ON THE EFFECTIVENESS OF GROUTH POLE STRATEGY

By
STAVROS XIARCHOS, Ph. D.
Graduate School of Industrial Studies, Thessaloniki

EXPECTATIONS FROM THE USE OF GROWTH POLE STRATEGY

Succes with the growth pole idea has proved to be more elusive than our early enthsusiasm led us to expect. We are all familiar with Perroux's non-geographic concept of economic growth as a field of forces emanating from poles or points of economic activity, and with the transformation of this idea to the geographic, policy - oriented concept of growth centers [1]. In the post-war period growth center strategies have been include in the regional policies of a large number of countries in the expectation of inducing economic growth in geographic areas having specific characteristics by harnessing Perroux's field of forces. The strategy has been used over a wide range of countries for varying periods of time and with varying degree of succes.

EXAMPLES OF THE USE OF GROWTH POLE STRATEGY

In Spain, for example, regional policy since the inception of the First Development Plan in 1964 has revolved around growth centers or Industrial Poles, relatively undeveloped urban areas outside of the main developed portion of the country but having the potential for conversion into industrial centers in order to stimulate development in their entire surrounding areas and offset the attraction of the older centers of industrial activity [2]. Infrastructure, with an emphasis on those services necessary for the operation of factories, has been provided, in these centers, and fiscal incentives have been offered to attract private investment to the centers. An attempt has been made to avoid the common pitfall of spreading a necessarily limited amount of aid money too thinly over a large number of points and projects. These various incentives have, as intended, attracted industry : over the

period 1964 - 1970, grants of 2,2 billion pesetas and credits of 9 billion pesetas led to industrial investment of 44,2 billion pesetas creating 44,000 jobs, or 7 percent of the total of new industrial jobs created in Spain in this period [3].

Evaluation of Spain's regional policy by an OECD Working Party indicated that the Poles had had only limited impact, lles than that which had been expected from them[4]. The Poles, while showing growth, lacked the degree and rate of growth necessary to enable them to be self-sustaining. Secondly, there was a lack of balance in the size and variety of firms which had located in the development centers. In particular, the minimum size required to enable a firm to receive aid, as well as the fact that incentives are based primarily on capital, have attracted relatively large, relatively capital-intensive industries such as chemials and metals. The 44,000 new jobs created were only a small percentage of the approximately 770,000 migrants from agriculture in these same areas over the same period. Third, the bureaucracy of the process is such that the would-be locating firms may be discouraged from docating in the centers due to long delays in administrative decisions. The Working Party felt that in view of these problems, extension of the system using a wider variety of incentives aimed at attracting a variety of types and sizes of firms and incorporating manpower training schemes might be desirable[5].

In Germany, since 1975, regional policy has been centered clearly on the growth center idea, the concentration of investment at specific points in the space economy which are chosen based on their potential impact on their surrounding areas[6]. This approach had been evolving gradually since 1959 when a growth center program was added to the then existing programs based on the Lander and the border areas. The sole methodology of the new growth center points was the installation of new industry in towns of from 2,000 to 30,000 population in unindustrialization rural areas. It was necessary that these towns already have a minimum of welfare facilities and a potential for growth with accompanying work opportunities for their present and future populations[8]. The main objective was to enable potential outmigrants to remain in their home areas so as to not swell the populations in industrial centers[8]. The newer program proved to be more flexible and less politically-oriented than that based on the older, politically-delineated areas. In 1959, DM 15 million were applied to these centers; in 1966, DM 20 million from a total of DM 140 million for regional development purposes went to the growth centers[9]. Between 1959 and 1965 this relatively small

amount had created 17,269 jobs in these centers, with an expected 17,000 jobs still to come[10].

Before the inception of the 1975 Plan, the country was divided into 170 labor market areas, whose central points would be used in the future as growth center points for investment[11]. These points are eligible for subsidies of types acceptable to the EEC, subsidies whose level is to be based on the neediness of the area and which are aimed at bringing in industrial employment whose outputs are exports from the center itself (and, secondarily, tourist industry)[12].

The time which has elapsed from the inception of the Fourth Plan has been too short to make any real assessment of the effectiveness of the strategy. However, it is clear that German experience with growth centers has been more successful than that with other strategies, leading the planners to further reliance on this approach to regional policy.

