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# I

# Suggestions for an Inquiry Into the Economic Growth of Nations

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## Contents

## 1 Reasons for Choice of Field

While choices of fields of inquiry are often subject to personal or erratic factors, they most often reflect the drive for intellectual mastery of the major events that affect mankind. The acuteness of a problem coupled with a realization that insufficient knowledge exists either of its magnitude or of the factors that determine it is a sharp spur to human inquiry and a powerful magnet that attracts efforts in one direction rather than another. In this light, the choice by the Universities-National Bureau Committee of the field of economic growth of nations for preliminary exploration, intended to lead to a program of substantive studies, can easily be understood.

The historical canvas of recent times, whether we look at the last half century or at the last two centuries, is marked by rapid changes in the rate at which various nations grew or fell behind. In times when a country, such as Germany or Japan, displays a remarkable record of rapid development over half a century and then, as if driven by inexorable internal forces, generates a conflict that results in a drastic setback to the country's growth, perhaps not to be overcome in the forseeable future; when countries that have shown a sustained advance to economic leadership of the world are rapidly passing into a phase of relative decline or are at least facing a genuine threat of it as in the case of Great Britain -- the very rapidity and drastic character of these secular changes overshadow short term adjustment problems and pose urgently the need of understanding the factors at play. Likewise, when we have had during the past century attempts by large groups of humanity in Asia and South America to follow a Western pattern of economic growth but with indifferent success, the tacit assumption, not uncommon in the nineteenth and early twentieth centuries, that economic growth is a matter of course cannot be easily retained. Finally, the

drastic differences in the institutional conditions under which economic growth has taken place in recent decades in such countries as the USSR, differences from the institutional pattern that has been so commonly assumed in whatever theory of economic growth there was, are another challenge to better understanding.

At any time, economic inquiry is greatly dominated by short term issues, and it is unreasonable to expect that a given discipline can be isolated from the current problems and somehow reserved for work on a longer perspective. That with the ever-mounting pressure of year-to-year problems calling for decision by governments and other policy organs of society, the major emphasis of economic research and study in recent decades was upon the problems of the day — whether it be those of depression, of war, of inflation, of relations between labor and capital, and the like -- can easily be understood. But it is also clear that in the absence of an effective theory and with only spotty empirical knowledge of long term changes, an intellectual framework within which the short term problems could be clearly understood and analysed was lacking -- with consequent limitations on the validity of such analysis and of the variant answers to policy problems. Such theoretical analysis and the consideration of the whole gamut of policy dealing with employment, prices, profits, taxation, tariffs, etc. were too often without explicit consideration of long term implications. And, conversely, attempts to discuss the secular changes in the economy were often colored by a short range of recent experience, and thus in fact involved confusion between short and long term changes — as witness the flurry about the secular stagnation theory in the latter 1930's in this country. Regardless of how one evaluates the success or ill success of economic inquiry in dealing with short term issues in recent decades, it seems clear that greater

attention must be paid to problems of long term change. These problems emerge most conspicuously as one thinks of temporal or spatial differences in the rate of economic growth of large, diversified aggregates such as national state units -- rather than in terms of single industries or single firms. It is in this belief of the importance of the problem of economic growth of nations that the Universities-National Bureau Committee chose the field for preliminary exploration.

The papers in this volume discuss various aspects of study of economic growth, necessarily in a rather tentative fashion. In a field as wide as this, and one in which the status of established knowledge and analysis is still so little advanced, one cannot hope for more than tentative reflections -- necessarily colored by the predilections and intellectual habits of the observer. The purpose of the present notes is to push forward to some consensus in the formulation of a broad inquiry in the field, a formulation that upon further testing could become the basis of planning of substantive studies. This formulation is in turn tentative, and again will reflect the individual biases of the author. But they are advanced here for purposes of discussion, in the hope that they will provoke a response and that by some amalgamation of whatever different viewpoints are advanced, will serve as a program of widespread study.

