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Kuznets and Modern Economic Growth Fifty Years Later

Moshe Syrquin
University of Miami

Abstract

Simon Kuznets was awarded the 1971 Nobel Prize in economics for his empirically founded interpretation of economic growth, yet, two decades after his death it is only in the guise of the "Kuznets curve" that he may be found in the literature of growth or of economic development. In this paper I review Kuznets' contribution to growth focusing particularly on his analysis of the costs and benefits of growth and the impossibility of conceptualizing modern economic growth without substantive structural shifts.

Kuznets maintained the impossibility of a purely economic theory of growth. He considered the more general theory as a worthwhile goal but a very remote one at the time. The central problem for Kuznets was to endogenize what economics mostly regards as givens: technology, population, tastes, and institutions.

In his studies of national income and growth Kuznets repeatedly emphasized the problems of scope, valuation, and the distinction between net and gross outputs. The answers to these questions depend on the purpose of economic activity which in turn refers to the social values of the place and time. The solutions, therefore, can never be absolute.

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A puzzle

Simon Kuznets was awarded the 1971 Nobel Prize in economics "for his empirically founded interpretation of economic growth which has led to new and deepened insight into the economic and social structure and process of development." Yet, two decades after his death and 50 years after the publication of the first of ten long articles on the Quantitative Aspects of the Economic Growth of Nations, it is only in the guise of the "Kuznets curve" that he may be found in the literature of growth or of economic development. This is puzzling. Over a 60 year period Kuznets produced 31 books and over two hundred papers, many of which were deservedly considered path breaking. Growth and distribution appear prominently in his studies but he was mostly known as the principal actor in the conceptual development of national income accounting and careful measurement of income and capital formation. Many assumed that the Nobel Prize had been awarded for this work whereas in fact this contribution was strangely omitted from the Nobel citation.

In this paper I review Kuznets' contribution to growth, from his earliest forays into growth in the late 1920s, focusing particularly on his analysis of the costs and benefits of growth and the impossibility of conceptualizing modern economic growth without substantive structural shifts.

Early developments

Kuznets was born in Russia in 1901, emigrated to the United States in 1922, and completed his economic studies at Columbia University obtaining a Ph.D. in economics in 1926. His dissertation, written under Wesley Clair Mitchell, was published in 1930 as *Secular Movements in Production and Prices*. It complements the two other books from this period, *Cyclical Fluctuations* (1926) and *Seasonal Variations* (1933) in presenting and analyzing the cyclical, seasonal, and secular movements in production and prices in a comparative framework.

Mitchell brought Kuznets into the newly founded National Bureau of Economic Research (NBER) where he remained as a staff member from 1927 to the early 1960 and where he did most of his work on national income and capital formation. Although still nominally associated with the Bureau and working on the completion of manuscripts, from the late 1940s the center of Kuznets' work shifted to the Committee on Economic Growth of the Social Science Research Council (SSRC).

Besides the work at the NBER on development of the national income concepts and numbers Kuznets was also instrumental in the institutionalizing of the continuous development and publication of comparable national income systems. He helped to establish in 1935 the Conference on Research in National Income and Wealth and for years was one of the major contributors to its publications. He was also among the founders of the International Association for Research in Income and Wealth in 1947, an association that brings together academics and official statisticians. At about the same time the Social Science Research Council followed his suggestion and established in 1948, with him as chairman, the Committee on Economic Growth. The committee recruited leading economists in 11 countries to study long-term growth. Kuznets was also the driving force in the creation of the Yale Economic Growth Center for the study of economic growth in the developing countries with a common framework of economic data.

