

The irreducibility of macro to microeconomics: a methodological approach*

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Este texto critica a idéia, bastante difundida atualmente, da necessidade de se buscar microfundamentos para a macroeconomia. Os autores argumentam que esses dois campos da economia, a micro e a macroeconomia, utilizam abordagens metodológicas diferentes. A microeconomia trata dos problemas econômicos segundo uma metodologia lógico-dedutiva, enquanto a macroeconomia caracteriza-se mais por uma abordagem histórico-indutiva. A tentativa de reduzir-se a macroeconomia à microeconomia, ou vice-versa, traz apenas um empobrecimento à ciência e ao debate econômico, em que, idealmente, deveria haver espaço para um grande pluralismo de idéias e correntes teóricas.

1. INTRODUCTION



The relation between microeconomics and macroeconomics has been story, in the sense that the subject has been ignored, discovered, settled and ignored again. Indeed, such relation is one of the most intriguing topics in contemporary economic theory. For some thirty years, economics has been embroiled in a complex controversy regarding the microfoundations of macrotheory, and many in the mainstream of the profession have become fascinated with the notion that macrotheory must be based on explicit and sound microfoundations. While many mainstream economists have been working full-time on microfoundations of macrotheory, non-mainstream economists replied that it is microtheory that is in need of a sound macrofoundation. Not surprisingly, little has been definitely settled. But, however tiresome inconclusive controversies tend to become, we cannot merely walk

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away from this one, for a variety of issues of great relevance crucially depend for their resolution on coming to a satisfactory understanding of the foundations of macroeconomics as an autonomous discipline.

This paper is predicated upon the notion that any attempt to make some sense of the microfoundations issue involves taking methodology as the most appropriate level for getting on the road in the task of opening what seems to be a Pandora's Box. It is an unfortunate aspect of contemporary economics that methodological discourses are denigrated, for they are indispensable to the progress of any science. The perennial complaint that "Those who can, do; those who can't, pontificate on method" is simply false, for the very reason that those economists who criticize methodological discourses usually engage in just that in their efforts to banish such supposedly undesirable activity from the discipline.

Our purpose in this paper is to argue for the relative epistemological autonomy of macroeconomics with respect to micro reasoning, thus arguing against the vain attempt to reduce macro to microtheory, which is implied in the search for an all-encompassing microfounding framework. The endurance of two separated fields in economic theory — macro and micro — is no accident, and it does not derive from the definitional truth that while the former deals with aggregates, the latter is concerned with individual units. It may partially derive from the fact that microeconomics is concerned with individual behavior — which can be subject to deductive reasoning — while macroeconomics focuses on systemic behavior — where the whole is different from the sum of its constituent parts — but this hypothesis has also some tautological content. The distinction in fact derives primarily from their use of two different methods: while micro employs primarily a logical-deductive reasoning, macro uses mainly a historical-inductive one.

It should be emphasized from the outset that we do not intend to criticize neoclassical theory as such, but only its insistence on unifying economic theory according to a single and all-encompassing model. Indeed, this is an arrogant epistemological temptation into which neoclassical economists have not been falling alone, for some Marxist or Keynesian economists often adopt such a stance as well. When doing that, however, they gloss over the complex, contradictory and continuously changing nature of the economic systems that economic theory is supposed to explain.

This paper is organized as follows. Section 2 details what is meant here by macrotheory using a historical-inductive method and microtheory following a logical-deductive one. After looking at some implications of such methodological dissonance for the microfoundations debate, we argue that the notion that sound microfoundations necessarily means one provided within a single microfounding framework, be it neoclassical or not, is a blinkered view. Section 3 details the role played by inductivism and deductivism in the split between macro and micro and the distinction between methodological individualism and methodological holism, this being done with a view to support our contention regarding the imperative of approaching the microfoundations issue from a relativistic and thus pluralistic perspective. In arguing that way, we follow the so-called Babylonian tradition described by Dow (1985), while the search for a single microfounding framework is a Cartesian-Euclidean dream. Section 4 is intended to argue that implicit in the Keynesian revolution, interpreted here as an attempt by Keynes to convert macroeconomics into an autonomous discipline, is in fact

the emancipation of macroanalysis from a single, time-invariant microfounding framework. We argue that underlying Keynes' macro project is the same plea for relativism and thus pluralism as regards the microfoundations issue that we suggest in this paper. Section 5 then poses the question of to what extent macrotheories really need microfoundations in order to have epistemological validity. Finally, Section 6 is intended to suggest that coherent and sound microfoundations can be provided, logically speaking, by alternative microfounding frameworks, thus showing that the neoclassical plea for a single, all-encompassing framework cannot be seen as a value-free one.

Before proceeding further, a caveat is required. In this paper, when we speak of microeconomics, we are just referring to standard neoclassical theory, as it appears in mainstream microeconomics textbooks or, in a more elaborated and abstract form, in the general equilibrium analysis of the Arrow-Debreu type.¹ We are excluding from the concept more recent developments on the working of imperfect markets, that are crucially dependent on empirical research. On the other hand, we see macroeconomics as a theory that derives from Keynes original contribution.²

2. WHAT ARE WE REALLY LOOKING FOR IN THIS PANDORA'S BOX?

Inductivism and deductivism have played a considerable role in the split between microeconomics and macroeconomics. This fracture arises from their employing different ways of reasoning, microtheory being essentially logical-deductive, whilst macrotheory is more inductively and historically inclined.³ In this sense, a main contention we wish to make is that the idea that sound microfoundations for macrotheory means one provided within a single, time-invariant microfounding framework is a blinkered view. It is because macrotheory employs mainly a historical-inductive method that the very attribute of soundness of a given microfounding framework for macro has an inescapably relativistic, historical nature. Different is the case of microtheory: since it follows mainly a logical-deductive method, it can afford having a single starting point: the individual maximization hypothesis. What we disagree with is not the desirability of providing macroeconomic results with sound microfoundations. Even though they are not fundamental to validate those results, since they can be made to stand on their own, without the need of showing that they have a definite connection with a predetermined individual behavior, the search for microfoundations in each macroeconomic situation will only strengthen the whole reasoning. In this case, however, we are thinking in *ad hoc* microfoundations instead of looking for a single and invariant one.

The difference in methods imply different ways of viewing the same reality. When neoclassical economics looks for a universal and invariant microfounding framework, it falls into an old positivist temptation: to find a unique logic for the whole economic

¹ For instance, Varian (1984) and Ferguson (1980).