2 Delimitation of the Inquiry

Even with general agreement on the importance of studying the economic growth of nations, an attempt to narrow the time and space limits of the inquiry is likely to provoke dissension. The choice of limits must be based upon inadequate knowledge, and upon some notion of the prerequisites of effective study. Both the inadequate knowledge upon which choices have to be made and the differences as to criteria of effective inquiry are obvious sources of possible disagreement.

The choices suggested here are based on two assumptions. First, admitting the importance of taking qualitative factors into account, we must consider the quantitative aspects of economic growth as basic; and measurement of economic growth of nations must be pushed forward so that the record of that experience is available in a form in which it can be accepted by and added to by students in the field. Second, the analysis of factors determining economic growth requires further exploration, antecedent to the possibility of measurement. The first assumption delimits the scope of inquiry in so far as it relates to observation and recording of economic growth as it actually occurred; the second directs attention to the need for a great deal of exploratory work which, at first, can be concentrated so that it bears most directly upon the quantitative aspects of the inquiry. The implications of the first assumption are explored further in this and the following sections; that of the second are dealt with in section 4 below.

The need for measurement flows from our definition of economic growth. Were we to define it, say, as a sustained change in the ways in which extending cooperation among individuals is combined with more freedom, the emphasis would be upon an analysis of the devices by which economic participation of individuals in social activity is assured; and while some quantitative data would be needed, they could perhaps be confined to the number of participants. The task would then be to observe the functioning of the institutional patterns that bind the individuals into a social-economic unit and the degree to which cooperation is combined with individual freedom.

But we define economic growth as a sustained change in total output, recognizing at the same time the need for both defining output in terms of purpose and studying the structure of that total. Consequently, quantitative data on both total output and its significant components are called for.

The need is first for observing economic growth. In the analysis of the determining factors, i.e., broad classes of conditions under which individuals, in line with their purposes and under the impulse of drives, manage to contribute to the long term change in the output of the social unit to which they belong, many other varieties of data will obviously have to be collected. The limitations on the supply of quantitative data, i.e., of economic statistics on total output and on its constituents, are a governing factor in the inquiry.

Even for economic growth as defined here, some comparisons can be made without recourse to statistics. When the contrast in the rate of growth is so marked as to be observable by the naked eye, some symptomatic indexes — reports of observers, memorials, and other easily noted manifestations of public concern can serve. But such indicators are necessarily crude and could be used only in 'fewer or more' types of comparison where the differences are exceptionally large. A more sensitive record demands quantitative data and we cannot avoid the problems created by limitations on their supply.

Collecting primary economic statistics about social units, such as sovereign states, is beyond the power of individual scholars, or even of groups of scholars. They can be assembled only by the state itself, or by some social group whose primary interest and responsibility are in some particular economic process. While the institutions that collect countrywide data are more diverse than appears at first glance, it can be assumed for present purposes that the state, i.e., the social unit as a whole, is the main collector; and is aided and abetted by, and often aids and abets, other institutions in their particular fields.

The compilation of economic statistics is a socially conditioned process; and their changing supply is not an accident, but a symptom of conditions under which economic societies operate. The ever increasing supply of economic

statistics, largely in the industrially advanced states of Europe and North America during the last 100-150 years reflects three groups of factors: (a) technological -- which produced a greater standardization of economic goods and hence facilitated their measurability; which 'rationalized' economic behavior and hence introduced quantitative relations in a more intensive way within the economic enterprise; which facilitated communication and transportation and raised productive levels in general; and finally, which increased the efficiency of a centralized state with consequences to the collection of state-wide statistical data that can easily be visualized; (b) economic — such as need for guidance in the increased complexity of the social and economic processes that raised the demand for such data as well as a growing reserve above the minimum of subsistence that could be devoted to the secondary wants satisfied by economic statistics; (c) cultural -- such as the enhanced valuations attached to particular needs or demands — and thus stimulated an interest in pig iron production and national income rather than in the number of angels that could be counted on each side of the Heavenly Throne.

