

American Philosophical Society in 1955, honorary member of the Deputazione di Storia Patria per la Venezia in 1961, and fellow of the Medieval Academy and member of the Academy of Arts and Sciences in 1964. A bibliography of his work appeared in the 1966 volume of collected studies, and this was updated in the 1980 issue of this JOURNAL dedicated to him. A complete bibliography will be published in a forthcoming issue of the Italian journal, *Ateneo veneto*.

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Simon Kuznets 1901–1985

Simon Kuznets, who was one of the founders of an empirical science of economics and of quantitative economic history, died July 9, 1985. He was the Nobel Laureate of 1971 and the Walker Medalist of 1977.

Kuznets was born in 1901 of a Jewish merchant family in Pinsk, then a Russian city.¹ He attended the Realschule and the University in Kharkov where the family had settled during the first World War. After two years in the University, he worked for a similar period in the Division of Statistics of the Central Soviet of Trade Unions, and it was there that he published his first article, "Money Wages of Factory Employees in Kharkov in 1920."²

Because the Polish-Soviet treaty of 1921 returned Pinsk to Polish sovereignty and because it established the right of persons born within the territory of the reconstituted country to return there, the Kuznets family was able to resettle in Poland. From there Simon, together with his older brother, Solomon, made his way to New York in 1922. The brothers were admitted to Columbia College with advanced standing, and there Simon gained the B.S. in 1923, the M.S. in 1924, and the Ph.D. in 1926.

Kuznets's dissertation on cyclical fluctuations in retail and wholesale trade was a brief but impressive study that led to his long-time connection with the National Bureau of Economic Research.³ The dissertation was prepared under Wesley Mitchell's supervision and was published in 1926 with a preface by Mitchell, who the next year brought Kuznets into the still young National Bureau. The Bureau remained Kuznets's research base until well into the 1950s. Here he did his famous work on national income and product and carried out a number of his early studies on economic growth.

Kuznets was Professor of Economics and Statistics at the University of Pennsylvania from 1930 to 1954. He then taught at Johns Hopkins from 1954 to 1960 and at Harvard from 1960 until his retirement in 1971.

Kuznets's first great line of work, on the national income and product accounts, began within a few years after he joined the National Bureau. The Bureau's very first

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The footnotes below give the documentation for the writings of Simon Kuznets that are cited here. A complete bibliography of his work until 1982 may be found in *Economic Development and Cultural Change*, 31 (Jan. 1983), pp. 433–54.

¹ Although many biographical articles and obituary notices give Kharkov as his birthplace, his widow, Edith Handler Kuznets, assures me that he was indeed born in Pinsk.

² In Russian, in Central Soviet Trade Unions, Southern Bureau, Division of Statistics, *Materials on Labor Statistics of Ukraine*, 2nd issue, Kharkov (July 1921).

³ Simon Kuznets, *Cyclical Fluctuations: Retail and Wholesale Trade, United States, 1919–1925* (New York, 1926).

project had been an investigation of the national income in the United States.⁴ After the Bureau decided to continue these studies, Kuznets was given responsibility for the research.

When the Department of Commerce decided to make official estimates of the national income it turned to the Bureau for help. The Department's first publication tells the story:

In view of the previous extensive investigations in the field of national income estimates by [the National Bureau], a member of its staff, Dr. Simon Kuznets, was retained by the Bureau of Foreign and Domestic Commerce to plan and supervise this study. Dr. Kuznets, who was in full charge of the work, was responsible for the preparation of the final estimates, as well as the organization and the text of the report.⁵

Kuznets's great influence on national income studies in this country and around the world rests on many features of his work. It was notable, in the first place, for its scrupulous attention to the conceptual foundations of the estimates. He viewed national income estimates as indicators of changes in economic welfare. He therefore insisted on the social judgments needed to separate economic activity from the rest of life, and productive from nonproductive activities. He dealt clearly with the need to extend the scope of the estimates insofar as possible from marketed production to activities outside the reach of markets, with a consistent treatment of intermediate goods, and with the tangled problems of valuing outputs of different kinds and of correcting for price changes. Kuznets stressed the relativity of his own solutions, or of any solutions, to the social values of time and place, to the nature of family, industrial, and governmental organization, and to the problems to which the figures are designed to apply. He preached these lessons incessantly, and his own studies carry many examples of their application.⁶ Here, in one sense, is Kuznets the economic historian at work.

