A Study of Industrialization

by *Chung-Hyo Lee*

I. Introduction

Development economics steps forward empirical generalization based on the last decade's vehement scientific analysis and constructions. To find feasibly effective means for successful launching of economic growth has been the uncleus of the study.

Practitioners of underdeveloped countries feel more acutely than theoreticians in advanced countries speculate that concentrated efforts to industrialization are the sole hope toward self-sustaining growth. When Nehru spoke: "Real progress must ultimately depend on industrialization."[1] expressed is the belief of the whole underdeveloped world. Even an American economist pronounces:

……Thus the underdeveloped countries can either industrialize, and in doing so make of the sole advantage that historical development has bestowed upon them— the ability to draw upon the scientific and technological achievements of the more advanced countries— or forego industrialization and remain content with snatching a few crumbs from the rich table of technical progress by importing some second-hand equipments from the industrial countries thus raising their "welfare„ at a snail's pase.[2]

The theoretical approaches to industrialization focuse on: What are the optimum pattern and speed of industrialization, or what is the strategy of economic development. This paper purposes to survey recent developments of the study of industrialization. The former parts are concerned with the economic structure of underdeveloped countries and motives of industrialization. The latter part deals an empirical study by Professor Hollis B. Chenery on patterns and causes of industrialization.

II. Big Push, Inevitable Modus Operandi To Overcome Structural Unbalance

The present economic position of underdeveloped countries is for the most part the result of individual, marginal market decisions. Government intervention,

1) Jawaharal Nehru, Speeches, March, 1953-August, 1957. New Delhi, India, p. ll. The present author recites from M. Bryce, Industrial Development. New York, 1961, p. 3.

2) P. A. Baran, The Political Economy of Growth, NewYork, 1957, p. 288.

though of large magnitude, has relatively little effect on the pattern of development except a few countries of socialistic streak. Nor is monopolistic distortion particularly marked. Nothing approaches the purely competitive ideal more closely than peasant agriculture. The industrial sectors are not purely competitive but they may have been as close to it as technical efficiency permitted. Population growth which industrialization accelerated assured to the industrializing sector all the labor it could absorb at wages just above the village norm.[3] And it was the monopolized industrial sector that expanded,not the competitive rural sector. The explanation of underdevelopment thus must be found elsewhere than at market imperfections. Most economists argue that the population explosion and technical dualism are to explain it—at least in Asia.[4]

Technical progress in the past has been accompanied by accelerated population growth. The sector where investment is concentrated is capital-intensive, providing far too few jobs for the increasing population. The additional numbers is forced to be absorbed into the peasant agriculture, urban manual services and peddling and small industry sector where coefficients are variable. Productivity and incomes in these sectors consequently fail to rise, and in some countries may even have fallen. Another part of the explanation lies in lumpiness, individualities, discontinuities, external economies, and in divisibility of demand stressed by Rosenstein-Rodan and Nurkse,[5] the lumpiness of capital, especially social overhead capital; discontinuities in the savings function; and, most important, discontinuities in the investment functions.[6] Each of one thousand investment projects may properly be rejected by one thousand entrepreneurs in terms of their own marginal cost-returns calculations; yet all thousand together may launch a sustantial and sustained increase in national income. In short, the imperfection of markets constitutes the first bottleneck to make inevitable Big Push. Social overhead capital (power, transport, communications, housing, etc.) is the most important item of Big Push. Higgins says:[7]

"Its most important products are investment opportunities created in other industries. Moreover, they usually require 'a great minimum size,' so that excess capacity will be unavoidable over the initial period in underdeveloped countries. Social overhead capital is irreversible in time. It must precede other directly

3) *Cf*.B. Higgins, Economic Development, N. Y., 1959, chap. 14 and Discussion on the Fundamentals of Economic Progress in Underdeveloped countries. A.E. R. May,1959. p.p. 134-178.

4) Professors G. Ranis and J. C. H. Fei developed rigorously the absorption process of redundant agricultural population in terms of technological disguised unemployment and coventional wage level. G. R. & J. C. H. F., A Theory of Economic Development, Am. Econ. Rev., Sept, 1961, pp. 533-558.

5) P. N. Rosenstein-Rodan, Industrialization of Eastern and Southern Europe, Econ. Journ., 1943; R. Nurkse, Problems of Capital Formation in Underdeveloped Countries, 1953.

