ECONOMIC STRUCTURE AND ECONOMIC GROWTH: A SURVEY OF AREAS IN WHICH RESEARCH IS NEEDED

EVERETT E. HAGEN
Massachusetts Institute of Technology

In accordance with fairly common practice, I use the term economic growth to mean a continuing rise in per capita income. I have defined the term economic structure broadly to include differences in the functioning of economic systems. In a few cases, the comparison suggested is among the structures of a given economy at different stages in growth, rather than among economies. The paper deals mainly, but not exclusively, with low-income economies.

I have included comments about the possible effects on economic growth of differences among societies in social and political, as well as economic, structure and functioning because, in my judgment, an economist who ignores social and political factors is in danger of attributing to economic forces differences that result from other factors, and of thereby erring in his economic analysis. This danger seems to me more serious in the study of economic growth than in any other area of economic research.

At various points below, I suggest evaluating the association between various factors and the rate or pattern of economic growth. In such an attempt a caveat is necessary. A complex set of factors influences the rate and pattern of economic growth. In statistical operations, use of simple correlation where multiple correlation is appropriate will yield spurious results. A larger share of the variation in the "dependent" variable is often assigned to the single "independent" variable than is properly attributable to it. In less quantitative analysis, the result is similar: an analyst who compares variation in a single factor or a single group of factors with variation in growth is apt to attribute undue importance to the factors he is analyzing. The danger of attributing all growth to economic factors is a specific case of this general proposition.

Obviously, one of the important tasks in future research is to obtain further information on the facts of growth and of economic structure in

various economies. We cannot determine the relationship of differences in structure to differences in growth unless we know what both are. We need more knowledge about growth in aggregate output and income, their components, population, and labor force. These data will, of course, yield estimates of growth in productivity. The research being carried on by the Committee on Economic Growth of the Social Science Research Council under Professor Kuznets' direction is invaluable. In this research I would like to see much attention directed to indications of the rate and nature of early growth in economies that are now "developed." As an example of the importance of this, I suspect that the rise in per capita income began gradually, and gradually accelerated, in all cases where a going society existed in the country before growth began. I suspect that the impression of a rather sudden "take-off" into growth results from our lack of statistics for earlier periods. Whether or not this is true has important implications; for if it is, this fact alone disproves a number of current theories about the forces causing or retarding growth. The facts of economic growth must be paralleled by the facts of economic structure—and social structure. We cannot, for example, assign causes for the differences in economic performance in China, India, and Japan, or Colombia and Ecuador, or nineteenth century Germany and France, until we have more facts about the pre-growth differences among them.

But we cannot first accumulate facts and later determine the casual relations between structure and growth, simply because until we have a theory we do not know what facts to collect. Some explorers of economic growth feel that they know with certainty the nature of the determinants of economic growth and need to investigate only the relative importance of each and the relationships among them. As suggested below, I think they are wrong—egregiously wrong. For example, our knowledge of why and how economic growth begins is almost nil. The same is true, only to a lesser degree, in other areas of theory of growth.

On the other hand, we cannot wait to collect facts until we have formulated our theory, for we cannot advance our analysis without concomitant advance in empirical knowledge. Unexpected facts, and the failure of expected empirical relationships to emerge, divert theories into new channels and suggest new theories. Hence, I am proposing both empirical research and theoretical speculation in the three areas that I consider most important for research.

One of the three is exploration of how economic growth begins. This may be the most important single piece of knowledge about economic growth that we now lack. It is parochial and unjustified to assume that any country will develop economically when "it is able to," as many now assume.

The second area is the mobilization of resources for growth. Capital formation is usually placed at the heart of the theory of economic growth. In my judgment, this emphasis is misplaced. Technological progress, an analytically distinct process with distinct causes, is the central feature.

But when we have learned something about how technological progress begins, we must study the circumstances that determine how great a flow of resources is made available to carry it.

Finally, we need greatly improved knowledge, and much more imaginative theorizing, on the differential effects of different allocations of resources during growth and of different allocative machinery.

These three areas cover a wide scope. Indeed, they may be interpreted to cover the entire study of economic growth. Within them, specific topics of especial priority do not stand out clearly, since we are not yet at the stage of refining theory but rather are not yet sure that our most general and vague ideas on the nature of the structure are sound.

In view of this, it seems to me that what I call below *gestalt* studies, or fishing expeditions, may be especially useful. The process of creation consists of the structuring of disorder; the man is most creative who can tolerate the greatest disorder among relevant facts, while he searches for the new higher order which will unify and organize them. Up to the present, too many economists have rather mechanically applied old rules, which were formulated in other circumstances, to the facts of economic growth. I suggest that it may be useful for a not too weary researcher to reject tentatively the principles that have been transferred from the standard body of economics to economic growth, to gather together in his mind the many disorderly facts about growth, and to seek new unifying explanatory principles. A number of the old rules would no doubt fit into these principles, together with some of the newly developed rules of the other social sciences.