Regional policy in the United States since 1965 has been centered around the Appalachian Regional Commission (ARC) and the Economic Development Administration (FDA) both of which have used a growth center approach, although the latter agency has used it more explicity than the former. The efforts of both agencies have been less than successful in inducing growth by this method. The ARC defined a growth center as «a complex consisting of one or more communities or places which, taken together, provide or are likely to provide a range of cultural, social, employment, trade and service functions for itself and its associated hinterland»[13]. Such centers, however, were not chosen directly by ARC based on their own criteria, but by the individual states eligible for aid under the program. In actual fact, growth potential did not play a central role in center selection, based partly on politics and partly on the peculiar nature of the Appalachian region, and this fact may have doomed the program from the outset. Working within these confines, ARC made an effort to concentrate its investment as much as possible in places of a size consistent with probable potential to have the largest areal impacts. Between 1965 and 1969, 60 % of its funds were invested in growth centers, with the largest portion going to the middle-sized range of cities[14]. Industrial activity has been less emphasized than the service and trade functions of these centers[15], perhaps wisely given the objective economic situation. However, under these circumstances it is difficult to assess their impact as growth centers.

The EDA, although it has supported such infrastructure investment, has emphasized industrial development. It has worked under the assumption that location or relocation of industry to growth centers would have spillover effects for their peripheral areas by way of: industrial linkages and new

job opportunities; Keynesian income multiplier relations; stemming the flow of out-migrants; and providing jobs for unemployed or underemployed area residents[16]. In 1972 EDA evaluated its own prformance in 12 growth centers and found that its projects had created no appreciable indirect impact on the economies involved by way of any of the expected avenues[17]. As with most growth center policies, the EDA one is relatively new and has many other objectives only peripherally related to the Perrouxian growth pole idea, making evaluation of the program as a whole difficult[18].

These three are only a few out of the nations using a growth center strategy. Judging the success of each program individually is difficult, but inter-country comparisons are even more difficult due to diferences in national goals for their programs and statistical problems. However, from this small group we may say that the United States has experienced the least success from its policy while the other two countries have met with a degree of success sufficient to induce them to continue or extend their growth center policies. A brief consideration may clarify one reason lying behind the varying degrees of success of this approach to regional policy. In the remainder of this paper we wish to indicate that there is a discrepancy between our expectatios from growth center strategy and the empirically derived stages theory of growth, which may have implications for growth center strategy.

PERROUXIAN GROWTH POLES AND GROWTH CENTERS

Perroux's notions of the growth pole revolve around certain types of industries or firms which might be termed growth-inducing, due to certain characterstics[19]. Among these characteristics are large size, importance in the economic system, dominance of their economic environment, and strong linkages with other firms, industries and sectors. The input-output table is an admirable device for showing the magnitude of these characteristics and for indicating those firms or industries having the greatest potential impact on the target variables of employment and income[20]. Other, more dynamic aspects of growth inducing firms, which may be even more important over time, such as economies of scale and the diffusion of innovation, cannot be depicted, however, in the input-output table.

There is little doubt that most types of firms having the required characteristics to be growth-inducing fit into the set of manufacturing industries, although being a member of this set is not sufficient to make a firm a Perrouxian growth pole. A large portion of manufacturing firms, as well as most involved in the provision of services lack both the large number

of interrlationships with one another and the potential for scale economies essential for the transmission of growth forces on the scale envisioned by the growth pole theory.

Transformation of an essentially non-geographic concept such as Perroux's to a policy oriented geographic setting has been accompanied by a decreased emphasis on the dynamic firm as an engine of growth. It is difficult to see how this de-emphasis coulf have been avoided. Assuredly, economic does have a geographic setting, and also assuredly, the number of dynamic firms is insufficient to be allocated equally among geographic areas in need of a push toward greater development. Nor can we be certain that Perrouxian firms generate l o c a l development: Perroux's concept implies an economy wide impact with greater impacts in some areas than in others. The policy makers fronted a clear dilemma in the face of practical problems of local stagnation or decline, and were forced either to accept locating firms from among those few available for location or relocation in the hope of stimulating lagging economies or of losing any hope of stimulation outside of time and chance. Time and chance, however, do not seem to fall equally but to favor sites prepared in some manner for their arrival; hence the very heavy emphasis on physical infrastructure investment and, in part, social infrastructural investment, which has marked growth center programs. We cannot ignore the fact that very few of the locating or relocating firms are or can be engines of growth or that few of the areas in question have natural or acquired advantages sufficient to make them real potential growth sites.

