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ECONOMICS AS A SCIENCE: REVIEW OF

Nancy D. Ruggles and Richard Ruggles, *National Accounting and Economic Policy: The United States and UN Systems*, Edward Elgar, Cheltenham, U.K. and Northampton, MA, 1999;

——, *Pricing Systems, Indexes and Price Behavior*, Edward Elgar Cheltenham, U.K. and Northampton, MA, 1999;

——, *Macro- and Microdata Analyses and their Integration*, Edward Elgar, Cheltenham, U.K. and Northampton, MA, 1999.

Three volumes of some fifty essays pay witness to the scientific achievements of Nancy D. and Richard Ruggles over more than half a century. From the first papers written immediately after the Second World War to the new century of today, the flow of research continues steadily, accumulating to a monument of professional devotion and success. How is one to review a body of work of this magnitude? Best to begin with two small items!

One is about authorship. All three volumes are jointly authored by Nancy D. Ruggles and Richard Ruggles but inside are all possible combinations—papers written by just Nancy, or just Richard, or by Nancy and Richard, or, finally, by Richard and Nancy. When I first came to meet the Ruggles and felt embarrassed about not being able to remember the precise authorship of their various papers, I addressed Richard directly, who answered without thinking: "It does not matter—it's always both of us who have been at it anyway." I was relieved then, as I am now—it is of no use to go for subtleties and sophisms in finding a distinction between the two authors in their work.

The other introductory remark is that these three books are quite an opus, but they are not the collected works of the Ruggles. The full 14-page bibliography at the end indicates that only a small fraction of their writing has been reassembled here. There is more to read, but in these three books we find Nancy and Richard Ruggles' ideas condensed into a message, and perhaps a signal of where we should direct our efforts in this waking century.

National accounts form the center of Nancy and Richard Ruggles' research attention, and they have been central in developing and shaping this tool. *National Income Accounting and its Relation to Economic Policy*, the first paper in the volume, was written in 1949, in Paris, for the Economic Cooperation Administration. Richard Ruggles had taken leave from Yale; Nancy Ruggles had received a post-doctoral fellowship to study in Europe. The ECA was interested in using a national accounting framework to analyze European economic recovery. In addition to publishing a booklet on national income accounting, Richard and Nancy went to Cambridge, England, to persuade Richard Stone, to set up, with ECA funding, a special "National Accounts Research Unit." That unit developed the famous "Simplified System of National Accounts" of the OEEC, the simplification having been performed by the Ruggles, because the Stone system was highly theoretical and too demanding in terms of statistical data provision.

It is nice to read this paper today, leaning back in one's armchair and enjoying the arguments from hindsight. If national accounts are now fully accepted in government and the economics profession, this paper gives you a feeling of what it was like to argue for them when they were not. At the time, distinguished economists like Kuznets viewed national accounting as "a dubious addition to the theoretical equipment by aid of which we define national income and reckon its distribution." Richard and Nancy Ruggles argued that taxation for munitions in time of war or highways and general education in time of peace require policy decisions that ought to be based on national accounts. They had to explain that "The adoption of economic policies does not imply the introduction of *planning*" and how an overall statistical framework can be constructed on an incomplete statistical basis and still yield useful information. All this can be nodded at today, because what followed was a story of success.

There are two messages in the paper, both of them surprisingly fresh: "The welfare of individuals can never be measured in terms of a few summary measures. There are many non-quantitative ingredients—such things as working conditions, freedom of opportunity, and the moral and political temper of a country" and "the calculation of the expected expenditures on the national allocations and expenditures account in terms of constant prices" is very much needed information. A typical Ruggles conclusion, the joy of paradox is that "many policies which in theory are beneficial may be found, when examined in quantitative terms, to make so little difference that they are not worth undertaking."

The paper immediately following, *Concepts of Real Capital Stocks and Services*, was written 12 years later, and focuses on an internal theoretical problem of national accounting. Capital stocks and services are measured by means of standard procedures in all national accounts today, so why should one read the old paper? Actually, it is when you are young that you are posing questions. When you are old, it is not that you have answered the big questions, but that you have forgotten them. In agreeing on accounting conventions for capital we have forgotten why we needed them—instead of just following the natural accounting rules—and how well or not well they serve their purpose. Here we have a paper on concepts worth re-reading, to be held against our standard practice as a ruler to judge performance. Drawing on studies by Denison, Domar, Creamer, Robinson, Kendrick and Solow, Nancy and Richard Ruggles carefully enumerate the arguments around the difficulty of capital evaluation.