My suggestions below are grouped under these four headings. It should be noted that other classifications might cover many of the same topics. For example, study of the relationship of the state to the process of growth is of tremendous importance. We do not even know whether the degree of state intervention is of any particular importance. Growth has and has not proceeded well under both a considerable degree of *laissez faire* and a high degree of governmental intervention. But some aspects of government intervention are surely of great importance. We need to isolate them. In my classification these aspects are included under the several headings.

How Growth Begins

Countries are sometimes classified by income level. For many purposes in the study of economic growth, a more important difference is whether they are experiencing continuing growth, i.e. continuing rise in per capita income. In this important respect, Japan and Colombia are more like the United States than like Thailand or Egypt; the difference from the United States is one of degree; from Thailand or Egypt, one of kind. They have begun continuing growth in per capital income, while Thailand and Egypt have not.

We have no satisfactory theory of why some countries have entered upon continuing growth, while others have not. Some economists studying growth imply that, since humans everywhere wish to maximize their income and since superior techniques are available to low-income countries, their failure to raise per capita income must be due to some peculiar economic barrier, removal of which would permit the forces of growth to take their natural course. But the several theses on economic barriers perhaps arise more out of desperation than out of empirical observation. There is reason to doubt that any of them is realistic. At best they need systematic empirical testing. Along with that testing, we badly need new theorizing about the forces that cause continuing technological advance, and thereby continuing rise in per capita income, to begin. We need to take into account social and psychological factors, for it is highly probable that we have failed to develop satisfying economic explanations because economic explanations alone are grossly inadequate. Developments in psychology since Freud and in sociology during the past two decades offer aid. In my judgment, earlier sociological explanations, such as the "Protestant ethic" thesis, do not. In few other areas of analysis does the integration of the social sciences offer as much prospect of theoretical advance as in the analysis of economic growth.

Of the eight topics listed in this section on the beginning of growth, one deals with a set of noneconomic factors that may be of central explanatory importance, a second presents a less important social factor, and four propose economic hypotheses about the "barriers" that prevent the "normal" course of growth. The last two deal with selected special aspects of the problem.

Social tensions. Man desires to maximize his economic income, but only *ceteris paribus.* He also desires to meet his obligations to his family, to his community, and to the gods he believes in; to have a decent, dignified, and stimulating occupation; etc. In a traditional society, economic, technological, or occupational experimentation may violate these noneconomic criteria of satisfactory behavior and thereby sharply reduce total psychic income. It is a plausible thesis that the values the individual has internalized will prevent him from engaging in economic innovation unless he is in some degree a social rebel, i.e. is dissatisfied with his place in his community, and that, even in this case, in the typical society the social pressures against deviation will prevent an isolated individual from deviating effectively.

Hence arises the hypothesis that a transition to economic growth will occur only if some *group* in the society is anxious about its place in the society. If an entire group is psychologically rebellious and turns to new activities in search of a way out of its unsatisfactory situation, the group's approval of the deviant activity of its members shields each member from the social disapproval of the society as a whole.

A group may feel tension because it feels unjustly looked down on. (Note that it must feel *unjustly* looked down on. If it has traditionally

been in an inferior role, as in a feudal or caste system, it may feel that being "looked down on" is natural and proper.) Examples are the Dissenters and Scots in Britain, the "outside" clans and many samurai in Tokugawa Japan, and the Antioqueños in Colombia. Or, a group may feel that it is in danger of being displaced from its proper position. Or, for generations its economic status may have been superior to its social status. This is often true of trading groups in traditional societies.

Let us call such a group psychologically "subordinated" (or threatened with subordination). The relevant hypothesis is that, in the typical traditional society, only a subordinated group, chafing at its position, will abandon old values and behavior patterns, turn to technological innovation to raise its economic status as a means of raising its social status, and bring about economic growth. One sub-hypothesis is that the subordinated group will react against the values of the subordinating group. If the subordinating group is a traditional one, this reaction may favor economic growth; but if the subordinating group is associated with "business" or "industry," as is the case of colonial masters, it may cause members of the subordinated group to reject "industrial" or "modern" values, and cling desperately to "the ancient landmarks," and thus prevent themselves from participating effectively in technological progress and economic growth. This rejection is emotional and unconscious. Many persons who zealously advocate economic development are emotionally incapable of devoting their energies to what, in their eyes, is a grubby business life.

