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Volume Title: Economic Research: Retrospect and Prospect, Volume 7, Quantitative Economic Research: Trends and Problems

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Volume Publisher: NBER

Volume ISBN: 0-87014-256-9

Volume URL: <http://www.nber.org/books/kuzn72-1>

Publication Date: 1972

Chapter Title: Summary

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Chapter URL: <http://www.nber.org/chapters/c4294>

Chapter pages in book: (p. 86 - 93)

study of economic growth and structure, conducted under the auspices of the National Bureau in 1958, resulted in several suggestions on research objectives and organization.¹² But no substantive program followed this effort at preliminary exploration.

My own judgment is that study of the growth experience and problems in at least some selected economies would prove valuable. A review of the field would, it is hoped, show whether and how the National Bureau can contribute to stimulating and developing more consistent, continuous quantitative research, at higher standards, in the important area of comparative economic growth and structure.

5. SUMMARY

In summarizing the paper, I begin with the distinction that was drawn between the ever-present conditions of quantitative economic research, and the particular situation in the field in the early 1970's.

As to the former, I noted five sets of conditions. The first was the origin and supply of the primary data. They are provided by the active economic agents themselves—individuals, firms, agencies, etc.—and economists have no direct control over their supply. Consequently, the quality of the data varies, there are lacunae in the available stock, and the supply of the data lags behind the emergence of the problems upon which they are to shed light.

The second condition was the dependence of economic measures—for which the primary data are the

¹² See *The Comparative Study of Economic Growth and Structure: Suggestions on Research Objectives and Organization*, National Bureau of Economic Research, Exploratory Report 4, New York, 1959.

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raw material—upon economic theory and the broader social philosophy within which it is embedded. Consequently, differences or changes in the broader philosophy, and in the theories of production, prices, and welfare, yield different economic measures for the same country and the same time. Economic measurement derives meaning only from the underlying assumptions and the relevant theoretical framework. It is implicitly a test of these assumptions and theories; and, if it produces changes in them, it must in turn be revised.

Third, at least within the period of modern economic growth (the last 150 to 200 years), the quantitative framework and the relations within and among the national economies have undergone major and rapid changes. These can be ascribed to the rapid growth in the stock of useful knowledge and the institutional and ideological adjustments to it. Because of these changes, the task of quantitative economic research in identifying the persistent and predictable elements and distinguishing them from the transient and historically accidental is made all the more difficult.

Fourth, the concentration of economic research on the scholar's own country is clearly associated with the easier accessibility of data, greater knowledge of underlying conditions, and, particularly, more intensive pressures for economic analysis of domestic problems—pressures originating within the nation's society and government and coupled with an available channel for applying analysis to policy. Yet, more systematic study on a comparative basis (in addition to the already developed study of international economic flows) is required to provide a sounder basis for generalizations and more intelligent consensus regarding the country's

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role vis-à-vis the rest of the world. Such study is quite limited, given the preponderant absorption of scholarly resources in domestic economic trends and problems, and the immense difficulties of making comparative studies that meet minimum standards.

Fifth, and finally, economic processes are closely interwoven with other social processes. Particularly in growth experience, the long sequence of economic impulse, a noneconomic response (say by a political or demographic process), followed by an economic change, is typical. Consequently, the interpretation of economic measures may require not only economic analysis but also consideration of the relevant framework of related social sciences and other disciplines. In fact, the very boundary between economic and other analysis may shift over time and from problem to problem.

These conditions of quantitative economic research were illustrated primarily by reference to the study of the economic growth of nations. But they apply, with differing weight, to research relating to the sectoral or any other aspect of national economies; to short-term changes as well as secular trends; to historical interpretation, theoretical investigation, or policy analysis—whenever these employ, as they must, observational, quantitative data. These conditions were presented, perhaps naturally, as impediments to research designed to yield generalizations sufficiently specific and firm to provide a basis for meaningful prediction and for discriminating policy evaluation. But they should also be viewed as challenges, resulting from the tension between what existing theory demands or implies and what the observable and changeable reality reveals.

Three implications of the conditions just summarized

are directly relevant to the role of a research institution like the National Bureau. First, given the origin and supply of the primary data, and the importance of government in the collection, organization, and, recently, analysis of economic statistics, on the one hand, and the difficulties of carrying on sustained, large-scale quantitative research within the framework of university departments, on the other hand, there is a clear need for economic research institutes. Such organizations should be able to handle the broader quantitative research problems on a continuing and collective basis, unaffected either by the pressures of governmental concerns or by the limitations necessarily imposed by attachment to a single university. Second, since quantitative economic research must deal with the ever-emerging new (and mostly unforeseen) changes in the economy and society and must interpret them in the light of existing knowledge, the process of measurement and interpretation is important for both theoretical analysis and the broader orientation of society. The nongovernmental, public research institute is not only a research laboratory for the specialist but also, in a way, a finder and keeper of truth for society at large, a producer of tested and acceptable measures, and a source of the balanced evaluation and judgment that should facilitate social consensus. Third, more thought must be devoted to the organizational problems of quantitative economic research that goes beyond the scope of this country's economy, and aims at comparative analysis and wider orientation. In an increasingly interdependent world, the intellectual and social costs of inadequate knowledge of the rest of the world are increasingly heavy.

