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## THE UNTENABILITY OF THE MICRO-MACRO DISTINCTION IN ECONOMICS

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Professor Zeuthen once observed that "considerable part of economic theory owe their existence to the fact that certain hypotheses by repetition have become venerable dogmas" [1, p. 6] . This paper offers an hypothesis that traditional claims regarding the existence of a micro-macro distinction in economics are erroneous. It builds on an insight offered a long time ago by Fritz Machlup that "we must take it as a fact to be reckoned with that there is no agreement on the meaning and scope of the concepts micro-and macro-theory" [2, p. 103].

Conceptual analysis --known also as linguistic analysis-- is the main method employed in this investigation.<sup>2/</sup> Thus this essay lies in the field of methodology or metaeconomics. We may define the latter as the logical analysis of the language of economics -- its concepts and statements. Conceptual analysis has revolutionized modern philosophy and solved a great many philosophical puzzles; it is a powerful tool economics can bring in from the outside to add to its arsenal of analytical tools.

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<sup>2/</sup> For examples of this method see [3] .

I. Some Consequences of the Micro-Macro Dogma

The belief in a micro-macro distinction has generated a large number of analytical puzzles and problems in economic theory and method. Professor Machlup's thorough and very scholarly investigational of the micro-macro controversy in economics was a response to the alleged "Superior Strength of Macro-Forces" as against weaker "micro-forces". He concludes "my decision must be: no winner, no loser" [ 2 pp. 110, 142 ]. Machlup's analysis is puzzling in the sense that a lack of agreement as to the meaning of micro-and macro-theory is recognized yet in another context he implies the existence of a customary meaning of the concepts. For example: "If one stretches the concept of macro-theory to include production possibility curves (the production surface) with their elasticities of substitution, the whole theory of relative costs and prices is virtually annexed. This does not correspond to the customary meaning of the words" [2, p. 106 ] .

Another familiar analytical problem concerns income distribution theory about which, we are told, two logically different views exist "in terms of a macro-theory of national income and in terms of a micro-theory of relative prices" [ 4, p. 326 ] . A so-called Neo-Keynesian macro (dynamic) theory of distribution is sharply contrasted to a so-called microeconomic approach. It is puzzling why they should be incompatible

since national income (revenue) is the sum of individual incomes (prices); and total wages and profits are sums, too.<sup>3/</sup>

The alleged existence of formal criteria dividing micro from macro-theory has naturally led authors to posit a different set of objectives and methods used by these two branches.<sup>4/</sup> Thus Ackley remarked that we should "approach microeconomic problems with microeconomic tools, and macroeconomic problems with macroeconomic tools" [7, p. 5]. And Brandis has claimed that "we cannot combine micro-economics and macro-economics into one sweeping theoretical model." To buttress his claim, a misleading analogy with physics is offered: "Modern physics suffers from the same kind of division and micro-physics... cannot be connected in the same theoretical model with macro-physics..." [8, p. 9]. The comparison with physics is inaccurate. Newton invented the integral calculus precisely for the purpose of summing or deriving the laws of planetary motion from the laws holding between particles and their interactions. The reference to modern physics pertains to the philosophical dispute regarding the interpretation of quantum phenomena; but this issue has no relation to the micro-macro distinction in economics. In the former, the dispute concerns the adequacy of the concepts of

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<sup>3/</sup> For labor's share of GNP as a simple weighted sum, see [5, p. 125].

<sup>4/</sup> See, e.g. [6, p. 2].

space, time, field and particle in explaining the laws of the universe; those falling in the classical rationalist camp, Einstein among them, defend their adequacy; other developers of quantum theory, Bohr and Heisenberg for example, assert the inadequacy of these concepts at the quantum level. Let us finally note just one other result of the belief in a micro-macro distinction: microeconomics it is said deals with relatively unimportant questions while macroeconomics deals with more important questions.

## II, Its Origin in the Language of Physical Objects

One search for logical differentiae for distinguishing one species (microeconomics) from another (macroeconomics) of the same genus (economics) is based on the distinction in the natural sciences between small and large. In the natural sciences, including physics, micro and macro ~~simple~~ mean small and large physical objects and no formal attempt at dividing these sciences into micro-and macro-branches has been made. As such, small and large are variables that range over a very broad area without fixed boundaries. Physicists of a generation ago would have classified the study of molecules in the sphere of microphysics. Many physicists would now put the study of atomic phenomena in macrophysics, confining microphysics to the study of structures inside the atom. If electrons should in future research reveal a complicated structure, the coverage of the concepts small and large will perhaps undergo another change. Note that the plain and customary meaning of

small or large does not exist, just as it does not in mathematics, but must be specified by the particular user of these terms who must point out what he means by a small or large object in the context of a particular field of investigation.