From business cycles to growth

Kuznets started his comprehensive project on the economic growth of nations not much before 1950. However, already in his earlier studies in the late 1920s he showed interest in growth and its incidence, positive and negative, on various groups of the population. An important motivation for his work on cyclical movements leading to his three first books was his belief that during recessions the poor suffer more than the rich. A smoothing of the cycle, therefore, would help the poor as well as ameliorate social tensions between immigrant Jews and Gentiles (Kapuria-Foreman and Perlman, 1995). The 1930 book on secular trends looks at long-term movements in production and prices in many products in six countries. Continuous growth is the first feature noted: "Our modern economic system is characterized by ceaseless change" ... "a process of uninterrupted and seemingly unslackened growth" (pp. 1,3). Yet, at the national or sectoral level the picture is less uniform; we observe shifts in leadership among nations and, within a nation, the lead shifts from one branch to another as retardation inevitably reaches former leaders. Kuznets contrasts the secular retardation at the sectoral level "with our belief in the fairly continuous march of economic progress" [p5] and asks why not balanced growth? The answer combines demand effects and technological change: progress of technique makes new goods available (tea cotton, radios,..) but eventually demand reaches saturation, the pace of technical change slackens, new goods emerge, and possibly also competition from younger nations. With this general retardation come

shifts in the relation between capital and labor, in the distributive process, in the character of the market, in the type of business organization, and in the roles of industry and agriculture. Here we have in a nutshell the sources of structural transformation which were to reappear several decades later with technical change and sectoral shifts as key elements of the process.

In *Secular* Kuznets established the existence of 15-20 year cycles in output and prices in the United States which he labeled “secondary secular movements” later to be known as “Kuznets cycles”. A substantial literature grew around these cycles, their relation to waves of immigration in the United States, and their eventual demise. As an important consequence it became clear that the study of long-term growth required observations over periods that extend well beyond the duration of the cycle itself; half a century or more as a minimum.

Measuring national income

At the NBER Kuznets worked on the conceptual development and the measurement of national income and capital formation for more than two decades. It is difficult to visualize today what the situation was like with regard to information for the aggregate economy. Kuznets effort at estimating national income, while not the first, was so distinctive that it became the benchmark in the field. Kuznets and Colin Clark in the UK were pioneers in the systematic clarification of methodological problems with operational solutions and, particularly in the United States, the institutionalization of the activity in official government agencies responsible for the continuous preparation and development of comparable estimates. (Patinkin, 1976, p. 1104).

At the NBER the dominant Mitchell and Burns approach favored disaggregation; “a fuzzy cocktail” of over 800 monthly series from which no meaningful summary measure could be derived (Maddison, 1982, p. 65). In those pre-Keynesian days there were still doubts about the usefulness of global aggregates, mainly in Germany where one could read that the concept of a nation’s income is a fiction, of interest to no one (Amonn, 1911, cited in Boss, 1990).

For Kuznets the design of national income accounts must start with a clear view of what the basic purposes of economic activity are. For him national income estimates are primarily indicators of economic welfare and less so measures of short-run productive capacity. “National income is for man and not man for the increase of the country’s capacity” (1946, p. 114). This led him to dwell during the next half century on some

conceptual problems which recur in his work, and in some memorable disputes: the problems of scope, netness/grossness and valuation.

In measuring national product we have to distinguish between economic activity and social life at large (scope), and between the costs and net returns of economic activity (net and gross). We also have to decide on the common base at which the various activities will be valued. Kuznets repeatedly asserts that the answers to these questions depend on the purpose of economic activity which in turn refers to the social values of the place and time. The solutions can therefore never be absolute.

The practice to include only market transactions leaves out important categories such as household activities and increased leisure. The downward bias on the estimates of the levels of income is aggravated when measuring growth if over time the importance of those omitted categories in income varies. The most contentious issue during the early stages of conceptualization was the treatment of government services. Originally, Kuznets argued for treating most of government expenditures as intermediate products; he viewed them as consisting of intermediate services to business or as necessary outlays for the maintenance of the fabric of society at large; a “necessary regrettable” (Nordhaus and Tobin, 1972), but not a source of final utility to ultimate consumers. The practice at the Department of Commerce in the United States as well as the UN’s System of National Accounts did not adopt Kuznets approach. His very negative review in 1948 of the postwar integrated set of national accounts prepared at the Commerce Department, pointed out that their approach had failed to clearly define the end-goal of economic activity and therefore has no basis to distinguish between the costs and net returns of economic activity or between intermediate and final goods. For Kuznets the end-goal was always the well-being of the population [see also the section on costs and benefits of growth].