Kuznets next pioneered in establishing the modern estimates of national product of the United States in each of its principal forms. First, there is national product as the sum of expenditures by different classes of users on different classes of goods.⁷ In this form Kuznets's estimates provided the empirical counterpart of the Keynesian model of the economic system. Indeed, it was the joint appearance in the mid-1930s of the *General Theory* and of the early Kuznets reports on GNP and its expenditure components that made it possible to give quantitative expression to the Keynesian revolution.

Secondly, as the sum of "incomes produced," national product is built up as the sum of wages, interest, rent, and dividends paid out and of the retained earnings of firms in the economy's many industrial sectors.⁸ Here we have estimates of the growth of output

⁴ W. C. Mitchell, W. I. King, F. R. Macauley, and O. W. Knauth, *Income in the United States*, vol. 1: *Summary*, vol. 2: *Details* (New York, 1921 and 1922); and W. I. King, *The National Income and its Purchasing Power* (New York, 1930).

⁵ *National Income, 1929–1932*, Senate documents no. 124, 73rd Cong., 2nd sess. (Washington, D.C., 1934), p. xi.

⁶ For example, "International Differences in Income Levels: Reflections on Their Causes," in *Economic Change* (New York, 1953); and "Developed and Undeveloped Countries: Some Problems of Comparative Analysis," in *Zeitschrift für die Gesamte Staatswissenschaft*, 124 (1968), pp. 96–107.

⁷ Simon Kuznets, *National Income and Capital Formation, 1919–1935* (New York, 1937), and *Commodity Flow and Capital Formation* (New York, 1938). The estimates of investment expenditures which Keynes reproduced in the *General Theory* were from an earlier report by Kuznets, "Gross Capital Formation, 1919–1933," *National Bureau of Economic Research Bulletin*, 52 (Nov. 1934).

⁸ Simon Kuznets (assisted by Lillian Epstein and Elizabeth Jenks), *National Income and Its Composition, 1919–1938*, 2 vols. (New York, 1941).

by industry and by sector net of the contributions of materials and services provided by other industries. Taken in conjunction with information about the labor and capital employed and of factor shares in income, national product in this form has become the basis for much of our knowledge of productivity growth in the aggregate and by industry. It is the source material for modern "growth accounting."

Finally, as the sum of incomes of all types received by individuals or families, national income provides the data needed for studies of income distribution. Kuznets himself made notable contributions to such studies and discovered in particular the dramatic reduction in income inequality between the time before World War I and the years since World War II.⁹ On the basis of cross-country studies, Kuznets tentatively concluded that countries in the earliest stages of economic development first experience a period of increasing inequality and later move toward greater equality as development proceeds.¹⁰ This suggestion became the basis for the still-debated empirical generalization, the "Kuznets Curve," which has also inspired long-range studies of income inequality in America and Britain.¹¹

Kuznets early saw that both the conceptual basis of national income estimation and its empirical application would need continuing discussion and study and the collaboration of many students over a long period. He therefore helped to found the Conference on Research in National Income and Wealth and for many years was its leading spirit and a major contributor to its publications. By 1984, 49 volumes in the series *Studies in Income and Wealth* had appeared. It is of special interest to economic historians that volumes 24 and 30 of this series are devoted to establishing the basic outlines of nineteenth-century economic history with respect to national income and product, its division between consumption and saving, its composition by type of income and industrial origin, and such related elements as labor force, prices, and balance of payments.¹² Kuznets was later instrumental in founding the International Association for Research in Income and Wealth, whose journal, conference proceedings, and special studies have been powerful agencies for fostering work on national accounts and for the compilation and systematization of historical statistics.

