

Growth Center Concept Re-examined in the Context of Accelerated Rural Development

by Myong-Chan Hwang*

CONTENTS

- I. INTRODUCTION
- II. GROWTH POLE: A SET OF PROPULSIVE INDUSTRIES
- III. GROWTH CENTER: AN INDUSTRIAL-URBAN COMPLEX
- IV. GROWTH CENTER IMPACT: BACKWASH AND SPREAD
- V. GROWTH CENTER CONCEPT RE-EXAMINED
- VI. GROWTH FORCES TRICKLE UP
- VII. REGIONAL DISPARITY AND GROWTH CENTER POLICY IN THAILAND
- VIII. MAXIMUM EXPLOITATION OF GROWTH CENTER: STRATEGIES FOR
ACCELERATED RURAL DEVELOPMENT

I. INTRODUCTION

The most popular scenario for economic development is simple and clear: Maximize the economic growth by concentrating the investments into a few industrial-urban complex. This conventional approach which is often called the unbalanced growth model or polarized development has been popular because of two important reasons inter alia. It is attractive because it makes feasible an impossible decision task for the decision-makers who face almost limitless problems relative to limited resources.

* Associate Professor, Human Settlements Planning and Development Program, Asian Institute of Technology. 이 論文은 The Seminar on Population and Human Settlements, December 18-20, 1975, National Environment Board of Thailand, Pattaya, Thailand 에 발표된 것이다.

In addition to the psychological advantage, the conventional wisdom has a strong support from the history of development in economically advanced countries. The development occurred in a polarized way at the initial stage showing a widening gap of economic welfare between regions, in particular between urban and rural areas. At later stages the development, however, spread out to other regions reducing the regional disparity. In the conventional scenario, the growth pole concept is essential, because it is a focal point of investment and growth.

The conventional wisdom as originally proposed has been seriously challenged for its workability in recent years, particularly in developing countries where high social and political instability is predominant. When people begin to regard the socio-political stability as an essential precondition for the national development, the concepts such as equity, justice and distribution become as much important as efficiency and growth.

To the growth maniac equity means nothing but a equalization of poverty. Their philosophy is: let the rich as social groups or regions accumulate their wealth because they are the source of capital formation and growth. To them efficiency first, justice later. In the conventional scenario of development, there is no stage for equity to play its role until the last moment when audiences become so mad that they decide to have another scenario of development: communism. Then, the basic question of development boils down to: For whom do we have development or growth?

The challenge is reinforced by the unresolved theoretical problem on the efficiency-equity conflict. No theory seems to render a convincing proof that equity is in direct conflict with efficiency. The evidence is fragmented and partial.¹⁾

The practical question is then how do we compromise efficiency and equity in a degree acceptable to the people in devising development strategies and programs, and it is a

(1) There are some studies which attempt to inquire analytically into the equity and efficiency. For instance, W. Alonso, "Equity and Its Relation to Efficiency in Urbanization", J.F. Kain and J.R. Meyer ed., *Essays in Regional Economics* (Cambridge: Harvard University Press, 1971), pp. 40-57; and Koichi Mera, "Trade-off between Aggregate Efficiency and Interregional Equity: A Static Analysis," *The Quarterly Journal of Economics*, LXXXI, 1967, pp. 658-74. Although these two studies show analytically under what conditions we can achieve both objectives, they lack empirical analysis. The following two studies, by using a linear programming model, deal with an empirical question of how to achieve both objectives. Takao Fukuchi and Makoto Nobukuni, "An Econometric Analysis of National growth and Regional Income Equality," *International Economic Review*, Vol. II No. 1, February 1970, pp. 84-100; and Bertran M. Renaud, *Industrial Location and Regional Policy in Korea: An Analysis of the Conflicts between National Growth and Regional Income Inequality in A Rapidly Growing Economy*, paper presented to International Liaison Committee of Research Conference, Seoul, Korea, August, 1971.

political decision. In this regards, I think the policies adopted by The Royal Government of Thailand where more than 80% of the total population are still living in rural settlements is in a right direction; such as the decentralized urbanization, accelerated rural development, and participation of Tambon councils in development programs.