As regards the present situation in the field, particularly the quantitative study of economic growth—its

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magnitude, structure, time pattern, and equity, for national economies—I can only offer broad impressions; but they may also be relevant to economic research in other fields.

The foremost impression is of a striking acceleration in the quantitative study of economic growth—in the supply of primary data, in the generation of aggregative and disaggregated economic measures, in attempts at interpretive analysis, and in the formulation of hypotheses, ranging from simple historical generalizations to elaborate mathematical models of imaginatively conceived (and imaginary) economic growth processes. This explosive outburst in the last two to two-and-a-half decades, coming after a century of almost total neglect, was associated with the assumption of greater responsibility by governments, particularly in the developed free market economies, for economic growth and employment; and in the international intersystem competition, with their greater concern for the economic growth of the less developed countries. This acceleration, as reflected in numbers of economists and the volume of publications, appears to have been true of economic research at large; and the same can be said for other social science disciplines (at least in this country).

Much has surely been learned; a vast stock of relevant economic measures has accumulated; the inventory of relatively firm empirical findings has grown; and a host of theoretical hypotheses has been advanced, many of them, however, too simple and partial to be valid without major and, lacking wider study, unspecifiable qualifications. Older theories have been found wanting, and attempts have been made to bridge the gap of ignorance revealed when the old theories were confronted

with the newly secured data and findings. The very discrediting of old theories was an advance, in that it removed constraints on policy choices. Emphasis has shifted rapidly from one presumptively crucial source of economic growth to another—not only in the rationale underlying international aid efforts, but also in the scholarly literature. And, it should be particularly stressed, the post-World War II record of economic growth of nations is most impressive, despite the breakdowns in some less developed countries where the search for national unity or for adequate internal equity has not been successful. High aggregate growth rates have been attained; the developed economies have been relatively free from major cyclical downturns, and have moved ahead toward economic equality. The rate of this economic advance in most parts of the world was much faster than in the pre-World War II, or even pre-World War I period. It was in shining contrast to developments in the two decades following World War I; and, one may suggest, far exceeded economic expectations entertained, at least in this country and most probably elsewhere, immediately after World War II (however disappointing the contrast between expectation and reality in the fields of international comity and peace).

But we are still far from a tested theory of economic growth, an aim that we may never quite realize. Many questions remain that demand intensive exploration and at least provisional answers as necessary elements in even a tentative understanding of the growth process. A record of successful economic performance is not necessarily evidence that we understand the process. Nor is rapid economic growth, even if accompanied by greater stability and wider equity, without consequences that

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may be viewed by contemporaries as urgent problems—even if they are, in a broader historical perspective, far less weighty than past problems resolved (or minimized) by past growth. In short, quantitative research in the field of economic growth is today, and will continue to be, under the double pressure of questions raised by new or newly studied experience and of policy problems generated by some consequences (frequently unforeseen, or, if foreseen, often unprevented) of recent growth. Paradoxically, the number of questions and the variety of what may be seen as policy problems may be greater after a period of accelerated study and growth than in the “good old” days when both study and growth were relatively stagnant. In those days, economic growth was viewed as a process much beyond the control of man, and its low rate did not produce the unsettling impact of rapid structural changes. The relation between the recent developments in the study and process of economic growth may have a parallel in the relation between the developments in the study and process of change of many economic sectors and institutions.

Selection of problems for quantitative research requires an effort to take stock, similar to that made in other National Bureau anniversary colloquia,¹³ but it is not attempted here because of the unmanageably wide scope of the field. Questions bearing upon the quality and causes, the why and the wherefore, of economic growth of nations will, in all likelihood, continue to loom large in the scholarly and public mind. The need for a wider historical and analytical perspective is obvious. It is not clear that the search for such a perspec-

¹³ See pp. vii-x for a listing of these colloquia.

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tive and a more sustained and objective study should concentrate on economic processes. There are other aspects of social structure and performance, which, at least at first glance, seem to lag behind in their capacity to adjust to technological and economic advance. But there are enough economic problems in the growth and changing structure of this and other nations to demand continuous and wider effort by research institutions like the National Bureau. The Bureau should, as in the past, deal with the basic measures of this country's economic performance. It should make an effort to have these measures reflect the changing reality and give meaning to the changes within the analytical framework of our discipline, or of that part of it that may still be relevant and at least partly valid. And the National Bureau should also consider the possibility of applying its experience and tools more widely and systematically to comparative measurement and analysis of the economic performance of nations.