Kuznets's studies of economic growth, which were to gain him the Nobel Prize, began with his remarkable early book, *Secular Movements in Production and Prices* (1930).¹³ Here Kuznets investigated the long-term trends in the output and prices of many commodities drawn from the records of six countries over periods stretching back as far as 1810. He found that the output growth of individual commodities commonly suffered retardation in the course of growth, and he advanced an explanation for this tendency. The finding forms one pillar for his later observations on the changing composition of output that accompanies general economic advance. In this same study Kuznets

⁹ Simon Kuznets, *Shares of Upper Income Groups in Income and Savings* (New York, 1953).

¹⁰ Simon Kuznets, "Economic Growth and Income Inequality," *American Economic Review*, 45, no. 1 (1953), pp. 1–28; "Quantitative Aspects of the Economic Growth of Nations: VIII, Distribution of Income by Size," *Economic Development and Cultural Change*, 11, no. 2 (1963), pp. 1–80.

¹¹ Edmar L. Bacha, "The Kuznets Curve and Beyond: Growth and Changes in Inequalities," in Edmond Malinvaud, ed., *Economic Growth and Resources*, Proceedings of the Fifth World Congress of the International Economic Association (London, 1979), vol. 1, pp. 52–73. Jeffrey G. Williamson and Peter H. Lindert, *American Inequality* (New York, 1980), and "Reinterpreting Britain's Social Tables, 1688–1913," *Explorations in Economic History* (Jan. 1983).

¹² Conference on Research in Income and Wealth, *Trends in the American Economy in the Nineteenth Century*, Studies in Income and Wealth, vol. 24 (Princeton, 1960); Dorothy S. Brady, ed., *Output, Employment, and Productivity after 1800*, Studies in Income and Wealth, vol. 30 (New York, 1966).

¹³ Simon Kuznets, *Secular Movements in Production and Prices: Their Nature and Their Bearing upon Cyclical Fluctuations* (Boston, 1930).

revealed a strong tendency for output growth and prices to display undulations, with a period longer than business cycles but shorter than the very long waves hypothesized by Kondratieff. Their average duration was about 22 years. Kuznets called them "secondary secular movements." They were his first encounter with the phenomenon that in later studies he called "long swings," and that other students have dubbed "Kuznets cycles."

These early observations were precursors of later studies by Kuznets and others that revealed wide and closely related fluctuations of about 20 years' duration in many aspects of economic activity in Britain, America, and several other countries. These included population growth, international and internal migration,¹⁴ domestic investment and international capital flows, the balance of payments, and monetary growth. Although whether Kuznets swings are self-generating cycles remains in doubt, their delineation had an important consequence for the investigation of long-term economic growth. They made it clear that to isolate secular movements requires observations over periods distinctly longer than the cycle itself. Kuznets himself often suggested that half-centuries are the proper units of experience in growth studies.

Kuznets's main program of research into economic growth began after World War II. It comprised three elements. The first appeared in a series of long papers that defined the nature of the subject and proposed a framework of study.¹⁵ A proper understanding of economic growth would illuminate the development of the more advanced industrial countries and the obstacles to growth of underdeveloped countries; it would consider growth in both free enterprise and authoritarian systems, in large and small countries, and at different stages of development; and it would include the external relations of countries, including war and other aggression having a bearing on economic growth. These ambitious goals were dictated in Kuznets's view by the wide variety of problems that are posed by growth in different circumstances, and more fundamentally because our inferences can only be made confidently by studying growth in many contexts and environments.

With these considerations in mind, Kuznets insisted that empirical studies be conducted with a long-time and wide-space perspective. He proposed that the proper units of observation were nations rather than geographical regions or areas classified by industrial specialization. As a matter of research strategy he was convinced that until much work had been done to establish the factual outlines of past experience, any detailed and specific theories of growth would be of little use. Instead he urged the need for wide-ranging empirical studies of four key elements in growth. These he identified as population growth, growth of the stock of knowledge, internal adaptation to growth potentials, and external relations of nations. "Subtheories" of these processes already existed that would guide the studies needed; and he looked forward to their eventual unification in a general theory of economic growth.