The objective of this paper is to re-examine the growth pole concept, in particular the role of growth centers in rural development. In the conventional approach, the growth pole was regarded as a forerunner on the growth frontier. It has been viewed primarily in terms of efficiency. It is attempted, however, in this paper to turn the view point completely around to evaluate the usefulness of the concept for rural development. The major question to be asked is: do the growth centers have *favorable impacts* on the welfare of the rural areas or not; and what are the *necessary conditions* for the growth pole to have a favorable impact on the rural economies? Some crucial policy implications may be hopefully drawn from the evaluation of the concept from the view point of rural development.

II. GROWTH POLE: A SET OF PROPULSIVE INDUSTRIES²⁾

When growth pole concept was first introduced it lacked the spatial dimension. According to Perroux, perhaps the first economist who introduced the concept, the growth pole refers only to set of propulsive industries. These industries are poles or foci, or centers from which centrifugal forces emanate and to which centripetal forces are attracted.

The basic characteristics of growth pole are its large scale fast growth, and high connectivity with other industries. The growth impulse or force is generated in the propulsive industries by such factors as entrepreneurial and technological innovation, cost reduction due to the external and/or scale economies, and high income elasticities of demand for their output. Once the growth forces are generated, they are propagated to other industries mainly via backward linkages, inducing the growth in other industries greater than the initial expansion in the pole.

(2) The literatures on the concepts of growth pole, growth center, and their impacts are enormous. There are some recent works: A. Kuklinski and R. Petrella, eds. *Growth Poles and Regional Policies* (The Hague: Mouton and Co., 1972); A.R. Kuklinski, ed. *Growth Poles and Growth Centers in Regional Planning* (The Hague: Mouton and Co., 1972); and *Growth Centers in Regional Economic Development* (New York: Free Press, 1972) for instance.

Since the propulsive industries are big and fast-growing, the impulses they generate must be enormous, requiring more inputs from other sectors of the economy. In fact, the concept is similar to industrial complex or input-output economics.

III. GROWTH CENTER: AN INDUSTRIAL URBAN COMPLEX

The original concept was later expanded to include the dimension of geographic space by many economists and regional scientists such as Hirschman, Boudeville, and Friedman.

One of the basic premises of the growth center concept is that the economic growth is polarized in geographic space as well as in industrial structure. The match between propulsive industries and the urban centers is regarded as reinforcing the growth generation and propagation because the urban centers have various locational advantages and socio-economic benefits due to the agglomeration of industries and heterogeneous population. The urban places are the centers of innovations and social change; they perform central place functions which assure internal and external demand sufficient for the industrial growth.

As the propulsive industries integrate the economic space through backward and forward industrial linkages so the urban areas achieve spatial integration through the urban network and hierarchy. Favorable industrial mix, innovation generation in urban places, and their exports are regarded as important growth forces *inter alia*. These growth forces from urban places are supposed to be transmitted to the smaller urban areas and rural hinterlands through the network system and industrial linkages.

There are two important aspects of growth centers. One is the internal mechanism of growth in growth center itself and the other is the transmission mechanism of growth forces from the growth center to the hinterlands and other places. The first condition of a successful growth center is to generate enough growth forces within itself. The growth could be generated by various socioeconomic forces and factors such as the shift in industrial structure and technological innovations. The second condition is that it should transmit the generated growth to other areas. The transmission channels could be inter-regional transportation and communication network and interindustrial linkages. To meet these conditions the growth centers should be large enough, relatively fast-growing, and highly connected with other areas in terms of industrial linkages and network system.

The role of innovation diffusion in regional development has received an increased

attention in the recent literatures; and it is a natural development because technological progress is, of course, an important variable in economic development. Innovation refers to new ideas, methods and techniques in production and products, management, and socio-cultural institutions. The innovations are generated and adopted in growth centers and diffused to other settlements. It is believed that the innovations tend to be diffused in a hierarchical way through the systems of cities.

IV. GROWTH CENTER IMPACT: BACKWASH AND SPREAD

There are at least three types of interrelationship between the urban and rural areas in terms of socio-economic impacts on rural areas: *unfavorable*; *neutral*; and *favorable*. If there is no connection at all between the rural and urban areas, there could be no impacts at all. In a real world, we would find very few cases like this. Another interesting case of neutral impact is when the favorable and unfavorable impacts cancel out each other. The unfavorable impact is often called backwash or polarization effect. In this case, the urban center is "parasitic" in Hoselitzian terms.³⁾ When an urban center has favorable impacts on the rural villages, it becomes a bona fide growth center. The "generative" impacts were often called spread or trickling-down effects.