Chapter 1 on *The quantity of capital as a concept for productivity measurement* points out the options comprehensively and dryly. Different kinds of capital are expressed in different physical units and "the basic fact is that capital in general has no physical unit."... "The only resource in these circumstances is to measure capital in some sort of comparable unit in the same way as we measure output—in value terms." National accounts concern the theory of economic value, a subject we return to later. If capital has no physical unit, one must ask critically, it also has no price, because price is a monetary unit per physical unit, by definition. So what meaning are we to attach to our statistical capital price indices?

Instead of being lead astray by further theorizing, Nancy and Richard Ruggles proceed pragmatically, another feature of their ability to work and communicate in a given but ever changing environment. They investigate the rationale of existing measurements of real capital stock. They follow Denison in judging the three alternatives of measuring capital by its costs, by the capacity of the system as a whole to produce output, or by the contribution which capital specifically makes to total production. Preference is given to the first, not least because including output capacity in the measure of capital would render capital productivity equal to one, by definition. The argument is developed in all its finesse, and the paper ends with a reminder that the measurement of capital could very well be embodied in the national balance sheets developed for the various institutional sectors of the economy. This call for completeness of accounting is one that Nancy and Richard Ruggles have driven home again and again in their work. It was to come true 30 years later with the completion of the 1993 SNA.

Having arrived at this stage, what do Nancy and Richard Ruggles think of it today? First of all, the message is never to read anything without its history. Implicit in the papers of these volumes is the message that you cannot understand a current state of scientific affairs without knowing the history, one might say the "archeology," of the knowledge that lead up to it. Many papers, therefore, begin with a careful account of what was happening before a particular theme of deliberation was initiated. In the case of national accounting, comparing the initial ideas with their final realization is a privilege not enjoyed by many a founding father scientist. We find a sound, typically Rugglesian judgment. The achievement is all right, but could be improved. More precisely, as they put it in National Income Accounting Concepts and Measurement: Economic Theory and Practice, the sixth essay in the volume, written in 1993: The SNA accounts "derive specific aggregates that will provide a macroeconomic view of the economic system. Conceptually, however, these SNA accounts depart widely from the bookkeeping and accounting records that are actually kept by different groups of transactors in the economy." For the reader of today, this paper most distinctly elucidates the differences between what we have and what we ought to have in the national accounts.

Concerning capital formation and capital consumption, national income estimators have gravitated toward providing estimates of gross income and product that are independent of capital consumption estimates. This is, in essence, the transactions approach to national accounting, a principle always evoked, if not discovered as a guiding rule of national accounting, by Nancy and Richard Ruggles. The role of government in the economy triggered an important debate it in the beginnings of national accounting (the so-called *Economica* controversy between Kuznets and Hicks). However, national accountants are now agreed in viewing the activity of government employees and government capital goods as contributing to gross income of an economy. Conversely, housework, students' work, voluntary work and environmental capital have been excluded from the accounts. Despite heated debates before and during the process of revision in academic and political circles, the production boundary is set clearly between paid and unpaid activity, another outcome of the transactions principle, (not withstanding some important exceptions such as owner-occupied housing and production on own account).

Another topic of extended debate concerns interest payments. These are considered a transfer of income rather than a sales payment for the services of capital—in accordance with the general distinction between transactions in goods and services determined in proportion to a product delivered in exchange and income or distributive transactions that lack such a direct link to production. On the negative side, Nancy and Richard Ruggles note that saving and capital formation are grossly misrepresented in the accounts. Drawing on their own research they discover that both corporations and households largely finance themselves internally. The saving of households goes into owner-occupied housing, while enterprises mostly use retained earnings for their capital formation, contrary to what every introductory macroeconomics book suggests in its traditional three sector scheme. Furthermore, even within the corporate sector, capital formation behavior in agriculture is different from mining, which again is different from construction. Public utilities, trade and services, financial institutions—each display their own pattern that is determined by the legal and commercial environment in which they operate, and can only be contaminated by consolidating its accounts with those of other industries.

This leads to the final plea of integration of national accounts and microdata bases, another sturdy Ruggles theme, illustrated here by the proposal for a core system of transactor/transactions accounts. This would consist of the market transactions relating to production, income and outlays and capital finance and accumulation of enterprises, government and households. The supplementary modules or "building blocks" would contain imputations and rerouting of transactions that were found to be analytically useful. For the United States, Nancy and Richard Ruggles have produced such a set of accounts. In summary, we read that "Looking back, in view of all that has gone before, one cannot say that this is just the beginning, and hopefully it is not the end. We are in the middle of what is an interesting and exciting development that promises much for the future." What on earth can put an end to so much enthusiasm?