² For instance, Dornbusch & Fischer (1984), Sachs & Larrain (1993) and Mankiw (1992).

³ After having written a first version of this paper, we came to found out that a similar suggestion had already been made in passing by Pheby (1988, p. 20), to whom the split that exists between micro and macroeconomics is partially explained by their employing different ways of obtaining results, micro being essentially deductive, while macro is more inductively inclined. However, Pheby does not elaborate on his assertion.

system. From a relativistic standpoint, which we share, it is the notion of an invariant framework for microfounding macroeconomics that lacks sound logical foundations. It is neither necessary nor desirable nor possible to develop a single, overarching microfounding framework, which can support all macro reasoning.

Although the basic method used in macroeconomics is historical-inductive, microfounding can be a powerful tool in macroeconomics research. However, a second point we would like to stress in this paper is that there are different ways of microfounding macroanalysis, with different strengths and weaknesses, and suitable to different contexts. Such multiplicity is consistent with sound economic reasoning, for it does not violate the common method derived from the inherent logic of the subject. For instance, neoclassical economists would not deny that maximizing behavior does not take place in a vacuum, but rather has to have a setting or structure. In standard neoclassical analysis, whose central methodological dictate is that all explanation of economic phenomena must be reduced to the maximizing behavior of economic agents, this is provided by the traditional assumptions about firms and individuals in a competitive environment, where the technologies available to the firms and the preferences of the individuals are to be treated as given. The endowments of factors then provide the initial conditions within that setting, and rational maximizing is the assumed mode of behavior on the part of the individuals that leads to a solution condition which is market-clearing.

Yet, as Nell & Semmler (1991) correctly noted, purged from their normative content (the specifics) this hardly gives a picture of neoclassical analysis alone, for it also provides a summary of virtually any analytical approach to an economic issue: the setting must be specified by identifying the agents, the knowledge available to them, the social pressures, their goals and desires, the characteristics of the technology, and so on. Then the initial conditions will be spelled out, with the assumed mode of behavior by individuals coming next and then, given these, one will try to develop the most appropriate kind of analysis, based on suitable conditions for solutions. In other words, what the differences in methods between micro and macro really rules out is not the possibility of alternative microfoundations, but rather the naive idea that constrained choice, maximizing behavior is the only logical way of microfounding macroanalysis. What we dispute is thus not only the possibility of having a single, all-encompassing microfounding framework, but also the notion that that framework should be based on maximizing behavior precisely because microanalysis follows a logical-deductive method.

Following Nell & Semmler (1991), we would argue that the theorizing procedure just sketched above is in fact followed by any economic analysis, not just by neoclassical economics. It starts by identifying a set of agents engaged in economic activity, giving some form to their desires, goals, knowledge and abilities. These agents may be rational individuals, but they could equally be firms driven by institutional goals, or social classes. They may maximize, and if they do they could maximize growth instead of profits, or they could pursue multiple goals. Or they could follow other types of behavior such as adaptive behavior, routines, imitation, conventions or institutionally determined rules. Even though it is almost consensual that firms aim to make profits, the problem with the neoclassical approach is that it translates this profit criterion into profit maximization. But as institutionalists and behaviorists like Simon (1976)

have been stressing, the complexity of decision problems as well as the fact that firms are made up of many different individuals with different interests and different views about the environment and the constraints facing the firm do invalidate the notion of maximization, so that decision-making is better conceived in terms of satisficing: decisions are reached in accordance with a set of routines and only if outcomes fall short of aspiration levels will there be an attempt to reassess and eventually improve the routines. Thus, there is no reason why macrotheory must be necessarily based on profit maximization, even if it is believed that firms are guided by the profit motive.⁴

Neoclassicism, therefore, is just a particular way of filling in a general format of microfounding framework. Altogether different — even contradictory — specifications can easily be set up, and some will clearly be more applicable to some macroeconomic explanations. A Post Keynesian approach would take households, divided into social classes, and oligopolistic business firms operating given techniques as the setting, with given autonomous spending as the initial conditions. The mode of behavior assumed is that agents will follow sensible rules, given by tradition, custom or routines governing induced expenditures, and the purpose will be to determine the equilibrium in spending, as influenced by relative shares. This may be long run or short run, but it will normally be a demand equilibrium; there need be no binding supply constraints. No form of maximizing behavior is assumed, and no factor endowments need be considered among the initial conditions. Nor is market-clearing required for equilibrium, for the “injections=withdrawals” condition balances the inducements and inhibitions on spending, and this need say nothing about market supplies or utilization of factors. The familiar Keynesian macro equality between leakages and injections is fully compatible with any specification about micro behavior, and it is logically possible to microfound the macro identity between investment and saving with a variety of alternative assumptions about the behavior of micro units, for such identity is valid irrespective of any specification about micro behavior. There is nothing intrinsically specific about the alternative way of microfounding just described that renders it logically inconsistent, for it does not violate any soundness condition spelled out on purely logical terms. Obviously, it violates the soundness condition spelled out in the neoclassical prescription. But on purely logical grounds, there is nothing intrinsically problematic about a microfounding framework which neglects the determination of prices in the neoclassical fashion of supply and demand in perfectly competitive markets.

A Classical or Classical-Marxian approach, in turn, would take technology and social classes as the setting, the labor force, or its growth, and capital funds as the initial conditions, assume an institutionally specific form of behavior by capitalists, and the following of customary spending rules by households. It would then determine the various possible comparative static equilibria of prices, the rate of profits, wages, and also growth rates, relative industry sizes and consumption, on the basis

⁴ Moreover, the defense of firm maximization based the notion that there is some form of selection that weeds out firms that do not behave as if they maximize, cannot be defended on purely logical grounds, for one can conceive of many plausible evolutionary situations in which the mean survivor need not be a maximizer, or even particularly efficient from some global standpoint (Nelson & Winter, 1982; Iway, 1984; Hodgson, 1990). A fuller discussion of this and some other central aspects of the neo-Schumpeterian approach may be found in Lima (1994a).

of a reproduction condition. Once again, no market clearing is involved, no individual maximizing takes place, and there are no binding supply-side constraints. We could then perform analytical exercises such as comparative statics or steady-state dynamics, such exercises having no intrinsic neoclassical content, this being so for the pedestrian reason that there is nothing intrinsically neoclassical about the solution and dynamic properties of a system of economic equations. In any case, neither of these alternative macro models would draw on individual rational maximizing, for both would see behavior as being strongly influenced by institutions and liable to change in the course of time. Neither would assume market clearing, nor do factor endowment scarcities would play any significant role. Notwithstanding, both would follow the general format for a macroeconomic analysis endowed with logically sound microfoundations.

