

## WHAT IS THE THEORY BEHIND?

Review of *National Accounts and Economic Values—A Study in Concepts*  
by Utz-Peter Reich (2001)

“This book is devoted to explaining the hypothesis that the national accounts imply a theory of value, and that this theory is different from the traditional macroeconomic model” (p. 11). This is the general objective of the outstanding book of Utz-Peter Reich. Looking from a different angle, it is obvious that the values statistically measured by means of the System of National Accounts imply a theory, one which needs to be explicit in order to be understood.

What is a theory of value? In purely “dictionary style,” the theory of value has produced three broad approaches in the course of history of economic thinking: (a) the general-use-theories, based on the assumption that the value of a commodity is related to the use to which it could be put (F. Galiani); (b) labor-value theory, according to which value is interpreted as reflecting the cost of production measured in terms of labor time absorbed (D. Ricardo and Adam Smith on the one hand, K. Marx on the other); and (c) marginal utility theory, which argues that the marginal utility in the final small increment in demand and/or supply determines the value of commodities in exchange (H.H. Gossen, W.S. Jevons, A. Marshall, M.E.I. Walras, G. Debreu) (Bannock, Baxter, and Rees, 1978). Reich’s book and this review is concerned with items (b) and (c) above. Reich speaks somehow more warmly of this theory than is normal in dictionary style: “Value theory tells us what is good and how good it is, what we appreciate and why . . .” (p. 1).

The writings of Reich—he produced so many papers for the various conferences of IARIW!—have always deserved special attention. He is at the same time an economic theorist, mathematician, physicist (some witty examples in the book are due to this science)—and he is also a statistician, an outstanding expert of national accounts. This book is dedicated to András Bródy, as his teacher in value theory and Richard Ruggles, his teacher in national accounts. It constitutes a valuable contribution to both economic theory and better understanding of the national accounts.

## VALUE IN THE NATIONAL ACCOUNTS

The history of economic theory has produced a number of value theories. A crucial detail of this history is that the marginalist school was created *before the birth of the national accounts*. The national accounts could not do with the marginal theory of value. But value constitutes one of the central categories of national accounts as the system of accounts is *about* economic value. Reich reveals that national accounts deal with value “that is circulated, accounted for and stored by means of money” (p. 125).

When talking about national accounts, Reich means *the* System of National Accounts, that is an international statistical standard, specifically the latest (1993) version. There are two reasons to be so specific:

- (1) Before the early 1990s there existed in the Soviet Union and in a number of countries with central economic management another accounting system, known as the “Material Product System” (MPS) which gained the name by its concept that only the products of “material production” (production of goods and production of services closely connected to goods) were considered as value-creating activity.<sup>1</sup>
- (2) The SNA is in many respects neutral as regards the background of economic theory. It clearly constitutes a model of the market economy; however the 1993 SNA asserts: “The types of macroeconomic models used for . . . investigations may vary according to the school of economic thought of the investigator as well as the objectives of the analysis, but the System is sufficiently flexible to accommodate the requirements of different economic theories or models, provided only that they accept the basic concepts of production consumption, income, etc. on which the system is based” (SNA93 1.33.). This means that the SNA—however huge a volume its description is—does not make its value theory explicit.

One of the principal issues of Reich’s book is that marginalism and the microeconomic approach do not fit the national accounting. Therefore a new theory of value is implicitly being used in the framework of national accounts. This value theory is of macro- rather than microeconomic character, and implicit in the concepts, methods and accounting framework of the System of National Accounts.

For the National Accounting System economic value is relevant, but not in terms of individual actions, rather in terms of the summary of these values; institutional or activity sectors etc. Reich makes a clear distinction between micro- and macroeconomic aspects. One of the crucial elements is the *marginalist theory*. It may play an essential role in business economy and business accounts, considerably less in National Accounts. Values in National Accounts may depend on prices, quantities and qualities, but not on utility. In this respect Reich likes to use the expression “a potato is a potato” (borrowed from Irving B. Kravis,) as the opposite of utility and typical for the National Accounts.

These ideas are expressed in SNA93 in the following way:

. . . In all aspects of their (institutional units and their members) economic functions and activities, they undertake a great number of elementary actions. These actions result in economic flows, which, in addition to their specific nature (wages, taxes, fixed capital formation) create, transform, exchange, transfer or extinguish *economic value*, they involve changes in the volume, composition or value of institutional unit’s assets or liabilities. The economic value may take the form of ownership rights on concrete objects (a loaf of bread, a dwelling) or intangible assets (a film original) or of financial claims

<sup>1</sup>Hungary calculated and published its macroeconomic data in both SNA and MPS starting from the 1970s.