The growth pole theory, in its evolved geographical form, has increasingly tended to de-emphasized the growth firm and to stress the role of the Keynesian income multiplier associated with increased employment. The existence of this effect is not in question, but its strength for relatively small areal delineations in lagging regions is. Its effectiveness in causing cumulative areal growth depends on the marginal propensity to consume in the area itself and for the outputs produced by the area. Increases in areal incomes may be dissipated, so far as the local area is concerned, by low or possibly negative marginal propensities to consume locally [21].

THE TRANSITION TO A SERVICE ORIENTED ECONOMY

These derivative elements of the growth pole theory are at variance with one the empirically arrived at tenets of economic development which indicates that the relative importance of the major sectors of the economy are subjects to fundamental changes in the course of development. This may indicate that the growth pole mechanisms expected may be significant in

causing areal growth only with a particular range (or ranges) of development phenomena.

In the 1930's the now familiar three part division of economic activity was elaborated ; the primary sector, corresponding roughly to agricultural and other activities involved in taking from nature ; the secondary sector, corresponding to processing or manufacturing activity ; and the tertiary sector, providing services instead of goods[22]. As income increase the relative demands for the outputs of these three sectors change, causing shifts in the composition of the national output and in the sectoral division of the labor force engaged in its production. This phenomenon has been verified for a wide range of countries by Chenery and by Clark [23]. Clark emphasizes the role of elasticity in explaining this phenomenon, doubtless because of the strong correlation which exists between the process of secoral change and increasing p e r c a p i t a income [24]. Fuchs has made an intensive study of the service sector of the United States economy [25]. He indicates that "since the end ofWorld war II .... the Service sector has become the largest and, in many respects, the most dynamic element in the U. S. economy. Furthermore, most of the industrialized nations of the World appear to be following, with some lag, the pattern set by the United States" [26]. Between 1947 and 1965 a net total of 17 million new jobs opened in the U. S. in industry and services ; of these, 13 million occurred in the service sector with the increase widely distributed throughout the sector. Further indications are that the industrial sector has had a larger percentage of employees involved in what are really service activities, understating the degree of magnitude of the change [27]. Fuchs indicates that changing expenditure patterns with increasing income levels has not been a large source of the shift in employment patterns : "measured in dollars of constant purchasing power, the (Service) sectors' share of output was the same in 1965 as in 1929. As a share of non - agricultural output in constant dollars, the Service sector actually declined over the same period" [28]. Instead, he attributes the major source of the shift to the slower growth of productivity in the service sector relative to that in agriculture and industry[29]. This latter finding is supported by Chenery's study of development patterns from 1950 - 1970 for the nations covered by the IBRD data bank [30].

Although we may profitably dispute the reasons which lie behind the sectoral redistribution of the labor force, that redistribution has occurred and continues to occur must be accepted as fact. And this fact, we believe has implications for regional policies aimed at creating spillover effects

into areas peripheral to growth centers chosen as sites for investment and employment increases.

The accompanying table, Table I, illustrates the process of change in

TABLE I

Percentage distribution of the labor force, by sector Great Britain, 1801-1973.

Year	Primary Sector Agriculture, Forestry, Fishing	Secondary Sector Manufacturing, Mining, Industry	Tertiary Sector Trade, Transport, Services, Public Service, Professions
1801	35.9	29.7	34.4
1821	28.4	38.4	33.2
1841	22.2	40.5	37.3
1861	18.7	43.6	37.7
1881	12.6	43.5	43.9
1901	8.7	46.3	45.0
1921	7.1	47.6	45.3
1931	6.0	45.3	48.7
1951	5.0	49.1	45.9
1960	4.1	48.8	47.0
1973	2.9	42.6	54.5

Source : Phyllis Deane and W. A. Cole, British Economic Growth, 1688-1959: Trends and Structure. Second Edition. University of Cambridge department of Applied Economics, Monograph No. 8. (Cambridge at the University Press, 1967). Tables 30 and 31, pp. 142, 143.

the composition of the labor force in Great Britain over the course of more than 170 years. As can readily be seen, the trend has been unmistakable. The percentage of the labor force engaged in primary activity has declined to a very small percentage of the total, and continues to decline ; the manufactu-

ring sector continued to absorb an increasing percentage of the labor force until, at just under 50 %, it began to decline somewhat, although the time elapsed since the onset of tne decline has been too short to predict its future course ; the rest of the employed population were absorbed into a steadily growing service sector. Table II shows the percentage distribution of the labor forces of the OECD countries over the period 1960 - 1973. The pattern traced out in the longer period case of Great Britain is apparent in the paths of these countries also. Although these countries are used for the comparableness of their data, the same sectoral redistribution can be found, or can be expected to be found, in the scores of non - included countries. In fact, with those countries recently developed the process appears to be greatly accelerated over the case of Great Britain, although we must be aware that some of the recorded shift between the primary sector and the other two may be illusory and represent a change in classification rather than function. (This, however, should not obscure the fact that a real redistribution has occured).