Thus, neoclassicism is just a specific instance of the general format for building a macromodel with logically sound microfoundations. Unlike the mainstream view, for which the micro-macro bifurcation is rectifiable only within the narrow limits of the constrained choice, maximizing behavior framework, we sustain that that bifurcation is primarily methodological. The adoption of an invariant, with respect to time and space, framework is only possible in neoclassical microtheory, whose method employed is primarily logical-deductive; in the realm of macrotheory as such, whose method used is mainly historical-inductive, where researchers look rather for regularities that are historically determined, such attempt is inescapably vain.

To say it another way, the methodological chasm between macro and micro renders the search for *the* microfoundations of macroeconomics self-defeating, in the sense that the distinct logic of their underlying methodologies renders the building of *the* microfounding framework a mythical dream. It is in this sense that we refer to the methodological dissonance between micro and macro as being at the root of the impossibility of deriving a single, trans-historical microfounding framework. We can developed the specifics of an open microfounding framework we need, as we need it, for particular issues, basing our analysis on the actual stylized facts of the setting and the initial conditions, and assuming the incentives and motivations that are actually called for by the rules of the game. In a sense, each macro paradigm builds its own notion of microfoundation, this being one of the reasons that makes ours a relativistic and thus pluralistic position as regards the microfoundations issue.

Macroeconomics deals with relations that are, at least in principle, deducible from the actions of individual agents. Yet, it is not necessary, to an understanding of macroeconomic relations, to start from individual actions. This is not the method employed by macroeconomists. They rather inductively observe macro phenomena, pay careful attention to the new historical facts that changed the macro relations, compare the facts with the existing theory, and derive new hypothesis and models. Only afterwards they will search for microfoundations, and the latter in most cases turn out to be partially *ad hoc*, instead of being intrinsical to the model, as it happens in neoclassical microtheory. The diversity of methods in question does not mean that we should give up making serious efforts to provide macrotheory with sound microfoundations, provided that it just means searching for greater consistency between the two disciplines, instead of trying to reduce one to the other.

Sound microfoundations do not necessarily mean foundations in the theory of individual behavior, but rather a consistent account of how microbehavior affects, and it affected by, macrobehavior. The need for microfoundations should not be interpreted in a narrow and a-historic manner. Neoclassical economists often regard alternative microfounding frameworks as too woolly and imprecise as well as lacking in choice-theoretic foundations. However, they should consider the fact that preferences and utility, for instance, are not easy to measure either. Even though we may have become socialized into reasoning in terms of well-defined preference orderings, the latter are by no means easier to identify in the real world than, for instance, monopoly power orderings. Besides, once we allow for learning, habit formation and social and institutional influences, then the historical contingency of the neoclassical microfounding framework is made clear, thus rendering problematic its choice-theoretic basis.

As Solow (1985) himself suspected, the attempt to construct economics as an axiomatically based hard science is doomed to fail, the main reason being that economics is a social science. In his view, the end product of economic analysis is likely to be a collection of models contingent on society's circumstances and on the historical context, and not a single monolithic model for all seasons. Economists should set themselves the task of modeling particular contingent social circumstances, which means they should be conscious of the fact that different social contexts may call for different background assumptions and therefore for different models. Economists should recognize that the validity of an economic model may well depend on the social context. Since the proper choice of a model depends on the institutional context, few things should be more interesting to a civilized economic theorist than the opportunity to observe the interplay between social institutions and economic behavior over time and place.⁵

In other words, the demand for microfoundations for macroeconomics is as valid as the search for proper macrofoundations for microtheories. In the search for greater consistency between micro and macro it is necessary consider not only the microfoundations of macrotheory, but the macrofoundations of microtheory as well. From a methodological point of view there seem to be no decisive arguments which would support the need of a single, universal microfounding (or macrofounding, for that matter) framework. Microtheory and macrotheory have different perspectives, research targets and employ distinct methods, so that no single microfounding framework can claim methodological priority over any other. In this sense, what we dispute is the notion that any macrotheoretical statement that cannot be immediately reduced to neoclassical microtheory should be rejected as hopelessly unsound. For to argue that good macrotheory should have a micro dimension, in the sense that there should be a correspondence between macro outcomes and micro behavior, does not imply that constrained choice is necessarily the best device.

⁵ After noting that modern economics has an ambition and style rather different from those envisaged by him, Solow wrote: "My impression is that the best and brightest in the profession proceed as if economics is the physics of society. There is a single universally valid model of the world. It only needs to be applied... We are socialized to the belief that there is one true model and that it can be discovered or imposed if only you will make the proper assumptions and impute validity to econometric results that are transparently lacking in power" (p. 330).

Micro and macro are not irrevocably incompatible bedfellows, but it is misleading to insist that an adequate explanation of how micro phenomena constrain a macromodel must necessarily be based upon a constrained choice framework. What is logically incompatible is not macro and micro as such, but the specificities of their methods, on the one hand, and the search for an invariant framework for providing such micro-foundations, on the other hand. We are not disputing their compatibility on epistemological grounds, but only the mainstream idea that there is only one framework within which such microfounding can be consistently carried out. It is only in the neoclassical microfoundations literature, which rests on the shared view of microeconomists that economics is a study of constrained choice in a variety of circumstances, that the attribute of logical soundness is conceived in a narrow sense. Indeed, the microfoundations project is inherent to the neoclassical project, particularly to its reductionist methodological framework. Once we adopt a broader sense for microfoundations, the normative claim that unless they are provided according to neoclassical requirements, no microfoundations at all have been provided, becomes simply nonsensical.

3. WHAT ARE SOME OF THE METHODOLOGICAL FIRST PRINCIPLES?

The alternative use of inductivism and deductivism has played an important role in the split between microeconomics and macroeconomics. This methodological fracture arises from their employing different ways of reasoning, microtheory being essentially logical-deductive, whilst macrotheory is more inductively and historically inclined. This is no mere matter of differences in emphasis, for these two methodological approaches have very different ideas as to how knowledge can be acquired, thus rendering them not always compatible or implying either that they are not naturally compatible or that an eventual compatibility is subject to certain specific conditions.