According to Robinson et al, in essence the growth pole model depicts the transmission of economic prosperity as the result of two sets of opposing forces. On the one hand, growth tends to concentrate in some center and erodes the economy of surrounding areas; on the other hand, development spreads over surrounding areas in the result of growth in the center. The area in which the center and surroundings interact constitutes the growth space.⁴⁾

Backwash effect can be caused by various socio-economic factors. Young and educated labor and emerging entrepreneurs of the peripheral community are attracted to the center, thus accentuating the urban and rural welfare gap. Similarly, savings and raw materials from the periphery are drawn to the center by the apparent greater returns on investment due to many socio-economic advantages such as agglomeration economies, the

(3) B.F. Hoselitz, "Generative and Parasitic Cities," *Economic Development and Cultural Change*, Vol. 3, 1955, pp. 278-294.

(4) G. Robinson and K.B. Salih, "The Spread of Development Around Kuala Lumpur: A Methodology for an Explanatory Test of Some Assumptions of the Growth Pole Model," *Regional Studies*, Vol. 5, 1971, pp. 303-314.

highly developed infrastructure, and higher level of public services.

On the other hand, the spread effect is believed to be initiated by innovation diffusion to the periphery; purchase of materials and other primary products from the surrounding areas; long-distance commuting from the rural areas; and the overspill of capital to the hinterland from the congested center. This trickling-down process is believed to equalize the existing center-periphery welfare gap. The balance of the two opposing forces would determine the net impact on rural areas.

V. GROWTH CENTER CONCEPT RE-EXAMINED

It seems that the rural areas was given relatively low priority until quite recently in the strategies of regional development like the agriculture in sectoral planning. It is, however, legitimate to question the validity of the conventional approach which emphasizes relatively more the industrial-urban sector of the economy because the rural areas constitute the other component of the human settlements system where a majority of the people still reside in Asia. In addition, the success of the regional development via growth center strategy depends upon the favorable interaction between the urban and rural areas. Unless the rural areas receive favorable impacts from the growth centers, the sine qua non of the growth center should be in serious doubt. In this respect, it is necessary to look into the interaction between the growth centers and rural settlements to find out whether and how much do the growth centers contribute to the rural development.

The theorists of polarized development often argue that in the early stage of development we would see the backwash effects dominate the interaction between two spatial components. At the later stage, the strong growth forces of the center, however, trickle down to the rural areas and ultimately, infuse dynamism into even the most tradition bound peripheries. Considering the urgency of the rural development problem, the critical question is the *timing* and *conditions* of the trickling-down process. Is the time lag between the backwash and trickling-down process *acceptable* to the majority of the people and *relevant* in the socio political context? What *conditions* are necessary to turn the strong backwash trend into the favorable process of trickling-down?

The first is very much a political question. In my opinion, there are two urgent reasons that the policy makers in the developing countries should think the process on a

very short-term basis. The first is the fact that the majority of the population are still living in the painfully poor living conditions in rural areas despite a rapid urbanization in Asia. Another is the increasing threat of socio-political disintegration in this region. Socio-political stability may be, therefore, more important than any other goals.

The urgency of the economic problems for the majority of the people in rural areas and the precarious socio-political integration require the immediate and deliberate initiation of the spread process. In this respect, the policies of Royal Thai Government seem to be in the right direction.

The second question is rather economic and demand detailed analysis.

VI. GROWTH FORCES TRICKLE UP

The above two questions are based on an implicit premise. The backwash effect, if it is unchecked, is so strong and cumulative that it dominates the entire urban-rural interaction, that is, "laissez faire, laissez passer". As succinctly pointed out by Myrdal, the play of the forces in the market normally tends to increase, rather than to decrease, the inequalities between regions.⁵⁾ I think this constitutes a strong rationale for regional development planning. In order to have relevant planning strategies, the first task is to understand the initiating and sustaining conditions for the trickling-down process.