The practical application of this conception, which was the second and central element in Kuznets's program, took the form of historical and statistical studies of the growth of population and product and of accompanying changes of economic structure. He began with a long-term extension of GNP and related data for the United States.¹⁶

¹⁴ See in particular "Long Swings in the Growth of Population and in Related Economic Variables," *Proceedings of the American Philosophical Society*, 102 (1958), pp. 25–52, reprinted in *Economic Growth and Structure: Selected Essays* (New York, 1965), and (assisted by Elizabeth Jenks) *Capital in the American Economy: Its Formation and Financing* (Princeton, 1961), chaps. 7, 8.

¹⁵ A typical paper is "Toward a Theory of Economic Growth," in Robert Lekachman, ed., *National Policy for Economic Welfare at Home and Abroad* (Garden City, N.Y., 1955), pp. 12–77.

¹⁶ Simon Kuznets (assisted by Lillian Epstein and Elizabeth Jenks), *National Product Since 1869* (New York, 1946), and "Long Term Changes in the National Income of the United States of America Since 1890," in *Income and Wealth of the United States: Trends and Structure*, Income and Wealth, Series 2 (Cambridge, 1952).

He then went on to bring together evidences of growth and structural change in every country for which reliable data were available. The key publications are his ten famous papers, which were published serially under the collective title "Quantitative Aspects of the Economic Growth of Nations," and the summary volume, *Modern Economic Growth*.¹⁷

The organizing theme of these empirical studies is that growth in the aggregate output of a nation is necessarily connected with a thorough-going transformation of its economic structure. The transformation takes the form of change in many aspects of economic life—in the composition of output, in the distribution of workers among industries and occupations, in the relative importance of household and commercial activities, in the income shares of the factors of production, in the size, the age composition, and spatial distribution of the population, in the importance of international movements of goods, capital, people, and knowledge, in the organization of industry and the role of government. Such transformations, he hypothesized, are necessary conditions of aggregate growth, and once in train will serve to shape, constrain, or support subsequent growth. In this dominantly descriptive element of his research we see the work of a great naturalist, observing and classifying the forms and parts of an order of life into its many species and varieties. The results define the tasks of theoretical work.

The third element in Kuznets's program was theoretical. This shows itself, first, in the many explanatory suggestions that accompany his empirical studies. Statistical tables that revealed uniformities provoked Kuznets to speculate about underlying causes. Why is it that the savings proportion of national product does not uniformly rise with the secular growth of income? This was itself a notable and surprising empirical finding. His hypothesis was a seminal adumbration of the life-cycle theory of savings.¹⁸ Why do the proportions of the labor employed in different sectors shift first from the primary towards the secondary sector and then towards the tertiary? Kuznets's explanation runs in terms of income elasticities of final demand, a path of technological advance that saves labor in direct production "on the factory floor" but requires increasing use of it in intermediate and auxiliary functions, particularly in business services and government, and differential rates of productivity growth in the three sectors.¹⁹ His discussion remains the standard formulation to this day. Dozens of such theoretical proposals dealing with novel empirical findings succeed each other in the unfolding chapters of Kuznets's research.

Beyond these "subtheories" are his attempts to unify our understanding of the most general features and causes of growth in a manner consistent with historical experience. These appear in a series of papers or as the chapters of books, bearing such titles as "The General Framework [of Modern Economic Growth]," "Modern Economic Growth: Findings and Reflections," or "Driving Forces of Economic Growth: What Can We Learn from History?"²⁰ In these papers, we glimpse Kuznets's deepest ideas about the nature of growth. They are based on his original intuitions and refined by long involvement in quantitative and historical study. These are his views regarding the originating impulses and adaptive responses in the growth process that guided his own studies and that now form the background of much contemporary research.