Let us look at the case of Greece. Greece is one of those countries which can be considered as neither developed nor undeveloped at the present time, but which is moving toward economic maturity. Table II indicates the gross sectoral changes which have occurred from 1960 to 1973. In 1960 over half of the Greek labor force was engaged in primary activity and over one-fourth in service activity ; together these two sectors accounted for over 80 % of the total labor force. However, in 1973 primary activity occupied 40 % less of (the now larger) labor force than in 1960. Primary activity underwent a steady decline while both secondary and tertiary sectors showed steady increases of 42.5 % and 56.4 %, respectively. Comparing the Greek figures with those of the more mature OECD economies it is evident that there still exists in Greece large scope for sectoral reallocation of labor from primary activities to both of the other two sectors. This could seem to indicate, following our reasoning, that a policy of decentralized investment patterned after the growth pole model would have larger chance of success than in ecoomics which have largely exhausted the benefit to be derived from sectoral reallocation of the labor force. Can we expect that such a policy would meet with success ? The possibility for sector reallocation is desirable but is not a sufficient condition for the implementation of successful growth pole of center policy since the growth pole theory itself is only a conditional theory of growth. Several considerations from the Greek example make this more clear.

In 1973, as seen from table II, 25.7 % of the Greek labor force was en-

TABLE II

Percentage Distribution of the Labor Force by Sector, OECD Countries. 1960-1973.

Country & Sector	Year							
	1960	1962	1964	1966	1968	1970	1972	1973
Canada								
Primary	13.3	12.2	11.2	9.0	8.6	7.7	6.9	6.5
Secondary	33.2	32.9	33.5	34.1	32.3	31.4	30.9	31.3
Tertiary	53 5	59.3	60.6	60.2	61.2	63.4	64.7	64.2
United States								
Primary	8.3	7.4	6 5	5.5	5.0	4.4	4.2	4.1
Secondary	33.6	33.2	32.9	34.3	33.7	32.2	31.1	31.7
Tertiary	58.1	59.3	60.6	60.2	61.2	63.4	64.7	64.2
Japan								
Primary	30.2	27.8	24.7	22.2	19.8	12.4	14.8	13.4
Secondary	28.5	31.2	32 1	32.7	34.6	35.7	36.3	37.2
Tertiary	41.3	41.0	43.3	45.1	45.7	46.9	49.0	49.9
Australia								
Primary	11.3	11.0	10.3	9.4	8.9	8.3	8.0	7.4
Secondary	40.9	40.0	39.9	39.5	39.2	38.8	37.9	37.5
Tertiary	47.7	49.0	49.8	51.1	51.9	52.9	54.1	55.1
New Zealand								
Primarg	15.4	14.6	14.0	13.4	13.5	12.9	12.4	12.1
Secondary	37.5	37.6	38.1	38.4	37.2	38.2	34.1	34.7
Tertiary	47.1	47.9	48.0	48.2	49.4	48.9	53.5	53.2
Austria								
Primary	24.6	22.9	21.8	20.5	19.9	19 2	16.4	16.1
Secondary	40.3	40.8	40.8	41.3	39.8	40.2	41.0	40.1
Tertiary	35.1	36.3	37.5	38.2	40.3	40.5	42.6	43.8
Belgium								
Primary	8.7	8.0	6.9	5.9	5.6	4.8	4.2	3.9
Secondary	46.8	46.9	47.2	46.4	44.9	44.7	43.3	43.2
Tertiary	44.6	45.2	45.9	47.7	49.6	50.4	52.5	52.8

TABLE II (cont.)