To do this let us first take a closer look at the rural-urban interaction relying on a few available empirical studies. The influence of growth center on rural areas may be divided into three large groups: social, political, and economic. Flows of information, ideas, and innovations to rural areas are regarded as important social influence, which can stimulate the commercialization of agriculture and other social changes deemed necessary for rural development. According to the recent theories of innovation diffusion, the adoption of innovation depends upon the presence of the entrepreneurs and skilled people who possess the necessary will and knowledge, the proper institutional arrangement, and the contact network. Considering the selective migration from the rural areas—selective in the sense that the most migrants are young and educated, the lack of proper institutions and network in rural areas, their capacity to absorb the innovation is very much limited.

(5) G. Myrdal, *Economic Theory and Under-developed Regions* (London: Gerald Duckworth and Co., 1957), p. 26.

Some regional scientists found strong empirical evidences that there is a high correlation between the primacy rate and centralization of power.⁶⁾ Politico-administrative power and resources are highly concentrated in capitals and in so-called growth centers for that matter. There is not only income disparity. Enormous disparity exists also in the level of public and social services between the center and periphery. The lack of power and resources and the welfare disparity make the rural people feel frustrated, alienated, and discriminated.

The economic picture of the rural-urban interaction is no less dismal. Suppose the government intends to invest a certain amount of money in growth center as often proposed by the regional planners. How much multiplier impact on income and employment would be generated in urban and rural area respectively? The total impact depends upon the magnitude of the investment, marginal propensity to save, and marginal propensity to import of each region given their industrial structure. According to two region multiplier model, the income increase in rural area would be larger than that of urban area if and only if the sum of rural marginal propensity to import and save is less than the urban marginal propensity to import. It is very difficult to imagine that the rural marginal propensity to import is less than that of urban area because while the urban area usually imports from rural area agricultural products with relatively low income elasticities of demand, the rural people import from urban area manufactured goods and services which have relatively high income elasticities of demand. It is reasonable, therefore, to expect that the total impact of a given amount of investment in growth center favors the urban economy more than the rural economy.

The less favorable impact on regional economy in the south of Italy was found in an empirical study by Chenery et al. The Italian economy was characterized at the time by very different productive structures in the North and the South. The North was relatively more advanced and industrialized while the South was backward and underdeveloped. It was found that 150 billion liras invested in the South directly generated income of 63 billion liras in the South and indirectly generated income of 160 billion liras in the North and 131 billion liras in the South. The indirect income impact was larger in the North simply because of the heavy reliance of the South on the intermediate and fini-

(6) One of them is Hilhorst for example. See S.G. Hilhorst, *Regional Planning: A Systems Approach* (Rotterdam University Press, 1971).

shed goods and services.⁷⁾

Another recent study by Moseley comes to the conclusion that "certainly, the expansion of the two small growth centres has improved the choice of employment and presumably the prosperity of many residents of the small towns and villages surrounding them, but in terms of the generation of supplementary economic activity, such impulses appear to have *trickled up*."⁸⁾ He investigated the economic impact on the regional economy in East Anglia of two fast growing yet small growth centres: Haverhill with population of 12,430 and Thetford with 13,706 population in 1971, by looking at the following impact-spread mechanism.

(1) Direct employment generation

—commuting

—migration

(2) Indirect employment generation

—purchase of materials

—subcontracting

—creation of new establishments

(3) Induced employment generation

—shopping pattern for final consumption of goods and services

His study "cast severe doubts upon the conventional wisdom of those growth theorists who claim that stringent policies of spatial concentration will inevitably benefit much wider geographical areas." This conclusion is reached on the basis of an empirical study of the interaction between the growth centers and surrounding regions in already economically *advanced* country.

In my opinion the conclusion will fit better into the situation in developing countries where less linkages between the urban and rural areas are normally observed. Without any empirical study to support our argument on the unfavorable impact on rural economy, one possible way is to have a simulated test. It is possible to construct a simplified urban-rural inter-industry input-output table which represents approximately the industrial structure of each area and their economic relationship in its extreme. It may be used

(7) H.B. Chenery, P.G. Clark, and V. Cao-Pinna, *The Structure and Growth of the Italian Economy* (Rome, 1953), and Chiou-Shuang Yan, *Introduction to Input-Output Economics* (New York: Holt, Rinehart and Winston, Inc., 1969), p. 109.