¹⁷ Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations," Papers 1–10, in *Economic Development and Cultural Change* (1956–1965), and *Modern Economic Growth: Rate, Structure and Spread* (New Haven, 1966).

¹⁸ Simon Kuznets, *Capital in the American Economy*, chap. 3.

¹⁹ Kuznets, *Modern Economic Growth*, chap. 3.

²⁰ *Ibid.*; Simon Kuznets, "Modern Economic Growth: Findings and Reflections," Nobel Memorial Lecture, Dec. 1971, in *Les Prix Nobel en 1971* (Stockholm, 1972), reprinted in *American Economic Review*, 63 (1973), pp. 247–58; and Simon Kuznets, "Driving Forces of Economic Growth: What Can We Learn from History?" in *Weltwirtschaftliches Archiv*, 116 (1981), pp. 409–31, and in Herbert Giersch, ed., *Towards an Explanation of Economic Growth* (Tubingen, 1981).

Kuznets saw modern growth as taking its start in science and technological innovation. "The epochal innovation that distinguishes the modern economic epoch is the extended application of science to the problems of economic production."²¹ This suggests that technological innovation may be regarded as an exogenous cause, but that would be true only in a preliminary way. In any event, technology only represents a *potential*. "It was the *application* [of science] that was crucial, not merely for the economic growth that ensued but almost equally for its feedback effects upon the growth of science itself—a kind of self-stimulation of economic growth itself." This circular process has two connected sides. The impulse to growth may be provided by the potential afforded by new technology; the societies that are to adopt it, however, must modify their preexisting institutional structure. And the consequent application of science in production is then "equivalent in a sense to the establishment of many experimental laboratories which provided new data to stimulate scientific progress further."²²

The efficacy of this circular process depended at bottom on a favorable intellectual environment: "and thus when we say that the modern epoch is distinguished by application of science to problems of economic production and human welfare, we imply that it is distinguished by a climate of human opinion, by some dominant views on the relation of man to the universe that foster science and its application."²³ Kuznets thought that the main elements of the relevant climate of opinion—both for good and evil—were to be found in three aspects of the modern outlook: secularism, egalitarianism, and nationalism. He was well aware of the difficulties of studying the connections between science, institutions, and men's dominant views about the relations of man to man and man to nature. But he was sturdily insistent on the need to try. The challenge to economic history is clear, even if the path is dimly lit.

My emphasis on Kuznets's work on national product and economic growth should not serve to obscure his studies in other fields. Business cycles, seasonal variations in industry and trade, professional incomes, income distribution, the economics of minorities—each of these was the object of Kuznets's attention and was advanced by some fresh and penetrating study.

When Kuznets began his work nearly 60 years ago, it could rightly be said that economics was, for the most part, still a speculative discipline. As has often been remarked, it proceeded from uncertain premises, by logical deduction, to imperfectly verified conclusions. This method had yielded moderately useful results for our understanding of relative prices and the allocation of resources among markets. It was, however, almost helpless in matters concerned with the aggregative behavior of economies, their growth and fluctuations. To deal with these aspects of economic life, economics had to change from being a branch of applied logic into an empirical science. It seems right to say that during the last half-century some important steps have been taken in that direction. We can see them in the greater comprehensiveness, finer detail, and historical extension of statistical data, in empirical studies of growth and fluctuations, in the econometric movement and in quantitative economic history. We owe this change as much—or more—to Kuznets's achievements and leadership as to those of any other single scholar in our time.

This is an appreciation of Kuznets's work. It is not the systematic exposition and appraisal which the great harvest of his life of scholarship should be given and which he himself would welcome as a step in the scientific process of verification, criticism, and reformulation of ideas. This will occur in time. It is enough for the moment to acknowledge the influence of his work and to realize how sorely his example and support will be missed.

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²¹ Kuznets, *Modern Economic Growth*, p. 9.

²² *Ibid.*, p. 12.

²³ *Ibid.*