Let us turn to the other volumes, although these must now be treated in brief. The volume on *Pricing Systems, Indexes and Price Behavior* takes a step from national accounting into the realm of economics proper. Here we find indepth studies of the wholesale price index of the United States, meant as a measure of the value of money at its time, and on the chronic inflation in the United States, 1950–73. Joining in on a study of Latin America by Felipe Pazos, Nancy and Richard Ruggles investigate the mechanisms that make inflation chronic in the twofold sense that inflation neither stops, nor accelerates into hyperinflation. Their diagnosis is that neither traditional explanation, aggregate demand or costpush, hold here. Institutional factors play a role that foster productivity and regulate its distribution through the economy.

An interesting illustration of the breadth of their interests is the study on *Redundancy in Price Indices for International Comparisons*. By means of stepwise regression analysis Richard and Nancy Ruggles investigate the number of commodities required to produce reliable price information about a given commodity group. They find a surprising redundancy in some groups, less in others—at any rate the allocation of collection cost is far from optimal. (Statistical offices, to my knowledge have still not picked up the finding.)

The flag paper of the volume again is one of the early ones, *The Value of Value Theory*, written in 1954 and appearing in the *American Economic Review*. Its four "suggestions for future work" are as valid today as they were then. "First, I believe that it should be explicitly recognized that the concepts of value theory as traditionally stated are not empirically operable, and in consequence that a separate conceptual framework must be erected for classifying empirical information about the individual firm." The paper focuses on the theory of the firm, implying that similar arguments can be made for the theory of the household. "Second, I would hope that such a conceptual framework would be of a very general nature and would take into account the requirements of macro theory as well as those of micro theory. Third, I feel that the classification scheme adopted in this framework should have as its basic criterion empirical operability, but within this criterion both functional and institutional characteristics should be observed as much as possible. Finally I would suggest that such a framework should be used in conjunction with orthodox value theory rather than substituted for it." Is not this a reasonable, almost obvious plea for doing economics as an empirical science? Probably no one takes issue with the analysis of the paper that the concepts of the theory of the firm are not set up to be operable in empirical terms, and that they are basically different from the macro concepts used in aggregative analysis—yet little has been done since to repair these deficiencies in our discipline.

In this reviewer's opinion, the desired extension of value theory into the macroeconomic realm might be constructed along the remnants of classical value theory. Although this set of concepts was overthrown contemptuously by the marginal revolution for being nonmathematical, but seemingly much less speculative in its assumptions, it is widely, although unconsciously, applied in the national accounts. Nancy and Richard Ruggles mean it more directly and concretely. If the value figures recorded in the national accounts are to represent the economy in a truthful way they should be derived from and related to facts observable at the micro level. This is the famous micro-macro linkage of economic data, for which the Ruggles have always stood in the forefront of research. This topic was of central interest to both Nancy and Richard Ruggles throughout the years, but it took on new significance with the development of computers that could handle large volumes of data, the extension of national accounts into new areas and new social policy needs for social and demographic information. The third volume of the publication is devoted to it.

Here you find both studies on sectoral saving and investment and *A Strategy for Merging and Matching Micro Data Sets*. A little note in the preface, where all papers are pointedly introduced, indicates that the paper was written for the *Survey of Contemporary Economics*, edited by Bernard F. Haley and published by the American Economic Association in 1952. The original draft was very critical of the economics profession for its failure to integrate macro- and microanalysis and to utilize micro data in macroeconomic analysis, and Haley "appropriately"—can you hear the Homerian laughter hidden behind choosing this word?—pointed out that what the AEA desired was a survey of current methodology and not a critique.

Reading the published essay makes one wonder what methodological advance may have occurred in economics in the fifty years that have passed. For purpose of orientation Nancy and Richard Ruggles divide the process of economic research in four stages, the exploration of the problem, the theoretical development of hypotheses, the empirical testing of hypotheses, and, finally, the evaluation of conclusions. The crucial element of research in the Ruggles' view is not the third. Propositions should certainly be testable but "this is not to say that all hypotheses which are not operationally meaningful and so cannot be proven either correct or incorrect by any empirical means are useless and nonsense; such a statement is itself a hypothesis which is not operationally meaningful, and to assume it to be correct is simultaneously to declare that it is nonsense." This is a Rugglesian turn of argument, revealing their characteristic understanding of intellectual scholarship. Generalize a scientific statement to its very limit, including, and not as its least application, your own thinking.

Peter Hill, James Tobin and Edward Wolff have supplied pertinent and substantive forewords to each volume. Edward Elgar and all helpers have done a superb job in casting the diverse material into what shows now as a friendly and uniform frame of appearance, easy to read and informative in details. Altogether, it is a pleasure to forget one's time wandering about within and between the papers. And in reading one becomes aware that, using the words of James Tobin, a close friend, the Ruggles and Ruggles partnership was "a husband—wife team unsurpassed, at least in economics, in its unity and its scientific and professional contributions."

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