In biology, micro and macro do not divide that science into two logical distinct fields. Indeed, the concept macrobiology is hardly known or used by biologists and is not used to refer to every other area of that science other than microbiology. Microbiology, itself, is just one field in biology as are anatomy, taxonomy and histology.

It is interesting to note that the stock use of micro and macro is to denote the relative smallness or largeness of physical objects. When economists apply this picture to social phenomena, these ordinary concepts undergo a major conceptual revision. The small physical object is identified with the individual units of economics and large objects with the sums or aggregates of individual units.

Very often in many treatises microeconomics is defined as the study of the "parts" (decision-makers, prices, commodities, etc.) of the economic system whereas macroeconomics deals with the "whole" or entire system. Now "part" and "whole" are also concepts borrowed from the language of physical objects; on this level, the whole cake is greater than any



of its parts or individual components. In mathematics, this is no longer necessarily true and the analogy therefore breaks down. In economics, the whole is the set of all individual decision-makers and their mutual interactions. It is in this sense that partial equilibrium analysis may give different results from general equilibrium analysis,<sup>1</sup> this is well known and poses no new problems. However, I shall show that a large number of authors have simply re-named partial equilibrium analysis as microeconomics and general equilibrium as macroeconomics in their attempts to define the micro-macro distinction. This is clear in Abba Lerner's statement of the alleged distinction between micro-and macroeconomics, to cite just one example:

The essential difference ... is in the nature of the abstractions made in the two approaches to comprehending the complexities of reality. In microeconomics, attention is focused on a part of the economic system ... What is distinctive about microeconomics is that such reactions from the outside are abstracted from ... In macroeconomics attention is focused on the economic system as a whole, and its complexities within the system that are abstracted from or disregarded [ 9, p. 1 ].

A failure to appreciate the physical origins of "micro" and "macro" has led to a mis-identification of aggregate and whole with each other. The aggregate is not the whole and consequently, the individual (part) vs. the aggregate and the individual (part) vs. the whole are two logically distinct attempts at defining the micro-macro distinction.

### III. Individual (part) vs. the Aggregate Approach

The first major attempt at defining the micro-macro branches of economics takes the familiar form: macroeconomics deals with the determination of aggregate output, employment and the price level while micro-economics deals with the determination of their individual compositions. A critique of this distinction must start with a definition of economics as the study of agents such as households, firms and so on viewed from the aspect of the administration of scarce resources. In studying the relationship among these basic elements, aggregates are employed as tools of analysis for simplifying the complexities of these relationships. It is misleading then to say that a branch of economics studies aggregates; rather aggregates are employed as means of generalizing these relationships among units. The subject matter of aggregative analysis, as a disaggregative analysis, is economic decision-makers and their behavior, not aggregates as such. An aggregate is a weighted sum of the basic elements. These basic elements are often aggregative (abstract) entities themselves in the sense that commodities, firms and households are usually collected together, irrespective of their differences over time, location, physical characteristics, age and so on. For many purposes in economic analysis these differences are not relevant, and the fiction that the basic elements of economics are well-defined, ultimate individuals is retained as a useful first approximation. Theil summarized the nature



of aggregation neatly -- "aggregation implies that microvariables are replaced by aggregates or macrovariables." These aggregates "are certain functions of the microvariables." From this a rule of perfect aggregation follows: "If the aggregation is perfect, then there is never any contradiction between the macroequation and the microequations corresponding to it. This holds for whatever values and changes assumed by the microvariables and at whatever point or period of time" [ 10, pp. 2, 171, 148 ] . R.G.D. Allen adds: "The economic theory of any model runs on micro-terms, based on decisions taken, e.g., by individual consumers or firms; the macro-relations are derived constructions." He states further that "there must be an explicit translation, through aggregation, from micro-relations" [ 11, p. 694 ]. As a tool employed in economics the technique of aggregation applies equally to all areas of economic investigation. The dictum that choice-allocation investigations are highly disaggregative does not accord with the facts and likewise the impression many have that aggregative analysis ignores problems of allocation and choice. For example some parts of welfare theory are highly aggregative; and Keynesian two-sector models which deal with gross output and employment determination are choice-allocation problems although these are dealt with on a high level of aggregation. The modern theory of labor and capital unemployment due to insufficient demands is a problem in the theory of choice. Summing up, seems foolish to argue that these portions of economic theory which employ aggregates of a high order form a distinct branch

of economic theory. While analogies are merely aids to explanation (except when the things compared are mutually isomorphic), the previous argument is similar to a claim that the axioms of Euclidean geometry form a distinct branch from its theorems.