Deduction involves applying logic to some general law, or axiom, possibly in conjunction with some initial conditions, to derive particular theorems. Induction, in turn, starts at the other end of the chain; particular conjunction of events are observed to occur and, if these conjunctions are taken to be causally connected (and expressed as theorems), logic is applied to work backward towards the axioms (Dow, 1985). Inductivism and deductivism are therefore two extreme methodological positions. Inductivism, which is a view most closely associated with the work of Sir Francis Bacon in the early 60s, stresses observation and systematic statistical work as the most adequate route to knowledge. Deductivism, in turn, which is an approach most closely associated with the work of René Descartes in the early 60s, emphasizes thought and introspection. While deductive arguments tend to move from general to particular statements, induction involves reasoning from particular statements towards more general ones (Pheby, 1988).

Even though few economists can be classified as fully fledged inductivists or deductivists, we would argue that while macrotheory ultimately employs an inductive method, microtheory essentially employs a deductive one. Truly enough, inductivism and deductivism are not employed solely by macrotheorists and microtheorists, respectively. However, while macrotheory is primarily induction-guided, microtheory

is essentially deduction-guided. They use a great deal of these ways of reasoning by the nature of their research agenda. Neoclassical microtheory, for instance, is essentially deductive, in the sense that it starts from a well-defined particular assumption, namely, agents rationally maximize their interests in a market where competition prevails. From this basic assumption it is then able to fully develop a sophisticated model of how a market-coordinated economy optimally allocate resources. The neoclassical microtheorist may eventually check his or her model with reality along the way. But, if we further assume that the model maintains its logical consistency, when reality does not conform with it, the discrepancy will have to be explained by the distortions in the market, not in the model itself.

Methodological sciences such as mathematics and logics are also essentially logical-deductive. Among the substantive sciences, however, no discipline is as extremely deductive as neoclassical microtheory. Physicists and biologists usually employ deductive reasoning, but they do that in a limited way, for they cannot assume aprioristically that atoms or molecules are fully rational; they can develop theories that predict their behavior only after inductively observing regularities in controlled experiments. Neoclassical microtheory, in turn, takes it as axiomatic that fully rational agents can, should and need behave in a maximizing way.

The fact that micro and macrotheory use primarily different methods does not mean that these two ways of reasoning should be regarded as being necessarily mutually exclusive, for this would imply an inherent micro-macro incompatibility. For instance, we can devise syllogisms where deductive arguments may involve general statements in both premises and conclusions, and inductive arguments that contain general statements and conclude with a particular one. Besides, there are no facts without deductive theory, in the sense that the mere classification of events require a taxonomy based on some deductive reasoning. In standard scientific methodology it is clear that the deductive and the inductive methods are complementary, being used alternately or jointly in any scientific inquiry. Yet, it is well known since the split between Descartes and Bacon that a scientific school or a scientific branch can emphasize the use of one or the other method.⁶

As Pheby (1988) pointed out, a distinction needs to be drawn between inductivism and induction, on the one hand, and between deductivism and deduction, on the other hand. While inductivism is a broad way of approaching scientific work, induction can and often does play an important part in this approach. Hence, the use of induction is a necessary but not sufficient condition to be an inductivist, so that an economist may employ induction without feeling the need to embrace the complete inductivist package. In turn, deduction, whether axiomatic or mathematical, can be employed in a manner designed to facilitate, ultimately, statistical analysis and testing. However, deductivists tend to believe that statistical and empirical knowledge is so transitory that it is of little worth, deductive analysis thus providing greater understanding. Even though deductivists do not necessarily ignore empirical evidence, they treat it as nothing more than an illustration of deductive argument.

⁶ In the classical methodological dispute — the so-called *Methodenstreit* — between the German historical school, represented by Schmoller, and the Austrian logical school led by Menger, the methodological question at stake was ultimately one of emphasis, not of exclusivity. Even though macroeconomics draws more heavily on deduction than the historical school, its emphasis is on historical-inductive methods.

It is worthy of mention that the historical nature of macroeconomics has been recognized even within mainstream circles. For instance, the twin concepts of path-dependence and hysteresis have been used in recent macrotheory to underline the notion that the tendency of macro variables is not independent of their own history. The notion of hysteresis attempts to conceptualize the traces left by the past in the variable values produced by an economic system. Hysteresis arises when the variable values created by a macro system depend, in addition to its relations and parameters, on the history of those values. In a paper on hysteresis in unemployment, Blanchard & Summers (1987) show that the European experience from the late 70s to the mid-80s requires the development of an alternative theory embodying the idea that the equilibrium (natural) unemployment rate depends on the history of the actual unemployment rate. Since the natural value of the unemployment rate is path-dependent, history really matters.⁷

Moreover, there is no umbilical association between methodological individualism and the recurrent neoclassical plea for a single microfounding framework. First of all, a distinction should be made between *ontological* individualism and *methodological* individualism. While the former asserts the true, but trivial, proposition that ultimate social reality consists solely of acting individuals, the latter maintains that the only genuine scientific explanations are those that are reducible to individualist explanations. Even though we do not dispute the former proposition, to reject a macrotheory on the grounds of its incompatibility with a predetermined kind of individual behavior, be it maximizing or not, is a serious epistemological slip. The methodological individualism underlying the neoclassical approach means that it is to the individualistic method — analysis of the decisions of individuals — that we owe whatever understanding of economic phenomena we possess. It is believed that neither aggregates nor averages do act upon one another, so that it will never be possible to establish necessary connections of cause and effect between them as we can between individual phenomena such as individual prices. Methodological individualism is a methodological statement asserting that economists should explain aggregate relationships in terms of the behavior of individual agents.

A holistic view of the economy, on the other hand, is one in which the behavior of the whole economy is more than a simple aggregate of individuals' behavior. Methodological holism means that there are entities that cannot be reduced to individual dispositions such as institutions, social structures and climates of opinion. These holistic entities exist independently of individual wills and are taken for granted when individuals act. Therefore, holistic entities can be causal factors that transform individual dispositions into dependent variables. Even though individual choices and preferences should not be necessarily denied, they are severely limited by the existing institutions, social norms, socioeconomic classes, and even macroeconomic events. In such a case, the definition of individual preferences is not sufficient to allow us to

⁷ The idea that the macroeconomy may exhibit hysteresis is not new. Hysteresis effects in unemployment were, for instance, discussed in Phelps (1972), and recent examples of hysteresis effects in economics are surveyed by Franz (1990). See also the minisymposium on hysteresis in the *Journal of Post Keynesian Economics* (JPKE, 1993) for papers dealing with the implications of the hysteresis concept for theoretical and predictive purposes, particularly with its relevance to an understanding of economic processes where economic events occur in a historical context with an uncertain future.

understand macroeconomic behavior. As Arrow (1994) himself recently recognized, the use of social categories is of absolute logical necessity when doing economic analysis, in the sense that social variables, not attached to particular individuals, are essential in studying the economy.