The factors just noted suggest that an adequate supply of economic statistics is the corollary of an industrial economy, and of it alone. This does not mean that in non-industrial economies items of economic information are not collected and used (e.g., the land surveys of agricultural states, the price and population data of many pre-industrial countries). Nor does it mean that in pre-modern, pre-industrial states attempts may not have been made to derive over-all and comprehensive economic measures (witness the efforts of Petty, Gregory King, and the whole school of Political Arithmetic). But it does mean that comprehensive and reliable (even by rough standards) data, articulated with respect to the significant components and published often enough to permit study of changes over time, could be produced only in the economically advanced countries of the last 150 years.

The supply of data would limit the study to, at most, the last two centuries, with especial emphasis on political units that have forged ahead and have as by-product yielded the evidence for an adequate record of the process. This statement is subject to exceptions that might be suggested by historical knowledge surpassing that claimed here: perhaps for some Italian cities of the Middle Ages or for some west European states during their mercantilist heyday, adequate data for a study of economic growth could be assembled. And with the rapidly growing knowledge of some empires of antiquity, exceptions are likely to be found there also. The narrowing of the inquiry to the last two centuries is dictated by general impressions but will be used until corrected by further insight.

To confine the study to the last two centuries, with unavoidable emphasis on the industrially advanced countries, means a drastic limitation on the variety of historical experience that can be utilized and a marked loss in the potential yield of the comparative method. For no matter how flexibly we may treat both the time limit and the selective emphasis, and they must be applied flexibly, the limitation must be real if it is to be effective. On the other hand, there is some advantage in the limitation over and above the plain fact that data are available for this period alone (and even so require a vast amount of labor in 'stretching' to adequate coverage). The advantage lies in a strong element of unity in the economic history of this period, in the existence of a substantial group of forces common to the economic growth of the diverse units. The short span of recorded history we deal with here is uniquely distinct from its predecessors. Furthermore, some of the heritage from preceding periods, not explicitly covered here, will emerge and be considered as the record reveals that, alongside a substantial common element, there have been diversities largely reflective of different pasts.

The most important element common to the last two centuries is the emergence and spread of the industrial system: a system in which the findings of empirical science are applied to problems of economic production and social organization, with corollaries in the industrial structure of countries (the diversion away from agriculture); in certain, almost physical features of social organization (increase in the size of the state and other units of social and economic organization); and in certain cultural levels of social life (exemplified by such processes as secularization, rise of economic values in the scale of social values, etc.). Since the industrial system, thus broadly conceived, is the important common element in the economic history of mankind during the last two centuries the inquiry formulated here may properly be called a study of the impact of the industrial system upon the economic growth of nations — provided 'impact' means not only successful adaptation but also failure to adapt while being affected by successful adaptation elsewhere, and that 'nation' is used synonymously with sovereign state.

Another common element, implicit in our choice of the unit of observation, is the organization of the world into sovereign states, in considerable number and with great diversity in size and character. It is relevant not only because the implication of 'sovereignty' is the intention and freedom to act as a separate entity and not only because these various units happened to possess diverse complexes of natural equipment, in the way of area and irreproducible resources. Perhaps most important was the fact that these separate units represented so many different bundles of historical experience, so many deposits of historical heritage embodied in the institutions and social habit patterns of each state. In other words, this organization of the world into states was the crystallization of a diversity of historical experience upon which the common element, the industrial system, made its impact. As a form

of organization, the state persisted throughout the period; and if we wish to realize how much difference the diversion into states made we have only to imagine for a moment that the industrial system came into a world organized into a single sovereign state exercising all the powers in governing society that political states exercise today or have through the last two centuries. Obviously, upon that assumption economic growth since the mid-18th century would have been vastly different.

This idea of unity in diversity is suggested in the title given the inquiry, in which 'industrial system' stands for unity and 'nations' stand for diversity.

3 Historico-Statistical Comparisons

If the central topic of the inquiry be the impact of the industrial system upon economic growth of nations, the first need is to consider what the result of this impact was. The result was what is commonly referred to as industrialization, a process which, disregarding some vagueness in its definition, has been observed in various countries at various times during the recent two centuries. In line with the need already stated of having more ordered, objective and systematic knowledge of the economic growth of nations during the observable past, the first major task in the inquiry is obviously a comparative study of industrialization in a variety of countries.