No quantitative study, or at least no statistical study, is possible of whether social tension is an important factor in the transition to economic growth, as hypothesized. But empirical study of a less specifically quantitative sort is entirely feasible. Under my direction, research is going forward at the Center for International Studies, M.I.T., to formulate a general theory of social change into which the concept of group subordination fits, and to study the relationship of group subordination to the beginning of economic growth in England, Japan, and Colombia. Similar studies in other countries are possible. Even though research economists may not wish to enter into this type of research, or may not feel qualified to do so, they should keep in mind the danger of incautiously attributing all change or lack of change to economic factors.

Class structure. In a more general way, the class structure of a society may be an important influence facilitating or blocking the transition to economic growth. Research into the class structure before continuing rapid growth began, in societies now growing economically, may be fruitful. In any society, was the leadership in growth exerted by a landed class? Are the members of a trading class always or typically prominent among the leaders in the transition? Has a peasant class ever provided the economic, social, or political leadership? What classes have been interested and effective in blocking or retarding the changes associated with growth?

A specific relevant thesis that could be investigated relates to social mobility. It has often been suggested that social mobility is necessary for

economic growth. A more precise and perhaps contradictory hypothesis is that social blockage—the absence or partial closure of traditional channels by which a discontented individual can raise his status, together with sufficient freedom so that economic venturing is possible, is a requisite. Has such a blockage been associated with the transition to economic growth in various countries?

Barriers: population? It is commonly assumed that population growth in response to a rise in income has prevented continuing rise in per capita income in a number of countries.

I suggest that this thesis is factually incorrect and that the historical record shows that in no case in which *aggregate* output has grown cumulatively at a rate of 1.5 per cent per year or more (as a result of continuing technological progress) has population growth prevented a rise in per capita income. And in no such case has the rate of population growth risen to the level which Malthusian theory would indicate. It is easy to formulate a population theory consistent with these facts.[1]

It is clear that accelerated population growth begins with a fall in the death rate (possibly also a one-time slight rise in the birth rate), and continues until the birth rate has followed the death rate down to low levels. Research into the economics of the fall in the death rate, and into the circumstances in which the birth rate begins to fall, could be fruitful.

This suggests one possible relevant hypothesis. In England, the fall in the death rate was very gradual and unobtrusive. The birth rate began to fall about a century after the death rate. Elsewhere in Western Europe, the fall in death rate began later and was more rapid, and the lag before the birth rate began to fall was much shorter—say, 50 to 70 years. Since World War II, death rates have been brought down with startling speed in a number of countries by public health measures. Empirical research to test the relationship between the conspicuous fall in the death rate and the lag before the birth rate falls is only one example of possible fruitful research in this area.

In any such population research, it may be useful to study geographic units smaller than countries, where possible. A rise of the rate of population growth in a country to, say, 1.5 per cent per year may be due to a rise to 3 per cent or more in the area in which economic growth and sharp rise in income is focused, combined with little rise elsewhere; and persistence of a national population growth rate of 1.5 or 2 per cent for several generations may be due to a wave of growth which rolls over the country, rising and subsiding in any given area within a much shorter time. This behavior requires a population theory markedly different from a persistent moderately increased growth rate throughout the country. From casual examinations of statistics, I suspect that the two phenomena are combined. Further research could be useful.

---

[1]See E. E. Hagen, "Population and Economic Growth," *American Economic Review*, June 1959.

Barriers: inability to save? In the past it has been assumed by a number of economists that low-income countries cannot save enough to initiate economic growth. Ragnar Nurkse states this thesis neatly in Chapter I of his *Problems of Capital Formation in Underdeveloped Countries.*[2] It is possible that this idea, like one about population mentioned above, is false, and arises jointly from Western egocentrism and from the assumption that some such barrier must exist, otherwise low-income countries would have progressed. Capacity to save on any given level of per capita income may be, within very wide limits, a relative matter. It may be true that in economies with per capita incomes (as conventionally measured) as low as $60: (1) thorough national income measurement typically shows a higher rate of capital formation than had previously been supposed; (2) distribution of income is very unequal and obviously a group of the population has ample capacity to save; (3) the percentage of the national income spent for purposes other than food, clothing, shelter, and related necessities of life is more than enough to finance enough capital formation to initiate economic growth; and (4) when values and motives (in the technical-psychological sense) favorable to economic growth arise, the economy will in fact provide enough capital for the process to begin.

Assertions (1), (2), and (3) above can be tested empirically. In testing them, the relationship between skewness of income distribution and rate of saving, as well as between class structure and rate of saving, would be interesting. (See section on sources of capital.)