Country and Sector	1960	1962	1964	1966	1968	1970	1972	1973
Denmark								
Primary	18.2	16.8	15.5	14.2	12.7	11.5	9.8	9.5
Secondary	36.9	37.2	37.3	37.2	37.4	37.8	34.3	33.8
Tertiary	44.8	46.0	47.1	48.6	49.9	50.7	55.9	56.7
Finland								
Primary	34.6	33.2	31.1	28.7	26.0	22.7	18.9	17.1
Secondary	31.9	32.8	32.4	33.9	34.0	35.5	35.6	35.7
Tertiary	31.7	33.9	36.5	37.4	40.0	41.8	45.5	47.1
France								
Primary	22.6	20.9	18.8	17.2	15.9	14.3	12.9	12.2
Secondary	38.3	39.1	40.1	40.1	39.5	39.5	39.3	39.3
Tertiary	39.1	40.0	41.1	42.7	44.6	46.2	47.7	48.4
Germany								
Primary	14.0	12.6	11.4	10.6	9.9	8.6	7.8	7.5
Secondary	48.8	49.7	49.9	50.0	49.1	50.4	49.6	49.5
Tertiary	37.3	37.7	38.7	39.4	41.0	40.9	42.6	43.0
Greece								
Primary	56.6	54.0	49.9	45.8	42.1	37.8	35.7	34.2
Secondary	17.7	18.6	19.8	21.1	22.4	23.8	25.2	25.7
Tertiary	25.7	27.4	30.5	33.1	35.5	37.5	39.3	40.2
Iceland								
Primary	23.5	21.4	19.2	18.4	19.2	18.1	16.1	15.9
Secondary	35.2	38.6	39.7	38.2	37.2	37.3	37.9	37.5
Tertiary	42.6	40.0	41.1	43.4	43.6	44.6	47.1	46.6
Ireland								
Primary	37.3	35.2	33.3	31.6	29.4	27.1	25.7	25.0
Secondary	23.7	25.7	27.1	27.7	28.9	29.9	30.0	30.7
Tertiary	39.0	39.2	39.6	40.7	41.7	43.1	44.0	44.2

TABLE II (cont.)

Country & Sector	1960	1962	1964	1966	1968	1970	1972	1973
Italy								
Primary	32.8	29.3	25.6	24.9	22.4	19.5	18.2	17.4
Secondary	36.9	39.5	41.3	40.8	41.9	43.8	44.3	44.0
Tertiary	30.2	31.2	33.1	34.3	35.7	36.6	37.5	38.6
Luxemburg								
Primary	16.4	15.4	13.8	12.9	12.2	11.1	9.3	9.1
Secondary	44.0	44.9	45.7	45.3	46.5	46.5	48.3	48.7
Tertiary	39.6	39.7	40.6	41.4	42.4	42.4	42.4	42.2
Netherlands								
Primary	11.5	10.4	9.4	8.5	7.9	7.2	6.9	6.8
Secondary	40.4	40.6	40.8	40.4	38.9	38.6	36.6	36.2
Tertiary	48.2	49.0	49.8	51.1	53.2	54.2	56.5	57.1
Norway								
Primary	21.6	19.9	18.3	16.7	15.4	13.9	12.2	11.4
Secondary	35.6	36.0	36.2	36.8	36.6	37.3	34.1	33.9
Tertiary	42.9	44.1	45.4	46.5	48.0	48.8	53.7	54.7
Portugal								
Primary	43.6	41.2	38.7	36.4	34.1	31.7	29.9	28.8
Secondary	28.9	29.5	30.1	30.8	31.5	32.3	33.2	33.8
Tertiary	27.5	29.4	31.2	32.9	34.4	36.0	36.9	37.4
Spain								
Primary	42.3	38.9	35.3	32.7	31.8	29.5	27.6	26.5
Secondary	32.0	33.6	35.1	36.3	37.1	37.4	37.7	38.0
Tertiary	25.7	27.5	29.6	30.9	31.9	33.2	34.6	35.5
Sweden								
Primary	15.7	14.2	12.4	10.0	9.1	8.1	7.4	7.7
Secondary	40.3	40.8	41.7	41.7	41.1	38.4	36.8	36.8
Tertiary	44.0	45.0	45.9	48.4	49.8	53.5	55.8	56.8

TABLE II (cont.)