Emphasis must be placed upon all three aspects of this major study in the inquiry: its comparative character, its use of both qualitative and quantitative data in a historical sequence, and its coverage of a considerable diversity of national experience. It is only via the comparisons that light will be shed upon the factors that determine economic growth of nations. It is only by the use of statistical evidence and of qualitative data of an objective character that the study can yield results beyond such vague or commonplace statements as are found in 'philosophies of history', no matter how

elaborate in detail or attractive in their artful coloration such statements may be. Only if we include a wide diversity of countries, both old and new, large and small, peaceful and belligerent, industrialized and non-industrialized, that a tolerably full account of the factors at play and perhaps even of their relative weight will be secured.

The basic contents and purpose of such a comparative study of industrialization in a variety of countries could perhaps be more clearly perceived if one were to list tentatively some major questions around which the historico-statistical record would be grouped. These are: (1) What has been the precise industrial composition of the industrialization process, as it affected and was manifested in the growth of total output, increase in the labor force, and accumulation of capital? (2) How was the labor force found and adjusted to man efficiently the more elaborate productive system that grew up in the process of industrialization? (3) How were the requisite material means of production obtained, the means being non-reproducible or reproducible capital of various description securable either within the economy or from abroad? (4) How was the expansion financed, with particular reference to the sources of savings that financed accumulation of capital and the mechanisms that were evolved both to mobilize savings and to direct them into the proper investment channels? (5) How was the increased product of the economy disposed of, either to the individuals and households who comprise the country's ultimate consumers, to business enterprises in the way of addition to their capital, to the government for various uses, or to foreign countries in the way of exports of commodities and services? (6) Who were the active agents of industrialization, the carriers of technological change and the spearheads in the institutional and economic breaks that were the indispensable prerequisite and accompaniment of the industrialization process, and what was their role in the conflicts that

the impact of industrialization created within the country? Clearly, each of these broad questions comprises a host of others; but they serve to indicate the scope of the comparative study suggested here.

In any further planning of such a study, decisions will have to be made as to selection of countries and periods for each; the formulation of concepts, of criteria of measurement, and rules of collation of qualitative information -- all to assure greatest possible comparability without distorting the genuine differences that existed in the diverse countries; the planning of supplementary cross-section studies, of a narrower scope than that suggested by the six broad questions above, but of value as revealing some strategic elements in the process and illuminating them by wider inter-country comparisons than would be possible for the full record of the industrialization process. But it would be premature to discuss these questions in the present connection. Instead we turn to another major study, still in the line of using the comparative method and employing historico-statistical data, viz. inter-regional comparisons within a single country.[1]

[1] In this connection see the paper by Messrs. Hoover and Fisher in this volume.

If we think of a country like the United States, the potentialities of a comparative study of its various regions, viewed as a corollary to rather than exclusive of a comparative study for various nations, are promising in three respects. First, the several regions of a country are not separated by legal, cultural, and other barriers of the magnitude that separate distinct national states. Some of the factors that determine differences in the rate and structure of economic growth stand out, therefore, more clearly in an intranational comparison of regions than in the comparison among the different national states. This does not mean that the conclusions that can be derived

from comparisons of regions will all be directly transferable to the analysis of differences among nations. But there is hope that a significant proportion of such results can be applied to the study of differences in rate and structure of growth among nations.

The second advantage lies in the comparative richness of data, both qualitative and quantitative. It can be reasonably claimed that for no two countries is the wealth of comparable statistical data and of non-quantitative information as great as for the various regions in the United States. These data are accumulated in our national census volumes, in various state publications, in monographic treatises, and in a variety of sources that can be much more easily brought together into a cogent picture of similarities and differences than can be done for a group of nations. Naturally, many difficulties would be encountered even in inter-regional comparisons for this country. It is not claimed here that the data are fully adequate, only that they are available in greater abundance than for any pair or larger number of distinct nation-states.