#### IV. The Individual (Part) vs. The Whole Approach

The other major attempt to specify the micro-and macro-distinction derives from analogy with the part and the whole of the physical sciences. When attention is focused on the part which in economics corresponds to individuals, industries, regional sections and so on one may abstract from circular and indirect feedback effects. However, when the whole is studied which in economics corresponds to the entire system of elements these feedback effects have to be included. As we recall, this was Lerner's view of the distinction. An example he gives after stating the essence of the micro-macro distinction is the famous paradox of wage reductions. The point of the example of course was to show that in macroeconomics, in contrast to microeconomics, indirect and circular feedback effects should not be abstracted from. In addition, macroeconomics simplifies "complexities within the system" through the technique of aggregation: "Heterogeneous collections of many different kinds of things are considered as if they were homogeneous quantities of a simple substance [ 9 ]. In this approach, the use of aggregation as a simplifying device is incidental to the definition of micro-and ma-

croeconomics. The essence of the distinction depends on whether one abstracts or does not abstract from feedbacks of all kinds.

Now it can be argued that feedback effects or "reactions from the outside" also abound in the theory of price formation -- a topic conventionally considered microeconomic. Many examples come readily to mind: the reaction curves of the theory of oligopolistic pricing, dynamic pecuniary externalities, Walrasian general equilibrium models of price determination, the farmer whose attempt to increase his earnings is turned into its opposite. In Soviet price theory, a few years ago, it was rediscovered that true costs contain an essential feedback element. Thus, to direct labor costs of the old economics must be added a feedback portion called "indirect labor costs" required to produce goods in other projects, which as a result of a previously undertaken project, are now deprived of scarce capital and natural resources [ 12] . Note that in the part vs. the whole distinction, the latter pair of concepts simply function as new names for partial and general equilibrium analyses respectively. In this approach, the degree of aggregation used is an irrelevant defining property. A highly disaggregative Walrasian general equilibrium model is macroeconomic in Lerner's definition (although he may not admit this) and a highly aggregative partial analysis would fall under microeconomics. But in applications, a general equilibrium approach will have to treat, to quote Lerner, "heterogeneous collections of many different kinds of things ... as if they were homogeneous quantities of a simple substance."

This is a requirement of theoretical manageability and resource limitations. Thus, in studying the system as a whole in actual practise highly aggregative tools are employed; but note that the whole is logically distinct from the aggregate. Aggregates are tools whereas the whole is properly an object of study. Interactions among elements of a field of study are not unique to the social sciences. The behavior of three electrons taken singly and in isolation from each other is altered when the three are gathered to form a whole system. The behavior of this system of electrons is not the same as the sum or aggregation of the equations giving the activity of each electron taken singly in isolation from the other elements of the system. Many economists and other social scientists have not been clear about the distinction between "aggregate" and "whole" and often mix them up when they apply <sup>the</sup> micro-macro distinction in their respective fields.<sup>5/</sup> This confusion is I think present in Schumpeter's view of the matter. In an earlier chapter of the History of Economic Analysis <sup>he</sup> defined macroanalysis as that "analysis that attempts to reduce the variable of the economic system to a small number of social aggregates ..." But in a later chapter, he notes that cobweb phenomena are neither microeconomics ("because it does not reach individual deciding agents" ) nor macroeconomics ("because its models do not embrace the whole of the economy ...") [ 14, pp. 278, 1168 ].

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<sup>5/</sup> Sociology and political science are currently borrowing the micro-macro distinction of economics apparently without being aware of the problems it has generated in the latter. See e.g., [ 13 ] .

Let us briefly document the point anticipated earlier and made just now that for one large group of upholders of the micro-macro dogma in economics what is actually referred to is partial and general equilibrium. Dernburg and McDougall wrote in their textbook that "macro-economics is set apart as a separate discipline with its own rules because aggregate economic behavior ~~does~~ not correspond to the summation of individual activities." And hence "an entirely different approach to the analysis of macro-economic problems must be developed." [ 15, p. 2 ] . But on closer look, the entirely different approach they offer is the old distinction between partial and general equilibrium. In his equally well-known text Lipsey regards the circular flow of income as the distinctive method of macroeconomics [ 4, p. 330 ]. This method also turns out to be the general equilibrium technique. And this applies, too, to another typical statement made by the micro-macro upholders: "... there are underlying relationships between demand and supply which can be ignored in micro-analysis but which are very important in the economy as a whole ..." [ 16, pp. 13, 11-17; 17 ] .