Assertion (4) does not imply that capital is not a bottleneck, and that, given other favorable conditions, provision of added capital from outside the economy will not accelerate growth. Whether capital is a bottleneck is a separate question, which, however, it is difficult to test empirically.

Barriers: limited market? Nurkse also notes that production techniques employing much capital require a market of a certain minimum size to be economic, and states the hypothesis that the size of the market in low-income countries is below this minimum. He suggests that this is a barrier to growth. Whether this is in fact a serious barrier could be tested by finding the capacities of plants using alternative techniques, in the manufacture of a given product, and relating them to the size of the market for the product in small low-income countries. This might be done for sugar refining, flour-making, spinning, weaving, fabrication of textile products, etc. It seems probable that such a study would explode the hypothesis.

A related question is whether expansion of the market due to exogenous forces has frequently been related to the beginning of continuing rapid economic growth. Has either occurred without the other? This is subject to historical, rather than quantitative, analysis. The entire piece of research could determine whether such expansion of the market is an essential, facilitating, or unessential condition for the beginning of growth.

---

[2] Oxford, 1953.

Barriers: lack of social overhead capital? Is a base of social overhead capital—notably, in transportation and power facilities and urban utilities —necessary before continuing economic growth can begin? Historically, has such a base existed everywhere before continuing growth began?

A substitute generalization would be that the construction of social overhead capital facilitates economic growth; that such capital has generally been constructed after growth has begun and the market has expanded, but that growth and construction of such capital are intertwined in a hen-and-egg sequence; that the formation of such capital at an early stage has seemed unimportant in some vital cases only when the ocean was available for coastwise transportation; and that in a country with difficult internal transportation (because of natural barriers), the presence or absence of such capital formation at an early stage has determined when the entire country would be drawn into a process going on in some part of the country. Has the amount of construction of social overhead capital at an early stage in development been correlated with conditions in the country? For instance, transportation would seem to be more necessary in a sparsely settled country than in one with population concentrations. Is investment in certain types of social overhead capital associated with a flow of capital from abroad? (See section on sources of capital.)

Determining whether social overhead capital has been constructed at an early stage in development involves dating the stage of development. Presumably this can be done by noting the rate of increase in aggregate output in the country. Are differences in the early presence of social overhead capital associated with differences in subsequent growth rates? It might also be possible to test how far in advance of demand a large unit of social overhead capital was built, by noting its profitability or lack of profitability after construction.

The influence of foreign contacts. Perhaps it would also be worth while examining the degree to which foreign contact is associated in various countries with the transition to economic growth. There is some gross evidence suggesting that foreign contact is not important as an initiating factor; that if in a given country there exist social conditions that create a drive for a change and economic conditions that make economic prowess seem a promising channel, then the motivated groups in the country will make foreign contacts and the degree of previous contact will make little difference. Witness Japan or Brazil with many contacts, and Colombia with few. Yet this simple picture is almost certainly misleading. The quantity and nature of contacts surely do count. A more sophisticated study could be revealing. It might, however, require historical field work in each country.

The "take-off." Professor W. W. Rostow has introduced a schema which divides growth into three stages: establishment of the preconditions; the take-off; and the period when growth is built in and continues "automatically."[3] The schema includes the idea of a rather sharply

defined point in time at which the take-off occurs. This concept of the take-off is subject to two possible objections:

1. It may not always be present. In England, for example, some relevant series when plotted on semi-logarithmic paper show no break in trend; one that appears in some others may be associated with a cycle.

2. In some cases there may be a fairly definite point of acceleration in trend, e.g. Japan around 1880, the Soviet Union after the Bolshevik take-over, probably Colombia in the early 1930's when a sharp fall in foreign exchange earnings induced domestic production of things formerly imported. But in such cases, the point may be of no great causal importance. In each case, it may be suggested, the fundamental changes necessary for continuing growth had *gradually* occurred, and growth had *gradually* accelerated. The incident that occasioned the break in trend identified as the take-off was not necessary for continuing growth, but was more in the nature of a fortuitous event that affected its timing and pattern somewhat. Without the depression of the 1930's, growth would surely have continued to accelerate gradually in Colombia. Without ingress by Perry in 1853 and the ensuing events that caused the Meiji Restoration in 1868, the trends that had already proceeded so far in Japan would have continued and continuing growth would have occurred, though in this case the pattern and pace would probably have been markedly different. In Russia, as Goldsmith[4] has shown, the rate of rise in output was already 2 per cent per year by the period 1860 to the early 1880's, and was 3 per cent per year during the period from the early 1880's to World War I.