(8) M.J. Moseley "The Impact of Growth Centers in Rural Regions-II: An Analysis of Spatial 'Flows' in East Anglia," *Regional Studies*, Vol. 7, 1973, pp. 77-94.

to estimate the *direct*, *indirect* and *induced* generation of income and employment in each region to see which region gets more benefit from a given investment in growth center. Although it may be an interesting exercise, it is so technical that it is not attempted here.

The alternative method adopted here is to make an intelligent guess as far as feasible. The effect of migration on rural economy is controversial. Unless the marginal productivity of agricultural labor is zero, the migration will reduce the productive capacity of the rural areas. The loss of the young and educated will surely hurt not only the production capacity but also the capacity to adopt innovation in rural areas. The painful experience in Korea supports the argument. Mainly due to the massive rural-urban migration triggered by urbanization and industrialization programs, the agricultural production suffered a considerable loss and this situation led to the initiation of the new village movement to revitalize the rural economy. It is not my intention to argue that rural-urban migration is entirely harmful to rural economy. What is implied here is that to make the migration beneficial to the rural economy, certain conditions should be met. For instance, it should be encouraged on a limited scale and synchronized with semi-mechanization programs in agriculture.

At the present level of development in Asian countries, the commuting of the rural people to the growth center is almost infeasible for various reasons such as the lack of appropriate means of transportation and required skills.

Indirect employment and income generation in rural areas by the expansion in growth center depends upon the existing industrial linkages between the two areas. It was found by Moseley's that less than 9 percent of the total purchase by the two growth centers were from the surrounding areas in the East Anglia and Essex. When we look at the existing linkages between growth centers and surrounding rural areas in Asia, the indirect seems to be negligible. Growth centers may purchase only surplus rice and other food stuffs from the rural areas which are dominated by subsistence agriculture.

It is in the induced impact that the trickling-up from rural areas is most apparent. Another characteristic of growth center is its performance of central place function. Most of rural population spend their income to buy necessary goods and services in growth center. This spending will lead to another round of acceleration-multiplier impact which will accrue mostly in growth center itself.

In balance, the rural areas will get very little or nothing from the expansion of

growth centers.

VII. REGIONAL DISPARITY AND GROWTH CENTER POLICY IN THAILAND

Before drawing some policy implications let us have a look at the situation in Thailand. Nineteen-sixties recorded a fast economic growth, about 8% per annum and gradual shift in industrial structure through industrialization in Thailand. On the other hand, an enormous regional welfare gap has emerged in the past decade. Central region, in particular the metropolitan Bangkok, has gained relatively high percentage share of growth in population and economic welfare at the expense of other regions as shown in Table 1. The regions also show a large gap in the level of public services provided by the regional government (see Table 2). Because the per capita expenditure corresponds roughly to the per capita revenue of each regional government, it approximately reflects the level of public services.

Dr. Pakkasem clearized: "First, despite remarkable national economic growth, the striking variation in level of development of different regions has become a critical policy problem. Second, interregional income disparities, the level and growth rates of both regional and aggregate per capita incomes had widened and intensified further. Third, this phenomena confirms the theoretical proposition that when a nation achieves rapid economic development, regional income inequality increase unless deliberate spatial allocation of resources through proper regional analysis and planning are implemented to

Table 1. Regional Per Capita GDP Relative 1960-1969

Year	Northeast	North	South	Central	Whole Kingdom
1960	53.30	71.00	125.75	161.25	100.00
1961	53.42	70.75	119.18	165.53	100.00
1962	52.88	72.27	112.37	165.61	100.00
1963	53.14	71.15	110.54	167.76	100.00
1964	48.05	69.95	108.44	175.33	100.00
1965	50.02	69.26	108.35	175.33	100.00
1966	52.73	72.69	96.19	171.78	100.00
1967	46.95	71.03	97.06	181.04	100.00
1968	50.05	68.85	96.96	178.11	100.00
1969	48.49	68.87	98.16	179.01	100.00

Source: Pakkasem's article (see note)

Table 2-A: The Revenue Structure of CAOs in 1970 by Region

Region	Revenue Bht (000)	Population	Per capita Rev. Bht	Per capita Re. Excl. Grants-in-aid	Per capita Grants-in-aid Bht
Region 1 (BKK-Thonburi)	33,765	151,289	223	57	166
Region 2 (Central)	167,774	5,637,578	30	18	12
Region 3 (Northeast)	112,297	10,666,361	10	4	6
Region 4 (North)	93,746	6,254,737	15	4	10
Region 5 (South)	104,889	3,522,113	30	10	19
All regions	519,471	26,232,283	20	8	11

CAOs=Chongwat Administrative Organizations, self-governments in non-municipal areas at provincial level.