When relative prices differ across space or over time, computing growth at base year prices or at end of period prices will yield different results. These reflect different vantage points from which economic growth is seen. Kuznets argues that, “economic growth should always be examined from the vantage point of the present, if only because this is a more complete view than that from the past looking forward. ... in every generation the indexes must be revised and history partially rewritten” (1956, p.7). Similarly, since measurement depends on theory, as theory advances past measures would have to be revised. Theoretical and empirical knowledge is therefore always tentative and

provisional, and subject to revisions in response to changing knowledge and to changing social goals and values.

Kuznets presented estimates of national income in its three principal forms. The first two elaborated were income received by individuals or factors, essential for distribution studies, and value added by industrial origin, essential for industrial shifts of economic activity and for growth accounting. The third approach, national product as the sum of expenditures for final use – provided the empirical scaffolding for the Keynesian framework. In the postwar period, the short-run perspective of the Keynesian approach and the related requirements of the political system for a more active macroeconomic policy to maintain full employment with price stability lead to the development of systems of national income and product accounts that Kuznets considered adequate for measuring short-term changes in current economic performance, but not as gauges of economic growth and welfare (1972). The short-run approach, focusing more on production than on consumption, prevailed in part because of the spread of Keynesian theory but also, paradoxically, because of the application of the Kuznets system of national income accounts to the war effort.

In 1942 Kuznets and his former student and now Chairman of the Planning Committee of the War Production Board (WPB), Robert Nathan, applied the national income accounts in a rudimentary input-output framework to estimate the economy's productive capacity and identify binding constraints of materials, labor, and other resources. Their work played a crucial role in mobilizing the economy's war capacity and maintaining a high level of civilian consumption during the war. In four years the share of material procurement in GNP rose from 4% to 48% (Kapuria-Foreman and Perlman, 1995, and Nathan 1994). This little known chapter in Kuznets professional life led John Kenneth Galbraith to argue that "Simon Kuznets and his talented people had been the equivalent of several infantry divisions in their contribution to the American war effort." (1980, p. 80). The dramatic demonstration of the feasibility of applying the national income framework for measuring economic potential was an important factor in determining the direction of the postwar developments of systems of national accounts. Kuznets continued to argue for a "peacetime concept" of GNP as opposed to the practice during the World War II when "success in war and preservation of a country's social framework [were] a purpose at least equal in importance to welfare of individuals." (Kuznets, "Government Product," pp. 184-85, cited in Higgs, 1992).

Economic growth of nations

Before Pearl Harbor Kuznets had already a clear outline for a research project on the economic growth of nations which he presented to Mitchell and referred to it in a 1943 letter toward the end of his service at the WPB. A more detailed outline was circulated and discussed at the NBER in 1945-6. Mitchell and Arthur Burns, who was soon to succeed Mitchell as director, were not supportive of Kuznets ambitious project. They were particularly concerned with the completeness and reliability of the statistical information. Kuznets, who we have come to identify with an almost pedantic care for the quality of the data, stressed more its relevance. He was keenly aware of the limitations of the data but even more so of the futility of waiting for the perfect numbers when pressing issues required attention even if not conclusive results. The missed opportunity on the part of the NBER was taken up by the SSRC under whose aegis most of the growth study was done.

For Kuznets, the failure of the long-term prognoses of both the classical and the Marxian economic schools, led by the end of the 19th century “to extruding the subject of economic growth (and the related topic of technology) from the accepted corpus of the discipline” (1978, p.97). The framework became short-term in which technology, institutions, and consumer tastes were supposed to be given and fixed. With few exceptions (Schumpeter pre World War I monographs) problems of economic growth were neglected until the rediscovery of the subject after World War II.