6) On these concepts Higgins gives us lucid exposition in his Economic Development, 1959, part 4.

productive investment. Its services cannot be imported. Investments in the 'infrastructure' ···have a high minimum durability, a long gestation period, and a minimal 'industry mix' of different kinds of public utilities."

The big push is in a nutshell the igniting plug to move the engine of underdeveloped economies off the dead center. And it means nothing but the rapid but herculian efforts to industrialize the stagnant economy.

III. Motives for Industrialization

The reason for universal interest in industrialization, as shown above, is that it is the most effective and consequently most strategic means to overcome the original inertia of stagnant economy and start it moving toward higher levels of productivity and income. A strong and positive connection between the wealth and standard of living of a country and the extent of industrialization is well expressed by Professor Myrdal:[8]

"Manufacturing industry represents, in a sense, a higher stage of production. In advanced countries the development of manufacturing industry has been concomitant with these countries" spectacular economic progress and rise in high level of living... Not least in the underdeveloped countries,the productivity of manpower in industry tends to be considerably greater than in the traditional agricultural pursuits. Industrialization, and the growth of that part of the working population that is engaged in industry, is therefore a means of raising national income per capita. In countries like India and Japan, with a high ratio of population to natural resources and, in particular, to land, manufacturing industry represents virtually the only hope of greatly increasing labor productivity and raising levels of living, however much is done for agriculture. But even in countries where the population pressure is labor···as for example, in many Latin American countries ···the successful exploitation of a more favorable relation between population and natural resources requires mostly the growth of manufacturing industry."

The primary motive for industrialization is to raise national income, but the more down-to-earth motives are stabilization and increment of foreign exchange earnings, and expansion of domestic markets by supplying social overhead capital. Finally Socio-political backwardness can be much more easily overcome with the rush of industrialization.

Means to stabilize and increase foreign exchange earnings

As Hans Singer pointed out,[9] foreign trade tends to be proportionally most important when incomes are lowest. Fluctuations in foreign trade tend to be immensely important for underdeveloped countries in relations to that small

7) Higgins, Ibid., p. 386.
8) Gunnar Myrdal, An International Economy, N.Y. 1956, p.266
9) H. Singer, The Distribution of Gains between Investing and Borrowing Countries, Am. Econ. Paper and Proceedings, May, 1950, p.473.

margin of income over substitution needs which form the source of capital formation, for which they often depend on export surpluses over consumption goods required from abroad.

A major, and often basically sound reason for industrialization is that it may be a means to improve the stability of both foreign exchange earnings and the national income through diversification of exports. Most underdeveloped countries rely on the export of one or a few products for much of their livelihood. These goods are sold in highly competitive international markets where prices are unstable because of severe fluctuations of both supply and demand. Consequently the unit prices for the export vary widely from year to year. The physical volume of the product availabl for export also fluctuates considerably if the item is agricultural, because crops vary from one year to another. A. U. N. analysis has shown that from 1901-1950, the average year-to-year variations in foreign exchange yuild of eighteen major crops exported by underdeveloped countries was 23%.

In addition to added stability, industrialization enables the country to make products to be sold competitively in export markets usually brings about larger total foreign exchange earnings and greater national income. Industrialization which permits the economic production of goods for domestic use which would otherwise be imported has an equally good stabilizing effect, such local manufacturing reduces demands on the country's foreign exchange resources.

Means to expand domestic markets

The prime motive to improve foreign exchange position is connected to the extention of domestic markets, substitution of home-made goods for imported goods results extended investment market as well as consumer's market.

Industrialization which is undertaken with the projects strongest in interindustrial linkage effects will augment intermediate demands and in corollary final demand.

The projects with the greatest linkage effects[10] will vary from country to country and from time to time, and can be discovered only by empirical studies of the input-output variety.

However, in usual an balance operations which are somewhere in the middle of the production process are likely to have higher total linkages than operations at the beginning or the end of the process.

Hirschman envisages a kind of "jacking up" process for industrialization, using import industries for their backward linkage effects, and then jumping

10) The concepts of interindustry linkages were clarified by A. O. Hirschman. The forward linkage encourages investment in subsiquent stages of production and the backward linkage encourages investment in earlier stages of production. Strategy of Economic Development, N. Y., 1959, chap.5 ff.

into the production of the import itself when the market reaches a sufficiently large size. The process of starting with final touches has brought a good deal of industrialization to underdeveloped countries. Market is provided under the prissure of linkage effects; local raw materials (timber, agricultural and mineral products) which otherwise would be largely or completely wasted are now compelled to be utilized much more economically.