(liabilities being understood as negative economic value). In all these cases, it represents a certain quantum of abstract economic value which is potentially usable to acquire goods or services, pay wages or taxes etc. (SNA 93, 2.24.)

### THE BASIC PRINCIPLES

The creation of a macroeconomic value theory, i.e. a value theory implicit in the national accounts, starts with the formulation of a set of principles, or, as Reich puts it, “propositions”:

1. An *economy* is the set of value transactions between economic units in a currency area.
2. The *agents* of the economy are institutional units that hold and manage property.
3. *Production* is an activity by a person in an institutional unit, carried out regularly and against pay.
4. *Products* are production outputs delivered to individual units.
5. *Consumption* is the use of products that are not destined for production.
6. The *real value* of a national currency is measured by the volume of national consumption.

These principles play manifold roles in the argumentation. For example, they come into juxtaposition with the axioms of the value theory of microeconomics, as formulated by, for example, Debreu (1959). As illustration of this confrontation we limit ourselves to two terms: *agent* and *economy*:

- The role of an *agent* in the micro sense is to choose a complete plan of action, that is, to decide on the quantity of his or her input and output for each commodity. Thus agents are characterized by the description of their choices and by their choices criteria. In a macro sense they are the institutional units that hold and manage property. It is obvious that the micro concept of agent—however precise and consequent it is—cannot be considered as actors of national accounts, e.g. as it would be very difficult to aggregate their plan of actions, or choices or criterion of choices.
- The *economy* in the micro-world consists of  $(m + n)$  agents, where  $m$  and  $n$  are positive integers of producers and consumers. In the macro sense an economy is the set of value transactions between economic units in a currency area. The main deficiency of the micro concept is that  $m + n$  agents do not necessarily form a national economy, but may, for example be some subset of it. So, again, this economy is not a national economy, the subject of the National Accounts. However, for the macro concept the term “currency area” is disturbing. (Of course one cannot define economy as the set of transactions in a national economy, even if that is the place of the transactions; this would be logical fault called “*idem per idem*”). A currency area is no longer a simple synonym of national economy. Does it refer to EURO-zone? Then National Accounts of an *individual* EMU member country would not make sense. Reich’s definition is more correct: “An economy is a set of transactions by institutions residing in a nation” (p. 73).

## THE MAIN COMPONENTS

The argument of the book is arranged around three themes: nominal accounts, real accounts (with a detailed discussion of price statistics and index numbers) and value theory. The author himself feels that there is no single reader with professional interest in all chapters, and consequently expects that the reader will choose which chapter to read and which to skip over. Although Reich assumes that national accountants may occupy themselves with chapters on the national accounts, price statisticians with those devoted to the index numbers, and value theorists with the chapters on the theory of value, such a reading would not reveal the actual message of the book, as the debate lies not within but between the individual fields. There is an interesting “roundabout” in the structure of his book. The individual parts assume some knowledge of other parts. It is for example easier to understand the chapters on the accounts if one has some knowledge on index numbers or economic theory etc.

In Reich’s view, the current accounts of the SNA depend in important ways on the basic principles and accounting rules of the System of National Accounts. Economic event, value transaction and its various (economic, financial and income) transformations are therefore explained as basic terms, followed by a detailed analysis of production, sectorization and transaction principles.

Production seems to be the item that plays the central role when discussing the framework of the accounting system. Reich points out the fact—well known for national accountants—that in the present SNA there are two types of economic agent, the institutional unit and the production (functional) unit; the first is aggregated to institutional sectors (non-financial corporations, financial corporations, households etc.), the second to industries. Both have their own classification, which implies a kind of duality of the accounting system. The main issue of detailed analysis incorporates a “proposition” according to which “production is an activity by a person in an institutional unit, carried out regularly and against pay”(p. 42). Later on the discussion is enlarged by own account production and the owner occupied houses, so the definition above can easily be compared to the production boundary as defined by the SNA:

- (a) The production of goods or services supplied to other units than their producers.
- (b) The production of all goods on own account.
- (c) The own account services of owner occupiers. (SNA93, 6.18).