The third advantage of the study of regional aspects of economic growth in this country is clearly indicated in the paper by Messrs. Hoover and Fisher. There is keen interest in the economic fortunes of the region, past and prospective, among various groups in this country; and there are numerous nuclei concerned with application of economic intelligence to the problems of their local area. It is true that most of the emphasis is on day-to-day problems, and that the concern is mainly with direct policy uses. But one could expect increasing recognition of the dependence of the present and future upon the past, of the need for considering the longer term changes in the economy of a region, and of the importance of a thorough study of a region's economic growth in a way comparable with that for other regions. The comparative study

suggested here should find support in the interests of a variety of groups and call forth adequate intellectual resources more readily than would be true of the comparative study for different national states.

Whatever was said above about the broad topics involved in studying the impact of the industrial system on a country's economy; of the questions that would arise and would have to be answered in specifying the scope of the study and making its concepts and measures comparable from one country to the next; of the possible need for cross-section studies of some specific aspects -- all of this could be repeated for the comparative study of regions within this country. Naturally, some of the questions will assume different weight in the inter-regional study; and, most important, the latter can have and should secure a unifying core in the available or possible central view of the country as a whole -- feasible and relevant in a way in which a similar view of the world as a unit is not. But the purpose here is to suggest only the major blocks in the whole inquiry of economic growth -- leaving more specific questions to further consideration when and if positive decisions are made on initiating the studies.

4 Exploratory Studies of Determining Factors

The historico-statistical comparisons suggested in the preceding section, whether on an inter-country or inter-regional scale, would serve to yield an articulated record of the rates and structure of economic growth, with some indication of the forces that were at play in the various countries and various regions. But under the best of circumstances, one would not expect them to yield full insight into the factors that determine economic growth of nations -- factors that may lie outside even the wide field of observation suggested by the broad questions raised above. We must consider, in addition, the possibility of a direct exploration of some of these determining factors.

In reading the papers of Professors Clark and Spengler one is struck by the variety of determining factors that easily come to mind as we think of why the economic growth of nations has followed the highly diverse and at times capricious pattern that can be observed on the basis of already existing knowledge; and the extent to which these determining factors lie outside of the economic discipline as it is presently understood. Indeed, one is tempted to say that economic growth is not essentially an economic problem, which only means that it appears to be determined by factors and forces that are not ordinarily examined by an institutional group called 'economists' in the pursuit of their professional activity as presently followed. But one can go even further and say that there does not seem to be any single group of scholars or a combination of them that are concerned with the factors determining the growth of large socio-economic aggregates. History is the discipline that comes closest to it; but in its practice it appears concerned with the detailed and specific succession of major events for a given nation or area, rather than with comparisons designed to distinguish variant from the invariant elements and to measure the relative weight of the determining factors. And when attempts at such comparisons and analysis are made, one is generally impressed with the difficulty of putting the hypotheses and results of the analysis to an empirical test by dint of established evidence -- not so much for lack of evidence as for the failure of the hypotheses and analysis to formulate conclusions that could be subjected to empirical checks. All of this means that exploratory analyses, by dint of testable evidence, of the determining factors in economic growth are strategically important; but that they are likely to be extremely difficult, for they would have to cross disciplinary lines and begin with a relatively scanty supply of adequate analytical tools and of organized evidence.

One basic problem to which such exploratory studies might address themselves can be suggested as follows: considering the divergent rates of growth and the different structure of the process among the different nations during the last two centuries, what were the factors in the common heritage of the world, in the stock of scientific and technological knowledge, that have contributed to both the common and disparate elements in this growth? This calls for a study in a vast and relatively unexplored field -- the application of empirical science to technology. By empirical science we mean not merely the elaborate and systematic intellectual structure of natural sciences, whether of the type that leads to scientific 'laws' (Gesetzwissenschaften, to use a German term) or of a more descriptive character. We mean the results of any inquiry that is conducted in accordance with canons of scientific objectivity and testability -- in which the results become accessible to any qualified user. And by technology we mean not merely the set of rules and devices for material production, but all types of device and scheme -- objectively describable and adaptable by any qualified user -- whether in the sphere of material production or social organization. With respect to this broad field of phenomena, two leading questions would be raised in any inquiry into economic growth: (a) What determines the rate and character of the contributions by empirical science to economic technology? (b) Are there any elements among the factors that in determining this contribution, render it more easily accessible and acceptable to some nations than to others?