Modern Economic Growth (MEG) is the term applied by Simon Kuznets (1966) to describe the economic epoch of the last 250 years, distinguished by the pervasive application of science-based technology to production. An economic epoch is a relatively long period (over a century) with distinctive characteristics that give it unity and differentiate it from other epochs (1966, p. 2). The principal quantitative characteristics commonly observed in the growth of the presently developed countries are: high rates of growth of per capita product, of population, and of factor productivity, and a high rate of structural transformation. Major aspects of structural change include the shift away from agriculture, increase in the scale of productive units, shifts in organization and in the status of labor, and shifts in the structure of consumption.

“Advancing technology is the permissive source of economic growth, but it is only a potential, a necessary condition, in itself not sufficient.” (1973, p. 247). Its realization requires institutional and ideological adjustments. Kuznets illustrates this with some examples from modern economic growth: the modern large-scale plants needed to

exploit inanimate power are not compatible with illiteracy or slavery, nor with the rural mode of life or the veneration of undisturbed nature. In *Modern Economic Growth* (1966) he suggests the special attitudes that are as important as the technological and social epochal innovations to initiate and sustain growth. He summarizes those attitudes in a triad: secularism – material attainment in this world; egalitarianism – denial of inborn differences among human beings; and nationalism – capacity of the state to provide stability and a historically community of feeling with an elite dedicated to modernization.

Structural shifts

The high rate of growth of labor productivity is inevitably associated with a high rate of structural shifts. These comprise changes in the shares of output and inputs in economic activity with implicit changes in the status of employment, the conditions of work and life, the forms of enterprise, and the structure of foreign trade and other interactions with the rest of the world. Changes in the proportion of workers actively engaged by sector are due to differential productivity growth, demand responses to the fall in costs because of improved technology and in response to the continuous emergence of new goods, and the evolution of comparative advantage.

The consequences are a disjunction between the sectoral attachment of labor of successive generations. Associated with the higher mobility and migration were higher skill and educational requirements largely the result of the new technology but also a response to the need for objective criteria for evaluation, given the increase in the number of migrants in the additions to the labor force. The outcome was a shift from social status to overt criteria of the capacity to perform. The trend away from status was magnified by the demographic transition; a shift from traditional to more modern population growth patterns. Higher incomes and technology led first to a decline in mortality followed with a lag by a reduction in birth rates reflecting the increased needs for human capital investment in the younger generation; a reversal of the traditional flow of investment from children to parents. The young thus became the carriers of the new knowledge and this contributed to the de-authorization of tradition. Structural shifts thus emerge as an important strand in the process of modernization.

The shifts in positions of various socio-economic groups often led to breakdowns and conflict. Established groups were likely to resist any expected loss in power or position. The resolution mechanism needed to preserve the consensus for growth and structural change came in the form of the national sovereign state, a form of social organization

that relies on a sense of community, of common interest, among its members to serve as arbiter of intra-national conflicts; as referee among new institutional devices to channel the improved technologies into efficient use and mitigate the negative effects and reduce the resistance to growth. (Kuznets, 1980).

Kuznets documented, commented on and clarified the essential link between growth and structural changes. Growth leads to and is inconceivable without structural shifts. "High rates of growth ... are closely associated with, and indeed require, changes in economic structure; the latter ... require shifts in population structure, in legal and political institutions, and in social ideology. This does not mean that all the historically associated shifts in economic and social structure and ideology are *requirements*, and that none of them could be avoided or substituted for. It does mean that *some* structural changes, not only in economic but also in social institutions and beliefs, are required without which modern economic growth would be impossible." (1971, p.348, italics in the original).

Costs and benefits of growth

From his earliest work on the measurement of national income Kuznets stressed the importance of delimiting what enters into the economic calculation and the dividing line between final and intermediate. This has a close relation to the question of what are the benefits and the costs of economic growth, a theme that often reappears in his writings. In the private sector, the dividing line between intermediate and final goods had shifted with the increased complexity of society during the process of economic growth. There had been an increase in a "whole array of expenses undertaken largely or in good part for the sake of effective performance as an income earner in a complex urban civilization" (Kuznets, 1956, p.7). These included commuting expenses to and from work and educational expenditures required for higher skills jobs.