Country and Sector	1960	1962	1964	1966	1968	1970	1972	1972
Switzerland								
Primary	13.2	11.4	10.2	9.4	8.5	7.7	7.3	7.3
Secondary	48.4	50.7	51.0	49.4	48.4	48.2	47.1	47.8
Tertiary	38.4	37.9	38.8	41.3	43.1	44.1	45.5	46.0
Turkey								
Primary	78.3	76.8	75.4	73.6	71.4	69.4	68.4	66.9
Secondary	10..	10.5	10.8	11.2	11.8	12.4	13.6	14.4
Tertiary	11.5	12.7	13.9	15.2	16.8	18.2	18.0	18.4
United Kingdom								
Primary	4.1	3.8	3.6	3.2	3.2	3.1	2.8	2.0
Secondark	48.8	48.2	47.9	47.9	46.8	46.5	42.9	42.0
Tertiary	47.0	48.0	48.5	48.9	50.2	50.7	54.1	54.1

Source : Organization for Economic Co-operation and Development, Labor Market Statistics. Various issues. (OECD, Paris).

gaged in secondary activity which we can accept as being roughly synonymous with manufacturing activity. Dissagregation of the gross sectoral figures is desirable in order to assess the composition of this sector in the light of what composes a Perrouxian growth pole. The following is a summary of employment in manufacturing activity for Greece and for the Greater Athens Area in 1974 [31].

While size alone cannot be considered as an infallible criterion of economic impact, we can assume that, other things being equal, a larger establishment has a larger impact in terms of linkages with suppliers and total income generated in production. For example, we find that 81 % of value added in manufacture in Greece in 1974 originated in large scale establishments (i. e., those employing 10 or more) and 62 % originated in the 6.4 % of establishments employing 50 or more persons [32]. Large sige is, in fact, cited in the growth pole literature as one characteristic of a Perrouxian growth pole and other characteristics, such as dominance of the economic environment

Employment in Greek Manufacturing in 1974

Category	Number of Persons	Number Establishments	% of Total
Small scale industry	0-9	112.912	93,6
of these 34.2 % were in the Greater Athens Area			
Large scale industry	10 or more	7.967	6,4
of these 51,2 % were in the Greater Athens Area			
	50 or more	1.246	1,0
of these 43,7 % were in the Greater Athens Area.			

and numerous backward and forward linkages would seem to be correlated with size, although size alone is insufficient to ensure that the firm is indeed growth inducing [33]. Success would therefore depend partially on choosing from all firms that set which is large sized and from that set those which are in growing industries.

The Greek Bank for Industrial Development has been active in planning and constructing industrial estates of various sizes in association with 28 urban places scattered over Greece. The infrastructure provided in these estates included roads, water, sewage facilities. electricity, and pollution abatement facilities. In some of the areas handicraft centers have also been planned. The nature of the locating or relocating units in these estates should be the object of the most careful scrutiny before they are accepted for the groups. Initial and future employment opportunities to be offered, the nature and magnitude of the backward and forward linkages with other firm, and the industry and its probable future growth are just a few of the topics to be considered if one of the priorities of the planners is to use these agglomerations of firms as grouth centers for their areas. It might be even more rational to ensure the largest areal impact by not leaving the initiative to private industry but by employing industrial complex analysis to find the besj potential mix of nndustry for each area and to then offer special inducements and incentives (over and above the normal incentives for each industrial zone) to just those types of establishments and to allow for future additions at the initiative of private entrepreneurship. The Development Company recently set up in Euretania for the purpose of developing the region and exploiting its natural resources is a very small step in this direction. However, the separation of the program under which the Euretania Company was set up from the basic regional invsestment program

seems not altogether appropriate. The greatest possibility of success of decentralized investment programs in underdeveloped rural areas will be greater other things being equal, when plans are co-ordinated for a concerted effort and where the number of places chosen for investment is relatively small. Small uncoordinated efforts scattered widely over the national space make little sense and probably offer little chance of successful results. The 28 ETVA investment areas are probably too many, especially since some of their central places are located close to one another.

A third type of regional investment in Greece merits our attention. This is the program of agricultural centers planned for the region of Thrace. Investment in these places is calculated to make the places more attractive and to stem the flow of migrants to the faster growing cities, especially to the Athens area. Wisely, it seems to us, the planning authorities have stressed the service functions of these small places rather than their rather nebulous potential for spreading sustained development after the growth center model. Not all centers are suitable for investment of the magnitude necessary to make them attractive to the degree necessary for reasonable success : in choosing centers for investments it is inevitable that some centers be indirectly chosen for ultimate death.