I suggest the following empirical work:

1. In what cases, and in what series, can a break in trend be identified fairly early in the growth process?

2. What is the causal significance of such points? Do they seem to mean similar things in different countries? Do they come at similar times, or, on the other hand, do they simply reflect the fact that any trend is apt to have a break in it at some time? How have the forces that caused them affected the growth process?

The Mobilization of Resources

As yet we have only partial and specific ideas—certainly no comprehensive theory—on the determinants of the share of national income devoted to capital formation in various countries, or on the effect of differences in saving and investment channels on the volume of capital formulation.

[3] See his book, *The Process of Economic Growth,* Norton, 1952, or his article, "The Take-off into Self-Sustained Growth," in *Economic Journal,* March 1956.

[4] "The Economic Growth of Russia, 1860-1913" (mimeographed), National Bureau of Economic Research, 1955.

We are not yet ready to make firm suggestions for policies that will affect the level of private saving; we need to achieve a far better understanding of the "natural history" of saving and capital flow before we can do so. The suggestions made under the three headings below provide a cursory introduction to possible research topics.

Differential rates of capital formation. With what are differences associated, other than with the degree of state intervention to create savings? With differences in class structure? Skewness in income distribution? Cultural values? Religious ethics? Sectorial composition of output? Land tenure? The allocation of investment? The capital-output ratio?

Sources of capital. When economic growth has begun, an important source of continuing capital formation is the plowing back of profits. But where does capital come from before profits from new enterprises are available to be plowed back?

In a pre-industrial, technologically static society, the high income group is typically a landed group, which spends its income in conspicuous consumption. Has this class voluntarily financed capital formation in the early stages of growth in any country? If so, in what circumstances? Elsewhere, in what circumstances and how has capital been extorted from the landed group? Another source may be peasant agriculture. The same questions apply.

There is some evidence that the most important early source in noncentrally controlled growth has been the liquid capital of an importing merchant class. Is this true? In the cases of Russia and China, was the early source of capital also trade? Are there any noncentrally controlled countries where the early source was not predominantly trade?

To what extent is the volume of flow of capital from abroad during the course of growth associated with economic variables, such as the presence of natural resource deposits, and the opportunity for investment in social overhead capital in transportation and power? And to what extent with international political conditions?

Capital markets. It is possible that difference in the efficiency by which the capital market transfers savings to investors are significantly related to the rate of economic growth. A study of the fiscal and financial machinery in different countries that are growing or starting to grow might add to our knowledge both of growth and of money mechanisms. A good deal of descriptive knowledge is already available. More is needed; our knowledge of the capital flow mechanisms in economically underdeveloped countries is much less than our knowledge of the fiscal mechanisms. A systematic analysis of the knowledge that exists is also needed.

Resource Allocation

By resource allocation, I refer to the allocation of both investment and existing productive resources, including labor.

Economic theory has had a good deal to say about the resource allo-

cation mechanism, and economists have often made policy judgments about it. Yet we do not know what the allocative mechanism has, in fact, been in various countries during their periods of growth. (See the following section.) *A fortiori* we do not know what type of mechanism has been associated with various rates of growth or with varying degrees of effectiveness of capital inputs. We have only very incomplete and incompletely tested ideas about regularities in change in the allocation of resources as growth proceeds. We will be able to speak with much more assurance about the relevant aspects of growth if we learn more about the facts of allocative mechanisms and patterns.

The first four of the nine topics in this section deal with allocative mechanisms and the second four with the substance of allocation. The last topic, which has only a marginal claim to inclusion under the present heading, is placed here for convenience.

Allocative mechanisms. While economic theory treats the price mechanism as the resource allocator, impounding other mechanisms in *ceteris paribus,* differences in other mechanisms may have been such important determinants of differences in growth that the assumption of conventional theory leads to serious misunderstanding of the growth process.

Nowhere has the price mechanisms alone served as the resource allocator. Nowhere, on the other hand, have administrative mechanisms alone performed the allocative function. In every economy, at every stage of growth, a combination has been in effect. The concept of a dichotomy in this respect between individualistic and centrally controlled economies, or between democracies and totalitarian societies, is unrealistic. The appropriate concept is of a continuum. We need country studies to indicate just how allocation has been performed in various economies. Administrative controls include ones that alter relative prices (tariffs, subsidies, price controls, etc.) and ones that directly ration resources (assignment of public lands to specified uses, forced labor, administrative control of investment and production decisions, public operation of productive enterprises). What role have various mechanisms played in various economies? (We have been discovering recently that even in the United States our earlier assumptions about the role of government in early development were incorrect.)