Moreover, methodological individualism does not necessarily imply the search for a single, maximization-based microfounding framework. The Austrian approach, for instance, clearly demonstrates that an individualistic world view is logically compatible with a non-neoclassical microfounding framework, thus supporting the relativistic and thus pluralistic position advocated in this paper. To put it metaphorically, methodological individualism is not a road that leads exclusively to neoclassicism, so that those who favor an individualistic world view do not have to place all their bets in neoclassical horses. More precisely, even those economists who have a strong revealed preference for methodological individualism are freed from seeing a single, maximization-based structure as the only acceptable one in their search for a consistent and coherent, logically speaking, microfounding framework. Even though the Austrian school in fact faces a microfoundations problem which is at best solved (or at most avoided) by means of eschewing macroanalysis altogether, in the sense that microeconomics is conceived as coterminous with economics, it provides a logically consistent counter-example to the necessary association of sound microfoundations with maximizing behavior.

Unlike neoclassical economists, Austrians are more intrigued by the dynamic and unpredictable change inherent in markets than by the stability that makes equilibrium models appealing tools of analysis. They provide a counter-example to the necessary association between an emphasis on methodological individualism and the focus on a constrained-maximization microfounding framework; even if one concedes that methodological individualism is the best route to an understanding of economic phenomena, a constrained-maximization structure does not emerge naturally as the most adequate microfounding framework. As Vaughn (1994) put it, even though neoclassical economists could also argue that they are theorizing about the human pursuit of projects and plans within the known environment when they model choice as constrained maximization, Austrians are likely to claim that constrained maximization is too narrow a framework to capture the kinds of action that they take to be distinctly human. Human action involves typical economizing behavior, to be sure, but it also involves breaking out known constraints and discovering new ways of doing things and new wants to satisfy. In fact, the whole Austrian emphasis on uncertainty is linked to a concern with the limitations of knowledge and the way human beings overcome those limitations. In this view, the fact that knowledge is multifaceted, heterogeneous and desegregated is one of the driving features of market processes. Even though Austrians agree with neoclassical economists that human beings attempt to act rationally to achieve their purposes, the fact that human action takes place in time and always under conditions of partial ignorance about the present and total ignorance about the future implies that a consistent theory of market processes can be neither static nor based on the assumption of perfect knowledge.⁸

⁸ For Hayek, for instance, rationality is the outcome of the interaction among agents in markets (Steele, 1993). Now, contrast this position with the more orthodox one of treating rationality as postulate or precondition for markets.

The imperative of approaching micro and macrotheory in a different way, and so, approaching the microfoundations issue from a relativistic and thus pluralistic perspective, follows the so-called Babylonian tradition described by Dow (1985). For Dow, the two modes of thought that have been governing intellectual inquiries can be referred to as Cartesian-Euclidean and Babylonian, by mode of thought being meant the way in which theories are constructed and presented, and how we attempt to convince others of the validity or truth of our arguments. The Cartesian-Euclidean tradition argues that all theorizing can be done using one unified framework. The Babylonian tradition, in turn, believes that economics pertains to a vast area of knowledge which, given the bounded rationality of the analyst and the present state of theory, cannot be analyzed in terms of one model. Models are by their very nature special cases, rather than being relevant for the whole universe of discourse.

The Cartesian-Euclidean mode of thought involves establishing basic axioms, which are either true by definition or self-evident, and using deductive logic to derive theorems, which are not self-evident. Dow uses the term Cartesian-Euclidean very broadly, to include all scientific thought influenced by the ideal of closed systems of axiomatic logic. In economics, for instance, the axioms of consumer rationality allow a wide range of theorems to be derived by deductive logic. In Dow's view, the application of this axiomatic approach to generating knowledge has fostered reductionism (or atomism) as a distinctive feature of this mode of thought. Because the entire logical structure depends on the basic axioms, it is important to make them as widely acceptable as possible, i.e. as close as possible an approximation to being self-evident. As a consequence, propositions are broken down into their smallest components, such that one set of axioms can be identified from which all propositions can be derived by means of deduction. Within economics, reductionism requires that basic axioms refers to the smallest unit of inquiry, i.e. the individual.

The Babylonian approach, in turn, rather than using a linear system of logical deduction from basic axioms, starts from the view that it is impossible in general to establish watertight axioms and points to the way in which axiomatic error is compounded by each link in the deductive chain of logic. The alternative approach is to employ several strands of argument which have different starting points and which, in a successful theory, reinforce each other; any argument, therefore, does not stand or fall on the acceptability of any one set of axioms. Knowledge is generated by practical applications of theories as examples, using a variety of methods. In this approach, some phenomena are seen as so complex that it is inconceivable that human minds could capture it in a complete system of deductive logic. But this does not mean that Babylonian thought disregards logic. Rather, logic is applied within partial systems, which means that two lines of argument may have conflicting assumptions or conclusions, but the conflict is not a logical one for it simply reflects different choices as to which part of the system is chosen for inquiry. Since the ability to agree on any one set of axioms is doubted within the Babylonian approach, there is no particular incentive to make the axioms as narrow as possible. Indeed, since Babylonian arguments can draw on a range of facets of a system, it is more useful to focus on the nature of the system as a whole. Rather than being reductionist or atomistic, therefore, this approach is holistic. While a Cartesian-Euclidean system of thought is bound together by the set of axioms from which all theorems are derived, Babylonian thought

is holistic in the sense that the binding factor of theories is a perception of how the system as a whole works. Different bodies of theory will reflect different choices as to which facets of the system to concentrate on, derived from different perceptions as to how the system works, no one body of theory purporting to present a complete, closed system. It is in this sense that our plea for a relativistic and thus pluralistic approach to the microfoundations issue can be seen as closely following the Babylonian tradition.

From a relativistic and thus pluralistic perspective, there are several kinds of macroeconomics, each requiring its own microfoundations, thus rendering totally delusive the search for a single, time-invariant microfounding framework. Methodological tolerance is thus required, for there exist several macrotheories, alternative visions of how economies work, grounded on alternative sets of microeconomic foundations. It is the methodological dissonance between microtheory and macrotheory that is at the root of the need for relativism and thus pluralism as far as microfoundational issues are concerned. As Feyerabend (1975) cogently put it, some freedom from single and narrow methodological prescriptions has often proved to be an essential precondition for new insights and the advent of new theories, and this is no less true for the natural sciences than for the social sciences. The search for a single, all-encompassing microfounding framework is therefore deleterious to scientific progress in economics.