In the 1970s after the publication of ten long articles in *Economic Development and Cultural Change* (1956-1967) and the 1966 monograph, Kuznets returned frequently to the discussion of the measurement of costs and benefits of growth, an issue that rose to prominence at the time (1971, 1972, 1973a, 1973b, 1978). Why then? "The sudden rise in interest" in "old questions" would seem to be the result of the renewed interest in the study of economic growth in the previous 25 years and the rising concern at the time with negative by-products of the growth of output and population that led some to advocate zero population and output growth. (1972, 1973b, and also Nordhaus and Tobin, 1972).

In his 1971 *Economic Growth of Nations* Kuznets refers to nonconventional costs and argues that a significant part of these are due to deficiencies in the “conventional national economic accounting that treats some outputs that are really cost of production as *final* rather than as *intermediate* products” (1971, p.75). We have reached this point, in part, by relying on national income measures well suited as indexes of short-term changes but not adequate as gauges of economic growth (1972). “In theory there can be no ‘costs’ in net product properly defined as a gauge of economic growth” (1980). In addition to reclassification of measured quantities Kuznets considers various “hidden” costs such as the time spent in commuting to work, air and water pollution, and more subtle effects of urban life “represented by the difficulties of maintaining privacy and of escaping from the vulgarities of mass media and from irrational domestic violence” (1980).

Changes in the conditions of life implied by Modern Economic Growth involve a variety of costs and returns not now measured and some which may never be susceptible to measurement. Internal migration associated with urbanization has substantial costs “in the pulling up of roots and the adjustment to the anonymity and higher costs of urban living ... and in the declining value of previously acquired skills”. But it is not only costs that are missed by the conventional accounts: some benefits are similarly omitted.

“Urban life, with its denser population, provided amenities and spiritual goods that were not available in the ‘dull and brutish’ life of the country-side; and the new skills ... were often a more adequate basis for a richer life than the old” (1973, p.251).

While aware of the omission and misclassification of many costs by the conventional measures of economic growth, Kuznets warns of a bias in emphasizing the negative or problem aspects and neglecting the positive aspects of technological innovations and growth. It may well be that “emphasis on neglected negative byproducts is a useful goad to reform and change ... [but] it is a balanced view ... that we must seek” (1978, 77-78).

Two points not usually acknowledged:

1. “The negative effects of growth have never been viewed as so far outweighing its positive contribution as to lead to its renunciation” (1973a, 254);
2. If depletion of natural resources are to be counted then so should additions to resources resulting from new discovery and knowledge. Similarly with pollution: it is illogical and biased to enter a minus sign for pollution or depletion and not to include the

original contribution of resources and of improvements in their use when represented by new technology (1973b, 583).

Theory and measurement

Kuznets was a student of Mitchell and became probably the leading practitioner of the latter's inductive approach to research. He had great respect for facts and theory but a strong skepticism towards formal statistics. Kuznets and others at the NBER were not engaged in measurement for the sake of measurement instead, they were motivated by a desire to quantify macro variables of significance (Patinkin, 1976, p. 1107).

Kuznets conceded that there are no empirical invariances from accumulated data, but held that for the principles of elementary economics to be more than "mere definitional tautologies, they must embody some kernel of empirical observation." (Lekachman p. 94). He regarded most of growth and development theory as lacking concrete empirical reference. Schumpeter and Rostow were taken to task on this account.

There is no formal theory in Kuznets but there is much theoretical speculation to comprehend empirical regularities, systematic differences, and underlying causes. He was a master of bringing out unintended consequences and uncovering 'surprises' inherent in a process of technological change and growth. In *Toward a Theory of Economic Growth* he maintains the impossibility of a purely economic theory of growth. A more general theory is a worthwhile goal but a very remote one for the present. The central problem is now to endogenize what economics mostly regards as givens: technology, population, tastes, and institutions.