The difficulties of such exploration are apparent. Scattered work on the history of science, inventions, and economic technology has been done, but the results are sporadic and fail even to suggest the complete framework. While it may be merely a sign of ignorance, I have been impressed with how little we know about the factors that determine the application of empirical science

to physical and social technology. The entire chain of connection between work in theoretical and general descriptive science, inventions, and changes in the level of technology of the productive system seems to be relatively unexplored; and no one seems to have inquired to what degree the national origin of inventions and technical improvements puts a stamp on them, thereby impeding their transfer from the originating to other nations.

Another problem of importance for exploratory study is the long term development of 'political' technology: what determines the size and the structure of the sovereign state, conceived not as a bare legal framework but as the apex of a pyramid of a network of social ties that bind the human aggregate into a cohesive whole? How much do we know of the forces that determine the birth and death of sovereign state units, their ability to grow extensively and intensively? Yet these factors are of direct importance because of the major influence the sovereign state exercises upon the course and rate of economic growth; let alone the fact that in measuring the economic growth of different countries we measure but one aspect of the growth of state units.

A third problem for exploration is what Professor Clark refers to in his paper as quality of the population and the question of incentives. The education of the population, the system of values by which it governs itself, its attitude to the importance of economic progress, its ability to cooperate in ventures that do require such cooperation and that may be strategic in determining economic growth, are all parts of this problem that have as yet been little studied.

Examples of such exploratory studies as were just given could be multiplied; nor are the formulations more than mere suggestions intended only to indicate the character of study desired. It is clear that questions of this

character are not likely to be covered at all adequately in the historico-statistical comparisons discussed in section 3.

Three further comments are in order on these types of exploratory study. First, they are exploratory on the assumption that little systematic and analytical work has been done on them. Second, the purpose is to lay the foundation for more systematic work of an empirical character, to decide, even though in preliminary fashion, what evidence is available or has to be sought and how it should be organized for purposes of systematic coverage and eventual synthesis. Third, such explorations require the collaboration of scholars affiliated with different disciplines and often not in close touch with one another. For example, studies in material technology would call for the combined competence of historians of science and technology, in addition to that of economists, statisticians, and other social scientists with some experience and interest in the field. Likewise, studies in political technology would bring in political scientists, geographers, sociologists, social psychologists, in addition to economists and economic statisticians. And I may well have omitted other disciplines (economic history, political history, and the like) that should be represented.

It need not be stressed that the exploratory studies just suggested raise, even more acutely than the historico-statistical comparisons, the question of do-ability. If the latter are confronted with lack of basic data as their main obstacle, the former face the even more formidable difficulty of disciplinary specialization and the scarcity of both intellectual tools and experienced investigators. In a sense, the studies proposed here run counter to the whole trend of development of scientific research. Specialization and disciplinary boundries have developed, I assume, precisely because it was found difficult to study the economic phenomena together with the political

or the technological. The proposal here means in fact a reversal of this trend, and may call for an impossible effort -- certainly in the short and perhaps even in the long run.

The difficulty is recognized. But one cannot escape the conviction that to accept the obstacles at face value as insurmountable means to classify in advance certain problems in the functioning of human society as inexplicable -- a judgment that one is reluctant to make, both on general grounds and in the light of past research experience. One may also add that the nature of the difficulties and the various possible ways of solving them can hardly be properly appraised until the effort is made to meet them in substantive inquiry. Recognizing that the proposals involve a risky intellectual adventure, one can only urge that the importance of the problems justifies the risk.