Indeed, the search for *the* microfounding framework (be it neoclassical or not) amounts to nothing more than a Cartesian-Euclidean dream. In this context, it is worth stressing that even though constrained maximization is the core of the imitation of physics by neoclassical economics, we would suggest that the lesson to be drawn from the physics of this century, in particular from the quantum mechanics developed by Max Planck, is that it is futile to search for a single, unified theory incorporating micro and macro phenomena.⁹ As Mirowski (1989) so cogently showed, the hard core of neoclassical theory is the adaptation of mid-nineteenth century physics as a rigid paradigm, and that hard core has been preserved and nourished throughout the twentieth century, even after physics has moved onwards to new metaphors and new techniques. To a quantum physicist, for instance, the universe is an inseparable web of vibrating energy patterns in which no individual component has reality independently of the entirety, which led Hsieh & Ye (1991) to suggest that since the world is a collection of quantum mechanical systems, this is analogous to the microfoundations of macroeconomics. However, their conclusion that macrotheory will be standing on shifting sands if it does not have firm microfoundations, does not necessarily follow. And even granted it followed, it hardly implies that it is feasible to search for a single theory unifying both micro and macro.¹⁰

⁹ An excellent discussion of the philosophical aspects of quantum mechanics may be found in Gibbins (1987).

¹⁰ Keynes once noted that unlike physics, such parts of economic theory as are expressible in mathematical form are extremely easy when compared with the economic interpretation of the complex and incompletely known facts of experience: "Professor Planck, of Berlin, the famous originator of the Quantum Theory, once remarked to me that in early life he had thought of studying economics, but had found it too difficult! Professor Planck could easily master the whole corpus of mathematical economics in a few days. He did not mean that! But the amalgam of logic and intuition and the wide knowledge of facts, most of which are not precise, which is required for economic interpretation in its highest form is, quite truly, overwhelmingly difficult for those whose gift mainly consists in the power to imagine and pursue to their furthest point the implications and prior conditions of comparatively simple facts which are known with a high degree of precision" (1972, p. 186, f. 2).

It must be recognized that neoclassicism already has well-developed responses to indictments of maximization such as processing information is costly, perfect knowledge is unrealistic, maximization ignores firms' decision-making structures, and so forth. In an often-cited methodological argument regarding the futility of criticizing the maximization hypothesis, Boland (1981) admits that maximization in neoclassical economics is a metaphysical statement subject to neither logical nor empirical criticism. Boland replies to those sorts of criticisms along the lines that inductive proofs are not necessary for true knowledge, and true knowledge is not necessary for successful or determinate decision-making. Yet, this argument does not undermine the kernel of our claim, for what we dispute is not the logical consistency of the maximization hypothesis as such, but rather its generality. More precisely, what we dispute is the Cartesian-Euclidean search for an all-encompassing microfounding framework, be it maximization-based or not. To a certain extent, we agree with Boland's claim that no logical criticism of maximization can ever convince a neoclassical theorist that there is something intrinsically wrong with the maximization hypothesis, simply because there is not. Besides, we also agree with his contention that whether maximization should be part of anyone's metaphysics is a methodological problem, for the kernel of our claim is that it is precisely the methodological dissonance between micro and macro that renders the notion of a single microfounding framework a mythical one. As Boland correctly put it, any sound criticism of neoclassical maximization must deal with neoclassical methodology rather than the true of the assumption. Therefore, the kernel of our claim — that is, the problem resides in the neoclassical notion that only a microfounding framework based upon maximization is methodologically sound — clearly follows Boland's own prescription.

At this juncture, a question that deserves mention regards the extent to which the methodological dissonance between micro and macro can be seen as a particular feature of the "postmodern condition" of contemporary economics. More precisely, one might well suggest that economics has not been immune to the postmodern condition which, according to the work of Jean-François Lyotard (1984) and others, refers to the sense of "incommensurability" concerning the "condition of knowledge" within contemporary culture.¹¹ The question that arises here regards to what extent, if any, the micro-macro methodological dissonance can be conceived as being at the root of the sense of "incommensurability" that renders the "modernist" search for a single, time-invariant and trans-historical microfounding framework a vain exercise. Postmodernism in this usage refers to a position from which some of the primary conceptual values that, combined, have served as the "metanarrative" of modernist science — the possibility of certain knowledge defined as a relationship between a knowing subject and the object it seeks to know, the role of Reason in establishing the universal meanings through which that knowledge can be discovered and communicated, the idea that "Man" is the proper origin and object of that knowledge, and much else — are bracketed and called into question. Instead, postmodernism focuses on and emphasizes the discursivity and plurality of knowledge — and thus the potential "incommensurability" of such different knowledges — as well as related

¹¹ Interesting discussions of postmodernism with respect to economics include Dow (1991), Ruccio (1991), Amariglio (1990), & Hargreaves Heap (1993), & Amariglio and Ruccio (1994).

sensibilities of the fragmentary, discontinuous, undecidable, contextual, and decentering (Amariglio & Ruccio, 1994). Hence, the claim that macrotheories are standing in shifting sands unless they are provided with neoclassical microfoundations would represent a (modernist) centering discourse. In turn, our contention that it is not possible to provide a single microfoundation for macro, or, that it is unsound to try to unify economics in a modernist way would be a typically postmodernist stand. It is in this sense that we would suggest that the microfoundations debate has been taking place in an essentially modernist fashion within the mainstream: Keynes' macroeconomics is seen as a decentering moment whose understanding requires its reduction to a well-defined center, namely, neoclassical microtheory. We elaborate both on the microfoundations debate within the mainstream and on the question of the extent to which macrotheories really need microfoundations in the following sections.