Kuznets was keenly aware of the limitations of the statistical information, always warning the reader of all its possible deficiencies. He worried about imposing too much structure on deficient data preferring simpler forms of data analysis such as frequency distributions with various levels of classification to regression analysis (Fogel, 2001).

"There is little question that, unless critically analyzed, much of the apparently quantitative record for the early periods of developed economies and even the current statistics for underdeveloped countries is almost worthless" (Kuznets, 1957, p. 548). And furthermore, "such errors cannot be dealt with by sampling theory". It is not realistic to expect the conditions for use of objective probability tests to be satisfied because: misspecification – impossible to include all the significant variables; the remaining errors cannot be assumed to be "sufficiently close to the *systematic* lack of system which we call 'random'"; the likelihood that the degrees of freedom have not been properly defined:

in testing a business cycle hypothesis for example, the degrees of freedom should reflect the number of cycle units, not the number of months or years.

Assessment

Kuznets did more than anyone else to convert economics from a speculative discipline into an empirical science. Leaders in his fields recognized his contributions during his lifetime and continue to do so today. A brief sample of accolades: 'Kuznets is a wise man; to my mind the wisest among now living economists' (Lundberg 1971), 'a giant in 20th century economics' (Samuelson, in obituary in the *Boston Globe*, July 11, 1985, p.43), 'the pioneer of quantitative economic history... revolutionized the analytical scope of economic history by giving it a quantitative underpinning' (Maddison, 2004).

And yet, in the economics profession there seems to be a '...profound ignorance of what Kuznets managed to accomplish in his approximate 60 years of professional work' (Kapuria-Foreman and Perlman, 1995, p.1525) and, as argued above, in the current literature of growth and development Kuznets and his work (except for the 'Kuznets curve') have all but disappeared. Some possible explanations:

1. "So much of his original work later became canon and in the process lost its identity as his..." (Kapuria-Foreman and Perlman, 1995, 1546).
2. Kuznets dense literary style paying little attention to the then emerging formal theories of growth and the absence of econometrics, increasingly diverged from the sharp turn to "theory without measurement" of the growth literature. The clear demonstration in Kuznets' 1930 book of the incompatibility of MEG with balanced growth and steady states were not what the new fields of development and growth were after.
3. An important contributing factor seems to have been Kuznets himself. For most of his career he shied away from active involvement in public policy. The one notable exception was his participation in the Planning Committee of the War Production Board during the Second World War; a chapter almost totally unknown by economists today. In the 1930s and 1940s Kuznets was willing to engage some of the leading theorists. He chided Keynes for misquoting his numbers in the late 1930s, wrote a lengthy and devastating review of Schumpeter's work on business cycles in 1940, and took on Hicks in 1948 on the definition of income. There is little such activity after 1950 due perhaps to the somewhat patronizing rebuke by Samuelson in 1950 of his participation in the debate with Hicks.

While he did much to assure the institutionalization of the measurement of national income he failed to do the same for his brand of empirical analysis of growth and distribution. Whereas between 1928 and 1955 he published consistently in the leading journals in economics, statistics, and economic history, after 1955, except for the Nobel and the Ely lectures in the AER, all his numerous articles appeared in either EDCCH or in very nonconventional outlets.

The picture that emerges is one of a committed scholar pursuing relentlessly a goal even if only he sees its importance at times. In a letter to Joseph Willits of the SSRC of 1952 he lays out his research program of growth and the minimal financial requirements which he knew then would not be forthcoming at the NBER but makes it clear that he planned to carry out his program “whether or not the Foundation acts favorably”.

A systematic exposition and appraisal of Kuznets work which, as Moses Abramovitz (1986) pointed out in his obituary article, Kuznets would welcome as a step in the scientific process of verification, criticism, and reformulation of ideas, is long overdue.

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