CONCLUSIONS

The evidence indicates that increasing economic maturity is accompanied by sectoral reallocation of the labor force from primarily agricultural activities to manufacturing and service activity. The majority of the employed population will be engaged in producing services in one form or another. Both mature and underdeveloped economies have experienced continuing problems of regional imbalance and shief among the strategies which they have used to combat these problems is growth center strategy. However, growth poles in the form of growth inducing firms available for these centers is few and far between and typically are found in the manufacturing activity while the fastest growing industries in both mature and developing economies are service industries. The results of growth center strategies have usually been less than satisfactory and part of the explanation of the lack of success derives from the fact that such sites have usually been organized around non-growth pole manufacturing industry and/or services industry which, in most cases, does not have the requisite scale and potential to induce growth. The less developed economies may have some greater potential for successfully using growth pole (center) strategy because their structure of production

and demand is such that secondary activity is as yet relatively untapped and that the sectoral reallocation of resources can be used by planning authorities to implement regional growth strategies. This is not enough in itself to ensure thnat their efforts will meet with success. As the Greek example shows, they still face all of the same problems which have confronted other countries in the implementation of such strategies, as well as some peculiarly their own, such as the small size of production units.

FOOTNOTES

1. Perroux, Francois, «Economic Space: Theory and Applications,» Quarterly Journal of Economics (1950); Perroux, Francois, «Note on the Concept of Growth Pole,» trans: Linda Gates and Anne Ma.ie McDermott in McKee, Dean, and Leahy, Regional Economicsh Theory and Practice. (New York: Free Press, 1970); Darwent, D. F., «Growth Poles and Growt. Centers in Regional Planning—A Review,» Environment and Planning, Vol. III (1969), pp. 5-311.

2. Organization for Economic Co-operation and Development, Salient Features of Regional Development Ppolicy in Spain. (Paris: OFCD, March, 1973), p. 9.

3. Ibid., p. 11.

4. » p. 12.

5. » pp. 13, 14.

6. Organization for Economic Co-operation and Development, Salient Features of Regional Policy in Germany. (Paris: OECD, March, 1968), pp. 36, 37.

7. Ibid., pp. 20, 36.

8. » p. 36.

9. » p. 20.

10. » p. 39.

11. Organization for Economic Co-operation and Development, Regional Problems and Policies in OECD Countries. Vol. II. «Germany», pp. 145-168. (Paris: OECD, 1976), p. 164.

12. Ibid., pp. 162-3.

13. Appalachian Regional Commission, The Appalachian Experiment, 1965-1970. (Date and place of publication not given.), p. 26.

14. Hansen, Niles, «Growth Center Policy in the United States,» pp. 266-281 in Niles Hansen, ed., Growth Centers in Regional Economic Development, (New York: Free Press, 1972), p. 271.

15. Appalachian Regional Commission, op. cit., pp. 27, 28.

16. United States Department of Commerce, Economic Development Administration, Growth Center Evaluation Task Force, The Economic Development Administration Growth Center Strategy. (Washington, D. C.: Feb., 1972), pp. A4 to A9.

17. Ibid., pp. 13-20.

18. In the United States since the late 1960's , the growth pole theory has been tested empirically for the presence of spillover effects into peripheral areas. Inrerested persons may consult the following studies: William C. Lewis and James R. Prescott, ‹Urban-Regional Development and Growth Centers: An Econometric Study,» Journal of Regional Science, Vol. 12, No. 1 (1972), pp. 57-70; Vida Nichols, ‹Growth Poles: An Evaluation of Their Propulsive Effect,» Environment and Planning, Vol. I (1969), pp. 193-208; Vida Nichols, Growth Poles: An Investigation of their Potential for Regional Development. RSRI Discussion Paper Series, No. 30 (Philadelphia: May, 1969); David W. Sears and Richard RB. Dymsza, Growth Pole Theory: A Test. Paper, Department of Agricultural Economics, Cornell University. (Ithaca, New?York: 1969); Charles T. Stewart and Virginia B. Benson, Linkages Between Small Metropolitan Areas and Their Hinterlands with Implications for Regional Development Policies. Prepared for the EDA. (Washington, D. C.: The George Washington University, May, 1972);Stavros Xiarchos, Growth Centers and their Spheres of Influence. Ph. D. Dissertation. (The Pennsylvania State Univetrsity, 1976). The general result of all these studies is that the effects of growth centers in the United States are small.

19. Perroux, 1955, op. cit.

20. Tormod Hermansen, ‹Development Poles and Development Centers in National and Regional Development,» pp. 1-64 in Kuklinski, Antoni, ed., Growth Poles and Growth Centers in Regional Planning. (The Hague: Mouton and Company, 1972).