4. KEYNES' PLEA FOR RELATIVISM AND PLURALISM IN THE (RE)BIRTH OF MACROECONOMICS

After looking back over the last three hundred years of economic theorizing, one identifies two broad types of questions as have been dominating discussion. The first to emerge, which occupied classical political economists, dealt with growth and development; the second, which occupied neoclassical economists, dealt with the efficient allocation of given resources. In the latter, the treatment of efficiency has always started from the rational behavior of single individuals, especially with reference to consumption. In the classical analysis, in turn, the economy is not the mere collection of individuals and the main question is not that of the coordination of their activities in exchange. Rather, the main issue regards the mechanisms of creation of wealth related to the structure of income distribution. Such analysis was carried out without any reference to individual behaviors, so that the emphasis on classes in classical political economy is a clear departure from the methodological individualism of neoclassical analysis. However, it is not correct to claim either that there is not microfoundations in classical political economy, or that this project started with the marginalist revolution.¹²

It was only when the classical approach was superseded by the emergence of neoclassical analysis at the end of the last century that the marginal revolution wrenched value theory from the macroeconomic inquiry of the classical political economists to the microeconomic sphere of the neoclassical marginal analysis. The classical political economists were primarily macroeconomists and only a Keynes would have been needed to put their theoretical structure in order, their specificities notwithstanding. It is in this sense that we would suggest that the Keynesian revolution gave macroeconomics its rebirth. Keynes' expression of a monetary economy in historical time brought out the problem of the conflict between individuals' desired actions and aggregate results. In addition to his emphasis on the organic interdependence of the

¹² Reference could be made here, for instance, to Duménil & Lévy (1987), who show that a coherent basis for microtheory exists within the classical analysis. They show that it is possible to build a macromodel of competition without an auctioneer, based on microfoundations along classical lines.

system, one of Keynes' main contributions was the classification of economic variables into what has become the standard national income accounts, the basis of that classification involving the division of the economy into sectors and the analysis of the flow of income in an interdependent system.

Hence, macrotheory is as old as economic theory, for whenever the latter devoted to some issue related to the economy as a whole, the ensuing analysis could be considered, using our modern jargon anachronistically, macroanalysis. But a clear distinction between micro and macro was introduced by Keynes, who was the first to conceive of macroeconomics as an autonomous discipline. To a certain extent, Keynes' solved the apparent contradiction between the "two faces of the moon" by liberating the macro from the traditional micro, thus showing that part of the neoclassical microfounding structure could be used to ground a macroanalysis leading to alternative results. It is in this sense that we would argue that implicit in Keynes' macroeconomics is a methodological plea for the emancipation of macroanalysis from a single and time-invariant microfounding framework. Keynes developed a new autonomous discipline which he christened macro, and the discontinuity between micro and macro required a move like that. To a certain extent, Keynes was led to make macro autonomous precisely because the notion of an all-encompassing, time-invariant framework combining micro and macro lacks methodological soundness.

Keynes was the originator of macroeconomics as a distinct topic, and contrasted such theory to the standard theory of his day, which analyzed the determination of prices and quantities of individual commodities in particular markets, industries and sectors. To a certain extent, he would have done much better to use either monopolistic competition or imperfect competition as the microfoundation of his macrotheory. By going along with pure competition, though, Keynes implicitly suggested that macrotheory is an analytical structure which is fully compatible, on logical grounds, with multiple microfounding frameworks. Moreover, one of the Keynes' main messages, however implicit, is that we should not concern too exclusively about providing macrotheory with rigorous and precise microfoundations, for the macrofoundations of microtheory may be just as important, if not more important, as the microfoundations of macrotheory. Like Marx and Kalecki, for instance, Keynes always had at the back of his mind the simple but profound insight that the whole may be more than the sum of the parts, that the macrofoundations of micro are as important as the microfoundations themselves. It is not surprisingly, therefore, that situations in which rational behavior at the micro level creates irrational macroeconomic outcomes abound in his writings.¹³

Not surprisingly, Hayek's capital-theoretic objections to Keynes' macroeconomic project were against macro as such rather than just Keynes' way of macrotheorizing. Hayek strongly rejected the core idea of macroeconomics, namely, the existence of stable relationships among aggregate variables. Indeed, much of his critique of Keynes, which first surfaced in the controversy over the *Treatise on Money*, concerned the

¹³ In Keynes' own words: "The atomic hypothesis which has worked so splendidly in physics breaks down in psychics. We are faced at every turn with the problem of organic unity, of discreteness, of discontinuity — the whole is not equal to the sum of the parts, comparisons of quantity fail us, small changes produce large effects, the assumption of a uniform and homogeneous continuum are not satisfied" (1972, p. 262).

conceptual validity of the notion of aggregate demand. For Hayek, macro variables are epiphenomena whose movement masks the micro forces that alone can explain them. For Keynes, in turn, given the complexities of building a complete micro-macro system, it is nevertheless legitimate to analyze behavior in terms of aggregates (Lima, 1994b). There are sufficient regularities between the chosen aggregates to allow valid theorizing, which means that it is acceptable to have different chains of logic which do not necessarily stem from a common set of axioms regarding the smallest unit of analysis.

5. DO MACROTHEORIES REALLY NEED MICROFOUNDATIONS?

At this juncture, it is worthy of some discussion the question of to what extent, if any, microfoundations are really needed to attach epistemological validity to macrotheories. Phrased another way, one might well wonder to what extent, if any, macrotheories would be really standing on shifting sands if they were not provided with explicit microfoundations. In our view, micro and macro should be seen not as competing theories, but as partial theories with restricted and different research programs. Even though they overlap insofar as both of them deal with the global economy, they are different and particular theories as regards the problems and perspectives which each of them stresses. Hence, one might well venture that there is no sound logical justification for a hierarchical stipulation that macrotheories do require microfoundations to obtain full epistemological validity, for one could just as well demand a macrofoundation for microtheory whenever the latter does not fit macro phenomena into its own framework.

In this sense, one might well wonder to what extent macrotheory as such needs microfoundations. In fact, the terms in which the microfoundations debate has usually been posed in some sense begs the question. It is argued that since macrotheory is aggregate economics, and aggregates are always aggregate of smaller units, macrotheory must be grounded on microfoundations. But economic theory has not always posed its problems, or constructed its methods, in such Cartesian terms. For instance, neither the classical economists nor Marx developed their theories of the long run development of a capitalist economy as a construction out theories of individual behavior. Indeed, the micro-macro distinction would not have made much sense to them. For those economists, individual behavior took its meaning and motivation from its social context, the development of which the theory explained, so that the theory of the whole was prior to the theory of the individual. For instance, an individual's spending pattern would be conditioned by his or her social class, which in turn was defined by the relationships in production, while the long-run development of the economy explained the changing relative prosperity of the social classes. Moreover, the notion of individual preferences that are independent of the economic changes under investigation is meaningless, for those preferences are socially constructed. Indeed, economic pressures shape individual preferences and define the social positions in which individuals make their choices. It is in this sense that one might well venture that it may be the case that macrotheory, conceived as the theory

of the functioning of the economy as a whole, needs no microfoundation in the theoretical sense, but could well rest empirically on detailed institutional studies. Macroeconomics matters at its own level in the hierarchy of theories, and the regularities and stylized facts one builds into macromodels require justification much more from historical and institutional analysis (some microeconomic) than from optimization games that idealized firms or households are supposed to play.

