lead to greater regional equality. Extraregional final demand linkages represent a component of E (regional exports). Data regarding E will already have been obtained in Stage 2. Thus the policy injunction is repetitive, encourage exports and improve the competitive position of poverty groups in the export industry.

In summary, knowledge of the direct stage and the linkage characteristics of the different areas of growth indicates likely regional multiplier impacts, and also the likely distributional effects. This knowledge does not provide a simple decision-making procedure. There may be conflict between the goals of maximizing regional multiplier impacts and of reaching poverty groups. There may also be conflict between reaching the poverty groups via direct and backward linkage effects. For example, a modern processing plant may have a high value of L, but also create a demand for the products of a great many more poor smallholders than is otherwise possible. What is claimed for the above procedure is that regional policy options and trade-offs are significantly elucidated.

6. CONCLUSION

If one is not to value the inhabitants of region X over region Y, then the reduction of inequality is an interpersonal issue, not a regional issue. The frequent centrality of regional policy in public policy reflects the political costs created by regional differences. However, in the literature on LDCs there is a sharp focus on, firstly, absolute poverty and basic needs deprivation, and, secondly, relative poverty. Thus, especially in LDCs, regional growth policies which ignore intraregional inequality and the reduction of absolute poverty are likely to be sceptically received. While economic growth in LDCs is an imperative, the task of policy-makers is to make growth policies "distributionally decent". It is hoped that this paper has charted some initial ground in suggesting how regional policy may satisfy the latter need.

NOTES

1. Initially, through the use of cross-section studies, analysts discerned a trend towards the concentration of incomes – to certain classes and regions – and then a decline, more or less in step with a country's level of development (Williamson, 1965; Wright, 1978; Cline, 1975). As a country develops, so class and regional inequalities were thought to diminish, and so too its economic sectors were thought to become closely interrelated through the expansion of the monetary economy, increased factor mobility, and the operation of market forces. The validity of the perceived trends towards reduced class and regional inequalities has been widely questioned recently (Wright, 1978; Cline, 1975; Gilbert and Goodman, 1976). The persistence of geographic and sectoral enclaves of development, and the failure or slowness of a

movement towards reduced income maldistribution, has cast doubt on whether policy can justifiably be based on trickle-down processes. In particular, recent time series studies of LDCs have revealed no inevitable reduction of class or regional inequality with development. The experiences of LDCs differ and, as Bruton (1977:81) remarks, the income distribution problem

> emerges from, or at least is accentuated by, the policies that have been followed in the search for development and the kinds of institutions and power structures that have evolved as these policies have been pursued.

2. A drawback of the RWG model is that the targeting of policy so as to benefit the poor is unlikely to reflect political reality. The poor do not constitute an effective lobby group, and do not have the wherewithal to influence the relevant officials. The result is that the state had difficulty delivering to the poor (Frank and Webb, 1977), and in Kenya the wealthy smallholders have captured the bulk of the extension visits and the little capital made available to smallholders (Leonard, 1977: World Bank, 1975). Indeed, the RWG model encounters the political feasibility problems so common in the proposals of liberal economists. The model thus evokes enthusiastic and damaging criticism from neo-marxists (see Leys, 1973; 1975). Defenses of the RWG model seem to expose its limitations as much as its potential (see Ahluwalia, 1974; Frank and Webb, 1977; Bell, 1974).

3. These recommendations echo the International Labour Organization (1972) and the World Bank (1975) reports on Kenya, and also the conclusions reached by Chenery and Syrquin (1975). Chenery and Syrquin argue that because of Kenya's limited resource base, especially that of skilled labour and minerals, and because of the small size of Kenya's domestic market, it is only through serving the export market that Kenya has significant growth opportunities. Further, that this will have to occur through the development of the agricultural sector since this is the only sector in which Kenya can be considered to have a comparative advantage.

4. The relevant figure is derived as follows: Mean household size of the relevant category of household/mean household size of smallholders x smallholder poverty line. In the case of pure pastoralists, for example, the relevant calculation is:
$15/7 \times 2000 = 4\,285$

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