21. Nichols, Growth PoleJ: An Investigation ....., op. cit., pp. 42-46.

22. A. G. B. Fisher, The Clash of Progress and Security. (London: Macmillan and Company, Ltd., 1935). Colin Clark in the Conditions of Economic Progress. 3rd ed. (London: Macmillan, 1957) attributes the earliest mention of the three part division and some of its implications to Sir William Petty in 1691.

23. Hollis B. Chenery with Moises Syrguin, Patterns of Development: 1950-1970. (London: Oxford University Press for the World Bank, 1975).

24. Clark, op. cit., Chapter VIII.

25. Victor Fuchs, The Service Economy. (N. Y.: National Bureau for Economic Research. Distributed by Columbia University Press, 1968).

26. Ibid., p. xxiii.

27. » p. 2.

28. » p. 3.

29. » pp. 4, 5.

30. Cheneyr, op. cit., pp. 50-53.

31. From Table X:4, Statistical Yearbook of Greece, 1977. (Athens, 1978), pp. 220-1

32. Ibid.

33. The number of employed may no. be he best method of measuring size, especially when size itself is a proxy, for impact or potential impact. The question of whether labor intensive or capital intensive industry best fills the requirements to be a growth pole is one of the (many) unanswered questions of growth pole theory.

Appalachian Regional Commission, The Appalachian Experiment, 1965-1971. (Date and place of publication not given).

Clark, Colin, The Conditions of Economic Progress. 3rd edition. (London: Macmillan, 1957).

Chenery, Hollis B. with Moises Syrguin, Patterns of Development: 1950-1970. (London: Oxford University Press for the World Bank, 1975).

Darwent, D. F., ‹Growth Poles and Growth Centers in Regional Planning-A Review», Environment and Planning, Vol. III (1969), pp. 5-31.

Fisher, A. G. B., The Clash of Progress and Security. (London: Macmillan and Company, 1935).

Fuchs, Victor. The Service Economy. (New York: National Bureau for Economic Research. Distributed by Columbia University Press, 1968).

Hansen, Niles, ‹Growth Center Policy in the United States,» pp. 266-281 in Hansen, Niles, ed., Growth Centers in Regional Economic Development. (New York: Free Press, 1972).

Hermansen, Tormod, «Development Poles and Development Centers in National and Regional Development,» pp. 1-64 in Kuklinski, Antoni, ed., Growth Poles and Growth Centers in Regional Planning. (The Hague Mouton and Company, 1972).

Lewis, William C. and James R. Prescott, «Urban-Regional Development and Growth Centers: An Econometric Study,» Journal of Regional Science, Vol. 12, No. I (1972), pp. 57-70.

Nichols, Vida, ‹Growth Poles: An Evaluation of their Propulsive Effect,» Environment and Planning, Vol. I (1969), pp. 193-208.

——— Growth Poles: An Investigation of Their Potential for Regional Development. RSRI Discussion Paper Series, No. 30 (Phila.: May, 1969).

Organization for Economic Co-operation and develolment, Regional Problems and Policies in OECD Countries. Vol. II. (Paris, OECD, 1976).

——— Salient Features of Regional Development Policy in Germany. (Paris: OECD, March, 1968).

——— Salient Features of Regional Development Policy in Spain. (Paris: OECD, March, 1973).

Perroux, Francois, ‹Economic Space: Theory and Applications,» Quarterly Journal of Economics (1950).

——— ‹Note of the Concept of 'Growth Pole',» trans. by Linda Gates and Anne Marie M:

Dermott in McKee, Dean, and Leahy, Regional Economics: Theory and Practice. (New York : Free Press, 1970).

Sears, David W. and Richard B. Dymsza, Growth Pole Theory: A Test. Paper, Department of Agricultural Economics, Cornell University. (Ithaca, New York: 1969).

Stewart, Charles T. and Virginia B. Benson, Linkages Between Small Metropolitan Areas and

Their Hinterlands with Implications for Regional Development Policies. Prepared for the Economic Development Administration. (Washington, D. C.: The George Washington University, May, 1972).

United States Department of Commerce, Economic Development Administration, Growth Center Evaluation Task Force, The Economic Development Administration Growth Center Strategy. (Washington, D. C.: Feb., 1972).

Xiarchos, Stavros, Growth Centers and Their Spheres of Influence. Ph. D. Dissertation. (The Pennsylvania State University, 1976).