Table 2-B: Revenue Sources of Local Governments by Region: Fy 1971

Source	North	Northeast	South	Central
Tax Revenue (Million Bht)	92.4	118.5	122.6	790.9
Per Capita (Baht)	(11)	(9)	(27)	(68)
Total Revenues (Million Bht)	182.3	386.1	200.0	1,063.1
Per Capita (Baht)	(23)	(30)	(44)	(91)

Source: IBRD, *A Study of Public Finances in Thailand*, Vol. IV, 1974, p. 60.

Table 3. Regional Disparities in Thailand 1970

Region	Per capita GDP (Baht)	Share ratio of secondary school enrollment to population	Share ratio of secondary school teacher to population	Population per physician	% Municipal
Central	6,612	1.86	1.95	7,390	28.22
Northeast	1,627	0.46	0.42	81,803	3.12
North	2,434	0.66	0.62	30,566	4.71
South	3,474	0.97	0.90	42,294	6.60
Whole Kingdom	3,613	1.00	1.00	17,831	11.60

Source: Daranee's report (see note)

redress the inter-regional imbalance in development."⁹⁾

The total population is distributed approximately 30% in rural areas, 10% in Metropolitan Bangkok, and 10% in other urban areas. Considering the population share of Bangkok, the concentration of economic wealth in Bangkok is amazing. About 80% of

(9) Phisit Pakkasem, "National Growth and Regional Gap: Northeast Regional Disparity and Development Alternatives for the 1970's," and *Urban Development Strategies for Attaining Desirable Population Distribution in the Context of Regional Development*, Thailand Country Report to U.N. Centre for Regional Development, Nagoya, Japan, Oct. 28-Nov. 8, 1974. See also Daranee Bunchorutavakul, *Regional Inequality in Thailand*. A Special Study Report, Asian Institute of Technology, Bangkok, Thailand, 1975.

the nations telephones, 50% of its motor vehicles, 80% of its total electricity consumption, 80% of its business tax collected, 70% of its personal income tax collected, and 70% of its total commercial bank deposits are concentrated in its capital. More than 60 per cent of annual construction are taking place also in Metropolitan Bangkok. The migration to Bangkok was approximately 3.3% per year in the last decade.

The overconcentration of population compared to the system capacity of the service delivery and management is major cause of uncontrolled squatter settlements and untolerable traffic congestion. According to one study,¹⁰⁾ about a million people live in squatter settlements in Metropolitan Bangkok.

With a view to redress the widening gap between regions, the Thai government adopted a decentralized urbanization policy with identified key growth centers as foci of development programs. For instance, Ubon, Korat, Khon Kaen, and Udorn were proposed as growth centers in the Northeast Region.

In my opinion, the growth center policy at the national level appears to be sound and well devised. It seems, however, that the rural side of the growth space and detailed action programs to maximize the socio-economic benefits from growth center have not received a proper attention. How do the rural development projects of Tambon councils fit into the growth center policy? What is the role of regional governments in this context? What specific action programs are needed to install built-in spread mechanisms between rural areas and growth centers? These questions still demand sensible answers.

VIII. MAXIMUM EXPLOITATION OF GROWTH CENTER: STRATEGIES FOR ACCELERATED RURAL DEVELOPMENT

Several guidelines which appear to be important through the previous discussions are presented for further consideration without attempting to give any detailed explanations and the order of priority.

Decentralization—more decision-making power and resources should be given to the provincial and local governments. The existing lack of planning and administrative capa-

(10) S. Angel, S. Benjamin and K.H. De Goede, *Towards The Recognition of the People's Housing Efforts: The Low-Income Housing Delivery System in Bangkok*, Discussion Paper Presented to the Roving Workshop on Low-cost Housing, Oct. 6-9, 1975, Asian Institute of Technology, Bangkok, Thailand, p. 3.

city at local level should not be used as an excuse for the possible delay of decentralization. It may be necessary to decentralize first the capable manpower from the central government to the regional and local level via various incentive schemes to improve their planning and administration capability.