Where a price mechanism has existed, we are not certain of the extent of its influence. Does a price allocation mechanism function in non-money-using sectors of low-income economies? Does price administration, legal control, or custom control prices, or do market forces cause evasion of these mechanisms? Are differential wages effective allocational devices? Are interest rates high in all such economies? In all sectors? What is the allocational effect? Do money lenders fail to go into industry for economic or noneconomic reasons? Intensive studies could be useful.

"Monetization" of the economy. In any low-income economy, some part of the economy operates with little use of money. Will growth be accelerated if the government takes measures to force a money economy

on this sector—for example, by requiring tax payments in money, or by making available, but only for purchase with money, consumer goods that may be desired? Or are exchange practices interwoven with others in such a way that the use of money is in large part merely a symptom of a way of life and, as the fundamental structure of life changes, money will enter, whereas forcing it in previously will not greatly accelerate growth? It is possible that field studies in various countries could throw light on this matter.

Protectionism and growth. It is accepted economic doctrine that protectionism lowers per capita income in an economy. However, a number of economies have grown rapidly behind protectionist barriers. It is easy to construct a theoretical model which indicates that protection of the growing sectors of the economy against foreign competition raises per capita income.[5] The argument does not refer to infant industries or to external economies. Its assumptions seem more realistic than those of the conventional model. What has been the degree and nature of protection in growing economies, especially during the first generation or two of growth? What rates of growth have various degrees and types of protection been associated with?

Monopoly and economic growth. In the early stages of economic growth, has there been a greater degree of effective monopoly in new industries in some economies than in others? Monopoly or a reasonable facsimile probably often exists because of difficulty of entry, i.e. because only very few entrepreneurs have the organizing ability to set up enterprises in the new industries. Is variation in the rate of growth associated (partially correlated) positively or negatively with the degree of monopoly? Involved, of course, is the Schumpeterian thesis about the dynamically beneficial effects of monoply.

Balance versus growing points. In the article cited above, Professor Rostow has written about the "leading sector" in growth. That is the sector whose output first increases greatly. The expansion of the leading sector occasions increase in demand for materials, capital goods, etc., and thus sets in train a chain of events all forming part of the growth process. Rostow's work has noted the existence of leading sectors in various countries. That there is a leading sector is obvious, except in the statistically unlikely contingency that all sectors expand *pari passu*. Perhaps further empirical work would be useful. Is it economically important for continuing growth that some sector rather than others should be the leading sector?

Economically, it is possible to conceive of an expansion in foreign demand for agricultural products that could make agriculture a leading sector. Socially, it seems unlikely that expansion and technological progress in agriculture should initiate economic growth, because the initiation

---

[5] See E. E. Hagen, "An Economic Justification of Protectionism," *Quarterly Journal of Economics*, November 1958.

of economic growth involves social rebellion, and that rebellion is almost certain to involve rejection of traditional agricultural values and exertion of energies in some other field. Aside from this, the significance of one sector versus another would seem to be primarily economic.

In a centrally directed process of growth, any of various sectors may, of course, be chosen for emphasis. In a closed economy the choice of sectors to emphasize is limited, for supply from each sector must equal the demand created for it (demand in some fields being, however, open-ended, and in others subject to manipulation by pricing policies). In an open economy the restriction is less strong. Yet balance of payments considerations are compelling. In view of the difficulty of quickly developing reports, a food deficit country must probably give high priority to agricultural development.

Apart from this consideration, low-income countries tend to desire industrialization. Does a comparative study of a number of economies indicate economic or technical reasons to select industry, or perhaps heavy industry, as a leading sector? The reasons, if they exist, may lie in the skills industry generates, or in its capacity to produce capital goods. The psychological satisfactions it provides may spur growth. It may be worth while to see whether advantages can be found that counterbalance the static comparative advantages of agriculture.

Is greater efficiency attained by decentralizing industry, in order to reach underemployed labor which is geographically immobile, or by industrial clustering?

In his book, *The Passing of Traditional Society*,[6] Daniel Lerner presents evidence on correlation of urbanization-industrialization, literacy, media participation, and political participation in some 54 to 73 countries. He finds evidence of a time sequence of development, and hence suggestion of a causal sequence, with urbanization, which implies industrialization, a necessary early step in modernization.

Can analysis of growth in various economies provide any further general evidence? The argument for decentralization would, of course, not be flatly disproved by evidence of a very strong opposite historical tendency. However, the study might attempt to assess causal factors in varying degrees of centralization of industry, if varying degrees are found. Perhaps a study might investigate the degree of suburbanization of industry and commerce in the United States, and attempt to relate it to the question of decentralization at earlier stages of growth.