Most writers on the career in economics of the micro-macro distinction attribute its origin to Ragnar Frisch who first coined these concepts in 1933. A reading of Frisch's use of micro and macro-analysis confirms the view that what a majority of economists really mean by macroeconomics is general equilibrium analysis. Conversely, what they mean by microeconomics is partial analysis. Let us quote from Frisch:

The micro-dynamic analysis is an analysis by which we try to explain in some detail the behavior of a certain section of the huge economic mechanism, taking for granted that certain general parameters are given ... Macro-dynamic analysis, on the other hand, tries to give an account of the fluctuations of the whole economic system taken in its entirety. Obviously in this case it is impossible to carry through the analysis in great detail. Of course, it is always possible to give even a macro-dynamic analysis in detail if we confine ourselves to a purely formal theory. Indeed, it is always possible by a suitable system of subscripts and superscripts, etc., to introduce practically all factors which we may imagine ... [ 18, p. 172 ] .

We conclude that the second major approach to the micro-macro distinction actually consists of renaming partial and general equilibrium analyses. In contrast to the first major approach, the degree of aggregation is an irrelevant defining property. Although he may not admit it, a highly disaggregative Walrasian general equilibrium model would fall under Lerner's definition of macroeconomics -- a topic conventionally classified under microeconomics.

Note then that in this second major approach "whole" is logically distinct from "aggregate" although in describing the whole system one is usually forced to use highly aggregative techniques of simplification.

#### V. Keynesian Origins

The habit of dividing economics into a micro-and macro branch was in part due to the understandable enthusiasm with which Keynes' General



Theory of Employment, Interest and Money (1936) was greeted. It led such eminent men as Professor Harrod to write "the first person to develop a fully articulated theory of what we now call macroeconomics" [19, p. 139] . Thus according to Professor McCracken: "In the main, classical economics, and more especially neoclassical economics is microeconomics, while Keynesian economics is macroeconomics" [20, p. 30] . Other typical statements which added to this division is Joan Robinson's "when you are thinking of output as a whole, relative prices come out in the wash" [2, p. 236] <sup>6/</sup> Yet nowhere in the General Theory is the concept of macroeconomics used. By "general" Keynes seems to have meant a particular theory he had discovered from which a Sayan aggregative general equilibrium could be deduced only as a special "limiting point of the possible positions of equilibrium" [22, p. 3] .

#### VI. Implications For Some Economic Puzzles

Some of the analytical puzzles which have led to quite a bit of misallocation of effort in economics are solved by the foregoing analysis. Machlup's statement that to say "macro-equilibria are 'contained' in the general micro-equilibrium (which) contradicts the plain meaning of the words" [2, p. 98] is shown to be a pseudo-problem since the meaning of the micro-macro distinction does not exist. Furthermore, it is meaningless to assert

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<sup>6/</sup> Strictly speaking, this is not generally true.

the formal independence of macro-from micro-theory as others have done [e.g., 23, p. 62 ]. The famous and bothersome puzzle -- what to do with a residual "realm of the middle," is also solved. To those unfamiliar with this methodological problem, Machlup sums it well [2, p. 100 ] :

...the "realm of the middle" remains without a name. The dichotomy of economic theory would then become impossible, since everything between the single individual and the whole nation ... would be left out of the picture. To escape this dilemma one must expand the concept of micro-theory and relegate to it the behavior models of groups of goods and services. If this is done, however, the distinction between individual and group no longer serves as the criterion for distinguishing between micro-and macro-economics.

Attempts to solve this conceptual dilemma have ranged from Vickrey's [24, p. 114 ] trinitarian division of economics such that aggregates of the middle range would fall under input-output economics to Boulding's [25, p. 259 ff. ] criterion whereby aggregates composed of "quasi-homogeneous" quantities may be classified under microeconomics and aggregations of completely heterogeneous quantities under macroeconomics.<sup>7/</sup>

A classical rule in linguistic analysis we have used states that one ought not to ask for the meaning of a concept but look instead at its functional context in ordinary discourse [26] . In economics micro and macro

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<sup>7/</sup> For an elaborate but related attempt, see [7, p. 5] .

have actually functioned for "highly disaggregative" and "highly aggregative" or partial and general equilibrium analyses respectively. If economics is the theory of choice, the methods used depend on the problem and resources on hand. To suppose that the techniques and levels of aggregation and abstraction used generate two distinct branches of economics has led to confusing analytical puzzles. In offering a solution to this confusion, the gathering of empirical data is irrelevant; knowledge alone of the rules of language is sufficient in dictating an answer.

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