Employment of the unemployed can be partially achieved. The unemployed people who could not be used productively in agriculture or some other activities can now be employed more productively and they make not contribution to the national income.

Means to overcome socio-political backwardness

Economic progress dooms to failure if it does not accompany social and political progress. Even though not sure whether "the problem of poverty and stagnation is bassically economic one or it is essentially technological, psychological, sociological, or political," "all economists who specialize development economics recognize the importance of the interplay of non-economic factors with economic variables."[11]

Baldwin and Meier state:[12]

"It is obvious that some institutional changes which are not merely economic must accompany successful development efforts. Economic development of sufficient rapidity has not taken place within the present cultural framework. New wants, new motivations, new ways of production, new institutions need to be created if national income rise rapidly... Fundamentally the backward peoples must recognize that men can master nature... Not only must economic organization be transformed, but social organization— as represented by such major institutions as caste, the joint family, the rural village, the church, and the schools—must also be modified so that the basic complex of values and motivation may be more favorable for development. Thus the requirements for development involve both economic change and cultural change."

And Hagen argues:[13]

"Most important of all... is the difference in basic motivation. In contrast to technologically advanced society with its high need-autonomy to (need to be a leader) the peasant society is characterized by a high need-affiliation (need to please friends and to have their affection, to cooperate with them) and high need-dependency (need to feel inferior someone; to have ideas and attitudes approved by someone regarded as superiors). With this motivational pattern, the rate of technological progress is likely to be slow. For the essence of innovation is the

11) B. Higgins, op. cit., p.xiii, p. 294

12) G. M. Meier and R.E.Baldwin, Economic Development, 1957, pp. 355-59

13) Everett E. Hagen, An Analytical Model of the Transition to Economic Growth, M. I.T., CIS, p.28. The author of this paper recites from Higgins' op.cit. p. 304.

solution of problems involving unknown or unique elements and no one could consistently and effectively apply his energy to the attacking of the problems unless he possessed a high need-achievement.

Professor Higgins criticizes such theory of Hagen;

"...the present writer would stop short of including in his policy recommendations measures designed to operate directly on the sociology, psychology, and culture of any country— even if he knew what measures would be successful. There seems to be no very clear way of creating the required attitudes, unless we revert to McClelland's process of gradual change through education, a process which would certainly take a generation or two... But there is some evidence that where economic and technical barriers to grow are removed the psychological and sociological barriers melt away rather quickly."[14]

Hagen himself refers to one dramatic case of rapid cultural change —the revolutionary development of Manus society as a consequence of occupation of the island by American troops during World War II. This experience suggests, Higgins asserts, that an almost complete transformation of a society can take place within a few years if the external "shock" to the society is powerful enough; Manus society jumped two thousand years in a decade.

Rapid but large scale industrialization can play the role of external shock since industrialization ensues urbanization so much. And social development initiated by industrial development is in turn conducive to making a favorable social climate to entreperneurian activities. The resultant upsurge of entrepreneurship, a key resources for promoting productive capital formation in underdeveloped countries may constitates a prime force of industrial growth.

IV. Optimal Nature and Form of Industrialization

In arriving at any general idea of the future size and place of the industrial sector in the total development of the economy, some broad conclusions must be reached concerning the desirable nature and form of indusions must be reached concerning the desirable and economically sound, considering the availability of capital, foreign exchange management, industrial skills, raw materials, and potential local and foreign markets and organizational and managerial ability. Mr. Murray Bryce puts the point as follows:

The great danger is that overoptimism may result in the belief that the scope for practical industrial development is much greater then it really is especially in the early days of the economic development program. The common tendency is to put too much money into elaborate industrial projects at a stage when the investment would be much more valuable to industrial development if it were put into such fields as education, transportation, and the modernization of public administration.[15]

14) Higgins, Ibid., p. 313.
15) M. Bryce, Industrial Development, N.Y. 1961, pp. 18-19.