These questions of sectorial, regional, and urban-rural relationships have certain analytical characteristics in common. How broad a base must economic growth have? Must the impetus exert itself in a number of industries, in order that they may energize each other in some social or psychological or technical way? Is a balance in growth in income necessary in order that an expanding market for products may exist? On the

[6]Free Press, 1958.

other hand, is concentration of effort fruitful, in order that within one region, or perhaps a city and its surrounding territory, there shall be experienced external economies from the existence of common social overhead capital, common services, political and industrial organization, and/or the growth of skills—no one firm being a large net loser from the training of workers who then go elsewhere? If one region begins to grow late, will it suffer seriously because it has a large adverse balance of payments to advanced regions and to foreign countries? Southern Italy is a case in point.

Study of the historical pattern of growth in various countries may provide many suggestions on this complex of questions—suggestions that may both increase our general knowledge of the growth process and provide guidance to governments who are trying deliberately to manage growth. In such a study, the recent cases of Brazil, Turkey, and Colombia should be included.

A specific question in point is whether economic aid to agricultural or industrial development is more advantageous for a low-income country? The intellectual question involved merits exploration, quite apart from its policy interest.

Circularity versus "triangularity" in interindustry relations. A specific question that might have been included above is about interindustry flows. In early growth, under what circumstances is there a large amount of circularity in production flows—e.g. iron mining to steel to steel machinery for the mining and steel industries—and under what circumstances is there a flow from material to finished product without much "feedback"—i.e. "triangularity" in an input-output matrix? In the former case, no investment may pay unless a circle of investments is made at the same time; in the latter case, no such interdependence exists. Theoretically, at least, the former case may be a deterrent to growth. Does this case exist widely enough to be a practical problem? If so, it may affect the problem of planning, not only at early stages, but at various stages of growth. (Of course, if a small closed circle of individuals makes the decisions, they may take each other's plans into account.)

Trends in sectorial patterns during growth. Colin Clark[7] has asserted, with accompanying evidence, that as per capita income rises, there is a steady shift from primary to secondary to tertiary industries. Some economists question his evidence and his conclusion. Research into this problem should no doubt use both this threefold classification and also others, and should attempt to determine whether there are straight-line trends, or curves and perhaps reversals in trends, during growth.

Factor proportions. Leaders in many low-income countries claim that they cannot use their abundant labor in advanced technology because the latter requires much capital and their capital is limited. That is, there are no advanced techniques that require slightly more capital than those now

---

[7] *The Conditions of Economic Progress,* 3rd ed., London, Macmillan, 1957.

in use and employ much labor. The reason presumably is that the inventive energies of the West have been devoted to conserving labor, and hence the only advanced techniques invented have been ones requiring much capital.

It is analytically clear that in such circumstances output may be maximized by permitting unemployment. Available techniques that provide full employment may yield less output than techniques that would concentrate available capital, but would leave many workers unemployed.[8]

Research might estimate the empirical importance of this problem. Have some countries, e.g. Japan, been able to devise advanced fairly labor-intensive techniques, thus preventing underemployment of labor? (There is much complaint in Japan today about disguised employment.) Do the causes of underemployment seem to lie in this problem of factor proportions, lack of training, labor immobility due to cultural factors, etc.?

The proportion of capital to other inputs is not the only factor proportions problem worth investigation. Is there a fairly general time order in which skill bottlenecks appear as growth proceeds—first in entrepreneurial-managerial ability, then in high-level technical ability, then in foremanship and lower level skills? Can these bottlenecks be anticipated? How do these various factor proportion problems affect growth?

Size of the plant or firm. Some writers have suggested that only by establishing large productive units can the presently underdeveloped countries compete with the advanced techniques of Western countries. Others consider this ethnocentric and unimaginative theorizing. Is there any general tendency in the distribution of firm or plant sizes in a country, as growth gets under way? Presumably such a pattern varies among industries? How? How can firms of markedly differing sizes and techniques coexist, as they often do?

An advantage of establishing large capital-intensive enterprises, in partially planned growth, is said to be that by subcontracting they induce the establishment of cottage industry and small-scale manufacturing ventures. Over a range of growth, Professor Paul N. Rosenstein-Rodan has argued, large and small enterprises complement each other, the large providing a market for the small; at a later stage the large begin to replace the small. He adduces empirical evidence in Eastern Europe. Would more systematic investigation verify this? The method of financing industry may have an important influence on the size of the firms that develop and hence on their techniques. Case studies may illuminate this point also.

This question of scale of the most efficient technique is of especial interest in agriculture. Is agriculture best developed through, say, irrigation projects and large-scale agriculture, or by "village development" training of peasant farmers? How do large and small farms coexist? Is the form of land tenure, rather than purely economic considerations, deter-

---

[8] See Richard S. Eckaus, "The Factor Proportions Problem in Underdeveloped Areas," *American Economic Review*, September 1955.

mining? In the case of plantation versus small-scale agriculture, what are the economic advantages involved in each?