## INDEX NUMBERS AND “REAL” VALUES

Taking into account the famous (or trivial?)  $v = p * q$ , i.e. value equals the product of price and quantity, the reviewer could imagine a value theory that is based on current prices only. All the more as the total accounting system can be compiled in current prices, whereas only a part of the accounts can be produced in constant prices. Reich undertakes a more difficult task by investigating the *real accounts*. Both SNA93 and ESA95 have a large chapter each on index numbers, in addition to a *Handbook on Price and Volume Measures in National Accounts*

published by Eurostat in 2001. Real accounts are necessary for the quantification of economic growth, the rate of inflation etc. (Szilágyi, 2002).

Index numbers play an outstanding role in the book. One may have the feeling, that a complete and advanced course of price statistics is given here. The considerations on real accounts are divided into two chapters, one dealing with the index number problem in general, the other with the quality issues.

A welcome achievement of the book is the clarification of the term “real.” This term is used in a very perfunctory way in both the everyday language and in a substantial part of the literature. The correct meaning, indeed, is the following: “We make every effort to convince the reader that nominal values are in the sense of ‘actual’ and what is observable as a statistical fact, while real values, as conceived by economic value theory are constructs” (p. 69). “Real value” is meaningful only in terms of comparison; i.e. in relative, not in absolute terms. For example, a salary of €10000 in a given year is expressed in nominal and in the same time in real terms. So the question “how much is it in real terms?” is meaningless. One may ask: “How much is in real value *compared to five years ago?*” Then the answer depends on the change of the purchasing power of the money during the five years in question. But the answer will be not “more real” than the €10000.

The disparity between a microeconomic theory of value and statistical observation can also be explained by a particular division of labor within most of the national statistical institutes. Price statistics departments collect price data and are interested in the reliability and consistency of price indices. This price information is used by national accounts departments, without much concern for the problems of its compilation. Eventual errors of the volumes derived by the price and current values are hardly linked to the details of price observations.

Reich investigates the comparisons over time in symbiosis with comparisons over space, i.e. country to country. Indeed, there is a lot of analogy between the two; here the similarities are taken as granted and the differences are quasi neglected (which helps rather than impedes the argumentation). Both aspects demonstrate to what extent the SNA contributed to the index theory and praxis. There is a very clear and educative explanation and a numerical demonstration of one of the most widespread multilateral methods, the Geary-Khamis index system and the calculation of Purchasing Power Parities.<sup>2</sup> The Geary-Khamis method is based on a linear equation system using all quantity and price information of all countries involved in an international comparison and it results in an international average price system, which enables the comparison of values and quantities in a consistent system for a given year. In the book a small size numerical example in the best textbook manner illustrates the difference between the two theories of value and each figure is given the proper economic interpretation (not an easy task).

Reich concludes with a discussion of three types of value: (a) nominal expenditure values, which imply the conversion of currency at their exchange rates; (b) real values, compiled on the assumption of an equal purchasing power in every

<sup>2</sup>The other, broadly used international index system, the Éltető-Köves-Szulc (EKS) system is as widespread in the international comparisons’ practice as the GK; the choice of the author is correct, as GK is easier in demonstration of some relevant properties of these types of calculations.

country; and (c) volumes, as the result of multiplication with world price that do not incorporate the average relative scarcity of a product in a particular country. In this, somehow unusual distinction, scarcity seems to need further explanation. This concept is to be understood in the following way: “in a country where the real value of a product is higher than the volume of world prices, this means that that product is relatively scarce in the particular country” (p. 79). This reviewer is rather suspicious about this statement (and especially with the term of “scarcity” and its use in the model) and is much closer to the concluding chapter (“Open questions”), according to which “scarcity is itself a dubious ill-defined concept that needs to be put into a much clearer context in order to render this interpretation plausible” (pp. 178–9).

Reich’s considerations on the use of indices to make comparisons over space and time constitutes a brilliant, entertaining and amusing, sometimes ironic essay on traditional and new issues of index numbers, including history, formulae, chaining, additivity etc.

### QUANTITY, QUALITY, VOLUME

Turning to the treatment of quality differences in index number, Reich becomes very severe and strict. He provides a complete price statistics, based on a series of definitions (e.g. definition of the field of observation, classification of households and of expenditures, definition of points of sale etc.). In the macroeconomic sense of value, the quantity of the products should be adjusted by their quality; this adjusted figure is the volume and it is this element which is taken into account in National Accounts, as the basis of the value. In other words, better quality equals larger volume. This is in contrast with microeconomic theory which “incorporates the assumption that quality and price of a good are two distinct variables that can be measured independently of one another” (p. 121). That is, quality is observed implicitly by the quantity of the good. The differences between the two concepts can be summarized as follows:

1. How are prices looked at? In microeconomics they are the relationship of value between different goods. In national income accounting the absolute price is crucial; relative prices refer to change between the prices of the same commodity in two different periods.
2. What is the meaning of price change? For national income accounting the *pure price* change (that is, the change of price adjusted by the change in quality) plays the central role. In microeconomics this concept does not exist, as it refers to the purchasing power of the means of payment.
3. How to treat quality changes? Any variable not captured by a pure price change must flow in the quality change. Consequently, a part of what is *price* in microeconomics is *quality* in price statistics of national income accounting.