We of underdeveloped countries well appreciate that the nonconventional inputs are important for increasing industrial productivity especially in the earlier critical phase of take-off where development of industry is based on labor-intensive, capital-saving techniques, relying heavily on technological innovations.

A. J. Brown's optimal sequences are as follows successively;[16] low-skilled light industry, high-industry, high-skilled light industry, low-skilled heavy industry, and finally high-skilled heavy industry. He includes in the first category fiber, leather, rubber, and glass industries and in the second category engineering and metallic industry; in the third cement, butter, magarine and fertiliger; and in the fourth oilrefinery. Professor Datta of Calcutta University approved Brown's pattern as practical and optimum pattern of industrialization specifically in view of the principle of self-reliance and self-sufficiency. He argues that domestic market is the greatest potential outlet and consequently priority is to be put to textiles, leather, glasses, pottery, and cannery successively.[17]

V. Chenery's Empirical Study

Professor Hollis B. Chenery worked out a very important research on the causal factors of industrialization by interindustrial approach; H. B. C., Patterns of Industrial Growth, Am. Econ. Rev. 1960, pp. 624-654. He undertook to find an universal patterns of economic growth in almost all non-communist countries (51 countries) by incorporating changes in both of demand and supply conditions into the mechanism of the growth of individual sectors of production. An experimental model construction is used to draw a generization from various obserbed patterns of industrial growth.

His model construction is well represented by the growth function (which he claims as a first operational apparatus for the quantitative analysis of the causes of industrial growth):[18]

$$X_i = (1-\mu_i)\,(K,S,R,N,R_i)\,[\hat{W}_i\,(Y,N) + D_i\,(Y) + E_i\,(K,S,R,R_i) + \triangle W_i(\triangle X_i, \cdots \triangle X_n)]$$

Where X_i is domestic production of commodity i, D_i is domestic final use of i, W_i is use of i by other producers; i. e., $W_i = \Sigma a_{ij}\,X_j$ where the a_{ij} are input-output coefficients, E_i is the export of i, M_i is the import of i, μ_i is the fraction of total supply that comes from imports, K is physical capital, S is human skills, R is total natural resources, N is the size of the country, as measured by its population, R_i is sector-specific natural resources, Y is per capita income, $\hat{W}$ is the normal value of intermediate demand for a given size of country, is a deviation from normal value of Wi.

The growth function comprises four determinants of three components of demand and one source of supply, i.e., import. The factor supplies are L, K, S, Ri, and R

16) A. J. Brown, Applied Economics, 1947, p. 33
17) Bhabatosh Datta, The Economics of Industrialization, 1957, p. 198.
18) H. B. Chenery, op. cit., p. 629

domestic production for imports; (2) growth in final use of industrial products; (3) growth in intermediate demand stemming from (1) and (2).

Table II Causes of Industrialization; Effects of Demand and Substitution

Industry Sector	Import Substitution	Final demand	Intermediate Demand & Subst.
Group A.			
Machinery	34	5	1
Transport	86	11	3
Metals	55	6	39
Nonmetallic M.	31	54	15
subtoal	72	11	17
Group B.			
Paper	85	13	2
Petroleum	98	0	2
Rubber	73	19	8
Chemicals	50	-5	55
Textile	69	12	21
subtotal	66	7	27
Group C.			
Wood Products	19	51	30
Clothing	15	13	72
Printing	2	11	87
Leather	29	16	56
Food, Beverage Tobaco	9	77	14
subtotal	13	45	42
total	50	22	28

By Table II, in groups A and B, imports provide 64 percent of the total supply of commodities at an income level of $1oo. In all sectors except nonmetallic minerals, economy of scale relative to the size of the market are substantial, as indicated by the size elasticity; this is doubtless one of the main reasons for the high proportion of import. In these two groups, the substitution of domestic production for imports accounts for 70 percent of the cause of high growth rate.

For consumer goods, on the other hand, the scale coefficient os not significantly different from zero in any sector and import substitution is a minor factor. In wood products, clothing and leather goods, the shift from handicraft to factory production is probably equally important as the growth elasticity, this change in relative costs is analogous to the change in comparative advantage that is the main source of growth in the other two groups.