Participation—more popular participation in planning and administration perhaps of development projects should be encouraged at local level. Voluntary community organizations could be relied on.

Feeder road—spatial connection between the growth center and surrounding rural areas is one of the important preconditions for a spread process. This should be synchronized with the provision of appropriate means of transportation between the two spatial units. This may stimulate the desirable commuting from the rural areas to the jobs in the growth centers, rather than migration.

Small scale industries—the advantages of small scale industries are well reported: the utilization of labor-intensive and intermediate technologies and so on. In particular, their interaction with agricultural/rural sector is interesting. One study by Child et al showed successful interaction between small-scale manufacturing industries (mainly diesel engines, pumps, strainers, and various farm implements) and agricultural sector in Pakistan.¹¹⁾ Their conclusion is:

“(1) It is a clear and specific example of industrial/agricultural interaction; that is, agricultural growth has generated demand for output of the domestic manufacturing sector, and, contrariwise, the supply of agricultural inputs has been the sine qua non of the ‘Green Revolution’ in West Pakistan.

(2) The industry is truly small scale and has been a vehicle for marshaling indigenous minor savings/investible funds, for the development of entrepreneurial and managerial talent, for training of skilled and semi-skilled labor, and for application of new (for Pakistan) technology.

(3) The development of the industry occurred spontaneously, with no subsidies, no tax concessions, no special credit arrangements, no technical assistance or even recognition by the official agencies.”

(11) F.C. Child and H. Kaneda, “Links to the Green Revolution: A Study of Small Scale Agriculturally Related Industry in the Pakistan Punjab,” *Economic Development and Cultural Change*, Vol. 23, No. 2, January 1975. pp. 249-250, and also see E. Brutzkus, “Centralized versus Decentralized Pattern of Urbanization in Developing Countries: An Attempt to Elucidate a Guideline Principle,” *Economic Development and Cultural Change*, Vol. 23, No. 4, July 1975, pp.633-652.

It is recommended, therefore, that the establishments of small-scale industries be encouraged in rural development areas. Large-scale agro-based or raw-material-oriented basic industries appear to be more appropriate for the growth center. The industrial linkages in the growth space, i.e., in the urban rural context should be treated as an interaction system.

Rural development area⁽¹²⁾—an appropriate number of rural development area within the growth space should be identified as the primary spatial focus of rural development programs, in particular rural infrastructure development.

Rural service center—public and other social service delivery to the rural people should be improved via creating an appropriate number of rural service centers. It could be the center of rural development area, or each rural development area could have a few more rural service centers depending upon the local conditions and needs. The improvement of rural services will prevent the trickling-up process thereby increasing the well-being of the rural population.

Location incentives—the further growth of metropolitan Bangkok should be curbed by limiting the new location of industries and construction. This policy should be linked to the attraction of industries to the rural areas and other growth centers via various incentives—small-scale industries in rural areas and relatively large-scale industries in growth centers. In Korea, it was helpful to rural development to require industries to establish at least one of their branch plants in rural areas providing various tax and other economic incentives to those firms.

Rural first—the urgency of the problem requires that a larger proportion, perhaps more than half of the public investment be allocated to agro-rural sector. Even if we invest in rural areas, considerable proportion of the total impact will trickle-up to the urban areas, given the existing rural-urban interaction pattern. In this respect Friedman's recommendation is most relevant:

“To place the emphasis on agriculture and the rural economy means to opt for a strategy which places social justice and the immediate necessities of the people ahead of simple economic growth.”⁽¹³⁾

(12) See J. Friedmann, *Specific Recommendations on Regional Planning in the Rural-Urban Context in Thailand*, National Economic and Social Development Board, Bangkok, Thailand, March 1975. He suggested the ideas of rural support center, and regional capital as “a new set of planning concepts in place of the discredited concept of growth center.”

(13) *Ibid*, p.2 (in memorandum #7).

Long-term perspective planning—to give guidelines to the decision makers and planner at all levels of government it is desirable to have a long-term perspective physical plan in which the broad policies and strategies on growth centers, the sectoral mix, industrial locations, and network system are laid down in addition to the usual five-year development plan. In this way the development program at all levels of government can be coordinated to achieve maximum and equitable growth throughout the nation.