Concepts of value, price, quantity and quality, differ to a substantial extent, without, however total contradiction.

In analysis of theory of value and its connection with national accounts, the interpretation of the trivial form  $v = p * q$  may play a crucial role. First, what is meant by  $q$ ? During the long history of the theory of index numbers,  $q$  has been

meant by quantity, or volume, using the two terms as synonyms. In some opinions, however,  $q$  means *either* quantity *or* volume. In this approach the two are not the same things. The factor making the difference is *quality*. This is the sense Reich and the national accounts use the  $q$  symbol (see item 3 above.) So  $q$  is volume which is quantity ( $q$ ) adjusted by quality ( $r$ ). Consequently  $q = r * q$  and  $v = p * (r * q)$ .

This is not the only distinction the author makes within the basic formula. As considered above, he introduced “scarcity”, as determining the price level. The variables and their interrelation is summarized below:

$$\text{Volume} = \text{Quality} * \text{Quantity}$$

$$\text{Real value} = \text{Volume} * \text{Scarcity}$$

$$\text{Value} = \text{Real value} * \text{Price}$$

These elements of decomposition and their various combinations provide the basis for further—theoretical and practical—investigations and conclusions on value theory and national accounts. They permit confrontation with various economic theories (function of utility, function of production, equilibrium (and disequilibrium) in product markets, asymmetry of labor of capital), the basic conclusion being that the microeconomic theory does not support the national accounts and vice versa.

In addition, Reich argues that:

- Value theory—in addition to its components considered so far—needs the incorporation of the institutional framework as part of the value-generating process.
- If product groups are very heterogeneous over time (or between countries), the periods (countries) are incomparable, and no statistical method can create comparability.
- The two production factors of the national accounts, labor and capital, behave asymmetrically. Only labor behaves as primary income, capital income is secondary as it distributes income that has been created through economic activities, not necessarily by the institution that pays it.
- A common idea of classical value theory and national accounts is the dissolution of value into its factors in terms of the economic circuit, known as the well known decomposition of the Leontief-inverse  $Q = (I - A)^{-1}$ .

#### TOWARDS RECONCILIATION (?)

As Reich states “the value concepts of the macrolevel are different from those of microeconomics, but they do not contradict them” (p. 122). The accounting link of the two worlds is part of the Ruggles (Nancy and Richard) heritage, one of the most valuable intangible assets of national accountants. As Wolff (2001) has recently noted, the basic idea has been the reconciliation of macrodata with microdata. The next step is the consistency between microdata *sources* with the macrodata in the National Accounts; e.g. the total for government expenditure in the microdata of the government sector should equal government expenditures in the



National Accounts. These and many other reconciliation activities go in “two-way-traffic”, i.e. a feedback to the micro sector is also necessary.

Looking at the accounting system of a great number of countries, the Rugglesian ideas remain a vision at present. This reviewer had a lot of private talks with Richard Ruggles in the last years of his life. In all cases he stressed the importance of the reconciliation of the two spheres, while being aware of the difficulties. On the one hand he had great expectation regarding the development of ICT, but on the other hand he saw the other side of the problem, such as the different concepts prevailing in the micro and macro world. This is the point where the book of Utz-Peter Reich meets the vision of his teacher in national accounts.

One of the most positive feature of this book is *entertainment*. This intention of the author is explicitly put forward in the introductory chapter. “A book is written to promote knowledge and truth, but it will open minds only if it is entertaining. Thus, dear reader, my wish is to entertain you” (p. 1). In which sense and to what extent is this book is entertaining? Entertainment doesn’t mean jokes. The entertainment in this book means intellectual entertainment—clear logic, convincing arguments, fresh analogies etc. And there is no better way to conclude this review than to quote from page 104, one of the most pleasant for the reviewer:

The statistician ignores theory, it seems, not because of lack of knowledge, but because of too much knowledge. In spite of their in-depth knowledge of reality, statisticians are not given the right to speak, for example the right to disqualify a theoretical concept for being inoperable.

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