The growth elasticity of total supply (or total demand) varies relatively much less than the growth elasticity of production. For all industrial sectors, the average growth elasticity of supply is 1.40. Only three (food, petroleum and

difference in growth elasticities[19] between investment goods and consumer goods is almost as great as the difference between agriculture and industry. At an

Table I Increase of Manufacturing Output with Income

Industry Sector	Growth Elasticity	Size Elasticity	Normal Output at: $100	300	600	Ratio 600/100
Group A. Investment & Related Products						
Machinery	2.80	.32	.08	1.84	12.82	151.4
Transport Equipment	2.33	.26	.18	2.28	11.44	64.6
Metals	2.14	.42	.34	3.62	15.97	46.6
Monmetallic Minerals	1.64	.16	.39	2.30	7.05	18.1
subtotal	2.16		.99	10.04	47.28	47.8
percent			12.08%	23.6%	34.5%	
Group B. Other Intermediate Goods						
Paper	2.69	.52	.04	.76	4.94	124.1
Petroleum	2.22	1.04	.01	.13	.59	53.7
Rubber	2.00	.44	.06	.53	2.13	35.5
Chemical	1.66	.26	.51	3.16	9.95	19.4
Textile	1.44	.40	1.00	4.90	13.31	13.3
subtotal	1.50		1.62	9.48	30.92	14.3
percent			19.7%	22.3%	22.6%	
Group C.Consumer Goods						
wood Products	1.77	.08	.35	2.46	8.36	23.6
Clothing	1.70	.18	.32	2.06	6.71	21.1
Printing	1.69	.07	.50	3.21	10.31	20.5
Leather	1.64	−.03	.09	.53	1.65	18.9
Food, Beverage,	1.13	.00	3.85	13.29	29.07	7.6
Tobaco	.93	.23	.51	1.42	2.70	5.3
subtotal	1.31		5.62	22.97	58.80	10.5
percent			68.3%	54.0%	42.9%	

income level of $100, 68 percent of manufacturing consists of consumer goods and only 12 percent of investment goods. At income level $600, the share of group A has increased to 35 percent of all manufacturing while group C has fallen to 43 percent. Group B maintains a fairly constant shares of the total.

The Causes of Industrialization.

His analysis clarifies the factors causing the industrial sectors to grow more rapidly than the rest of the economy.

He distinguishes three caused of industrial growth; (1) the substitution of

19) The growth elasticity is $\left(\frac{dVi}{Vi} \Big/ \frac{dY}{Y}\right)$ where Vi is per capita value added, and size elasticity is $\left(\frac{dVi}{Vi} \Big/ \frac{dN}{N}\right)$.

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The growth elasticity of total supply (or total demand) varies relatively much less than the growth elasticity of production. For all industrial sectors, the average growth elasticity of supply is 1.40. Only three (food, petroleum and

textiles) are less than this, and only two (paper, and metals) are above 1.75. Among three groups, the range is from 1.64 for investment goods to 1.29 for consumer goods. Intermediate demand in general grows more rapidly than final demand because import substitution requires increased production of intermediate goods; this accounts for the difference between 1.50 for the former and 1.36 for the latter.

Professor Chenery pronounces that these results contradict the usual assumption that changes in the composition of demand are the main cause of industrial growth. If a country has an increase in income with no change in comparative advantage, the analysis suggests that only about a third of the normal amount of industrialization will take place. Changes in supply condition, resulting from a change in relative factor costs as income rises, couse a substitution of domestic production for imports and, to a lesser extent, of factory goods for handicraft goods and services. These supply changes are more important in explaining the growth of industry than are changes in demand.

What can we learn from Prof. Chenery? Professor Bark, Hee Bum at S.N.U. who is now engaged in making the First Five Year Plan of South Korea argues that such generalization may be helpful to dovelopment programming in theoretical conceptuation, but the urgency of lifting national income cannot be evaporated by piecemeal projects. Symbolic heavy industry complex must be emphasized, he asserts, since psycholgical decision-making is made only by jerk.[20] Grandiose plans is necessary to stir the national enthusiasm which makes for overooming the obstacle of indivisibility of development psychology stressed by Rosenstein-Rodan. Even India adope heavy-industry-oriented method for economic development in her Third Five Year Plan after she experienced twice five year plans. The planning problem is to determine the sequence of industrialization that will meximize initial decision-making as well as induced decision- making. Here we may conclude that heavy industry (for example Iron and Steel) plays the role of safety-valve and the real progress is made on the line of Chenerian patterns of industrial growth.