Gestalt Studies (Fishing Expeditions)

Our knowledge of the factors influencing growth is still so incomplete that it would seem to me useful to search widely and generally for relationships, with as little preconception about causal influences as possible, to disregard deliberately old frames of reference, such as those suggested under previous headings, and to bring into juxtaposition complex sets of disordered facts in the hope that new order will suggest itself. The proposed process contrasts with the analysis of one variable, other factors being held constant. It is suggested that complexes differing in many respects be pondered, in order that fresh ways of organizing them may appear.

In a sense, the last three of the four topics suggested below for such roving exploration are merely sub-cases of the first. The brevity with which the first two are stated is an indication only of my inability to add any very useful specific comments about them, because of their extreme generality. The fourth is stated at greater length solely because I assume that the subject matter involved is less familiar to economists.

Rates and patterns of growth. With what complex of economic, social, political, and psychological variables do differences in over-all rates of economic growth and patterns of growth seem to be associated?

Why similar countries differ in growth. Why has one of two or more countries that seem superficially similar grown much faster than the other or others, or begun to grow while the others have not? Possible sets are Venezuela, Colombia, Ecuador, and Peru; Japan and China; and China and India.

The state and growth. I am sure that the gross picture many persons have about the relationship between different degrees of state intervention and different rates of growth is erroneous. Until the case of China, there had been no example of an extreme degree of state intervention at the early stage of successful economic growth. (Accelerated growth began in Russia in about 1860.) But in most Western countries, as noted earlier about the United States, the degree of state intervention was somewhat greater than we have realized until recently. Rapid growth has occurred under a high degree of state intervention and under a considerable degree of *laissez faire;* and both relationships are associated with failure to grow. A loose-jointed hard-digging exploration by an imaginative research worker into the history of, say, England, France, Germany, the United States, the Soviet Union, Japan, Brazil, and Colombia might turn up illuminating comparisons and contrasts.

Relation between initial structure and pattern of growth. It is important to study the implications of the pre-growth structure of the economy and society and the pre-growth culture for the structure of the society

during growth and after industrialization. The most fruitful research in this field might be by sociologists, anthropologists, and psychologists rather than economists, but joint research by all four might be the most fruitful of all. There is, I think, a common assumption among many economists, businessmen, and government administrators, that industrialization, if it is to be most efficient, necessarily involves the evolution of the institutions that we associate with industrial society in the West: private enterprise, allocation of resources primarily by market forces, monetary remuneration of labor on the basis of its productive efficiency, clear assignment of authority and responsibility, certain elements of line and staff administration—to mention a few of varying degrees of generality. Study of various societies suggests strongly that all of these, and others, may be to a considerable degree "culture-bound"; that in societies starting with cultures different from ours, economic growth may proceed most efficiently with institutions in the areas listed differing markedly from ours.

The hard facts of growth and technically effective economic performance in the Soviet Union have coerced us into abandoning some preconceptions about the inevitable technical superiority of private enterprise and market forces. We may be equally in error about the necessity of the management organization that is effective in our culture. Recent investigation in Japan indicates relationships within the industrial plant that would seem virtually incredible to American executives.[9] For example, a person is selected by a company at the beginning of his career, remains with that company for life, is never laid off, and is advanced in salary and formal rank throughout his life without regard for his performance. Important decisions are made by groups; assignment of responsibility is avoided. Yet output per capita in Japan has risen more rapidly than in the United States, from, say, 1880 to the present. With organization and procedures in productive firms that would seem to American executives to guarantee bankruptcy within a short period, they have excelled us in progress. The differences undoubtedly arise from the preindustrial culture of the society. Surely there are generalizations to be drawn from data such as these that have so far escaped us. We have now accumulated enough economic, social, and psychological knowledge so that reflection on the relationships between differences in initial social, political, and economic structure and differences in the rate and pattern of growth may be fruitful.

Among the more purely economic aspects of initial structure to be studied are the population-resource ratio, the structure of ownership, and the composition of output. The degree to which a country produces its own consumer goods and capital goods and the economic relationships among the producing sectors in the country vary considerably among growing economies and among economies that have not begun to grow. Some of these factors may be worth generalizing about, rather than

[9]See James C. Abegglen, *The Japanese Factory*, Free Press, 1958.

ignoring them as variants not affecting the general principles of growth. It might be useful for someone to ponder the combined impact of all of these differences on the rate and pattern of growth.