VI. Industrialization versus Agricultural Development

Industrialization, alone and in itself, is often overrated as a means to achieve the progress. Industrial development has a necessary and, ultimately, a large role to play in almost any sound development programs in any underdeveloped countries. However, its part, particularly in the very early stages of a country's economic growth, is likely to be relatively small in the total program if decisions are made on the basis of thorough study of the economic costs and benefits involved.

In virtually every industrial country, industry in its early stages was built

20) The present writer discussed with Prof. Bark on this point.

on the backs of the farmers. Inevitably this was so; in almost every case agriculture has been one big paying activity from which industrialization could be financed, as well as the one large consuming section of the economy which could provide a market for the new industrial goods. Development of industrial sector is closely interwoven with that of agricultural sector and each must depend heavily on the other.

Staley explains their relationship in the following style:[21]

"Improvement in the productivity of agriculture is one of the most solid means of promoting industrialization; in fact unless agriculture does modernize substantially, industrial expansion in most underdeveloped countries is likely to be out short by lack of market, for the great majority of the population will not have the necessary purchasing power. Conversely, agricultural improvement cannot go very far unless there is industrial development to take up the released manpower an to provide a solid technical base for the equipments and services essential to modernized agriculture." ···Recently Johnston and meller deat with this point. They criticize that development problem has too often been discussed in terms of the false dichotomy of agriculture versus industry. They argue:[22]

"...in virtually all underdeveloped countries agriculture is an existing industry of major proportions, frequently the only existing industry of any consequence... Economic development is characterized by a substantial increase in the demand for agricultural products and fallure to expand food supplies in pace with the growth of demand can seriously impede economic growth."

Even heavy industry orienting Communist China is well aware of the fundamental importance of agriculture, as revealed in the Hsueh Hsie of mid-1957[23].

"As ours is an agricultural country, the effect of agriculture on our national economy is most tremendous and extensive. It is calculated that about half the value of industrial production during the First Five Year Plan depends on raw-materials supplied by agriculture and about 80 percent of the value of consumer goods depends on raw materials supplied by agriculture... During the First Five Year Plan, over 50 percent of the state revenue has come directly from agriculture and industrial production, commerce, foreign trade, and communications and transport that are connected with agriculture. Agriculture is also the main source of capital for construction of heavy industry.."

Recent trend of study of development is a sort of balanced growth of heavy and light industries as well as between agriculture and industry.

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21) E. Staley, The Future of Underdeveloped Countries, N. Y., 1954 p. 304.
22) B. F. Johnston and J. W. Mellor, The Role of Agriculture in Economic Development, Am.Econ. Rev., Sept. 1961, pp. 571-2.
23) A.D Barnett, Communist Economic Strategy; The Rise of Mainland China, 1959, p. 19

VII. Conclusion

As expressed in Introduction, this paper aims only to survey recent achievements on the study of economic development and so cursorily.

The problem of industrialization is not so easy to give any articutate answer, since ultimately any plan of industrialization must be reduced to specific projects. The problems of development financing and inflation must be paid due consideration before any undertaking. The goel of industrialization is not the maximum output at a point of time but to make the successful take-off into self-sustaining growth of national economy. The really difficult problem for a country determined to industrialize and modernize is to determine the optimal nature and pace of structural change in an economy and proportion of government Participation in the development process. So many problems are to be solved to make successful a 'Five Year Plan'. Let me finish this essay by citing Professor Mason's story of nonexistence, nay! death of d e u s e x m a c h i n a.[24]

"It is unclear at this moment of time whether the large governmental participation in Asian development programs is a temporary phenomenon associated with early stages of economic growth or whether it foreshadows a lomg-term "socialistic pattern of society. ...Government initiation of development in Japan was accompanied and followed by the rapid emergence of a business class... In a number of Asian countries local entrepreneurship is expanding, and in both India and Pakistan the vitality of the private sector.. is impressive. But too many diverse influences impinge on the path of development in this part of the world to permit more than a cautious recognition of this possibility.... A survey of Asian experience indicates how far even the most sophisticated of Asian democracies has to go before it can be said to have effective planning process... Democratic planning is something very new in the world, and, in any case, to arrive at a sensible judgment, one has also to consider the alternative."

24) E. S. Mason, Economic Planning in Underdevelopd Areas, 1957, p. 80