In other words, one might well venture that in some sense macroeconomic relations can be seen as experiencing a life of their own, thus being logically independent of micro units. For a suggestion might be made that macro relations are a complex manifestation of an overdetermined process of mutual constitutivity among a myriad of isolated units, thus rendering meaningless the notion that there is a single and definite relationship between the aggregate and an individual unit. Granted that the micro and the macro spheres of the economy are overdetermined, a question that arises regards what are the logical implications of the prevalence of such regime of mutual constitutivity for the microfoundations issue. From an overdeterministic perspective, micro instances of the economy are just as determinant upon macro ones as the latter participate in determining, or rather, overdetermining the former. In this sense, we would argue that an overdeterministic perspective would clearly support our plea for relativism and thus pluralism as far as microfoundation (and macrofoundation, for that matter) issues are concerned.¹⁴

It is clear that macroeconomics, by its very nature, involves aggregation. However, aggregation problems are complicated ones. In the traditional analysis, the aggregate economy is pictured as a composite of millions of individual decision-makers, and implicitly analyzed through the eyes of an imaginary representative individual seen independently of the aggregate economy. But the presumption that the Marshallian notion that the economy is a large-scale replica of a representative individual is the most adequate vehicle for microfounding macrotheories is quite problematic. As Stiglitz (1992) noted, the use of representative agents in macromodels has serious drawbacks. First, they are of limited use in investigating problems arising from information asymmetries and coordination failures. Presumably, asymmetric information could be reconciled with a representative agent model only by assuming a particular kind of schizophrenia on the part of the representative agent. Second, if one believes that some kinds of market failures are at the root of macroeconomic phenomena, one can hardly study these issues by using representative agents models. For when all individuals are identical, there is no need for trades, and hence there are no consequences of the absence of markets. Thus, the heroic assumption that the decision-makers of the macromodels are representative agents whose behavior fairly well approximates the aggregate behavior of the economy ultimately assumes away a basic subject that should be dealt with in macrotheory, namely, aggregation problems and failures of coordination between the behavior of individuals.

Moreover, the results derived by Sonnenschein (1972, 1973), Mantel (1976) and Debreu (1974), hereafter SMD results, which show that any set of market excess

¹⁴ The concept of overdetermination was introduced by Althusser into Marxian analysis in the early 60s, having been borrowed from Freud (1938). More recently, Resnick & Wolff (1987) took over this Althusserian approach and developed a non-essentialist, overdeterministic Marxian theory.

demand functions satisfying Walras' law can be derived from utility-maximizing individual, cannot but make one even more skeptical of the usefulness of the representative agent model for macrotheory. Essentially, these results show that the neoclassical rationality hypothesis puts no restriction on observed behavior; individual optimization (i.e. microeconomic rationality) placing no restriction on aggregate excess demand. However, when economists argue that a particular parameterization of behavior should be derived from microeconomic principles, it is meant that that parameterization can be derived as the behavior of a single individual. But as Stiglitz (1992) reminded us, the SMD results show that there is no logical reason why the economy should behave as if there were a single individual. Based upon SMD results, Kirman (1989), an author far from hostile to neoclassicism, recognized that the notion that a coherent economic analysis should start at the level of the isolated individual is problematic, which means that to microfound macrotheories using independent individuals is misleading. As Kirman (1992) more recently put it, the representative agent is simply another attempt to circumvent the fact that while neoclassical macroeconomists generally want microfoundations based on individual maximizing agents, maximizing behavior does not impose any restrictions on aggregate excess demands that would guarantee stability or uniqueness. In the same vein, Grandmont (1992), another insider to these debates, concluded that efforts to provide systematic theoretical microfoundations to macrotheories through models involving a single optimizing representative agent are quite misleading. It is thus hardly surprising that some recent mainstream attempts to avoid the implications of the SMD impossibility theorem have a more holistic flavor.¹⁵

6. SEASON FINALE: WHO IS AFRAID OF ALTERNATIVE MICROFOUNDING FRAMEWORKS?

In addition to disputing on methodological grounds the plea for a single, time-invariant microfounding framework, we bring forward some alternative macroeconomic formulations that cannot be charged, logically speaking, for the lack of sound microfoundations, thus showing that that plea is not a value-free claim. Our purpose is to persuade the reader to see a neoclassical framework (or any other, for that matter) as one methodological alternative, rather than the only one, in terms of microfounding structure that can provide macrotheories with sound microfoundations whenever these are required.

A primal example of the possibility of building consistent and coherent macro-models with sound alternative microfoundations is provided by Kalecki's contributions. Kalecki made little use of, and was actually hostile to, neoclassical analysis, with its concepts of marginal productivity and general equilibrium. He made no use of utility

¹⁵ Hildebrand (1994) suggests that a possible route to avoid the embarrassing implications of the SMD theorem is the reformulation of the theory of the market demand along holistic lines. His analysis does not rely upon any hypothesis about individual rationality, which shows that it is possible to obtain some form of aggregate rationality by relying more on particular features of the distribution of behavioral characteristics among the members of the population.

or production functions, not having assumed optimizing behavior either. But this does not necessarily (meaning logically) mean that Kalecki's macroeconomic conclusions lack sound microfoundations. Kalecki's mark-up pricing theory, for instance, consistently and coherently shows how the pricing decisions of individual firms operating in an oligopolistic setting lead to macroeconomic variables such as output and employment to behave accordingly. Kalecki's macromodels have an underlying non-neoclassical microbehavior which is logically compatible with the macro results obtained; there is nothing intrinsically distinctive about the micro-macro connection established by Kalecki that renders it logically inconsistent.

In turn, to accord a role to mark-up pricing in macromodels leading to alternative microfoundations implies to recognize that the price system plays a broader role than that envisaged in the mainstream. While the only role played by the price system within neoclassicism is the allocative one, a relativistic and thus pluralistic approach to the microfoundations issue should conceive it as playing other roles. Given the supremacy of the notion of exchange in the neoclassical microfounding framework, it is hardly surprising that that role is so narrowly conceived. As Gerrard (1989) put it, prices have (at least) five roles in a capitalist economy. The conductive role relates to the passing on of costs as prices (with the addition of a mark-up) and in the case of workers the passing on of prices as wages. The positional role concerns the relativity of one economic agent with another: in the labor sector, for instance, this has been seen as particularly important for groups of workers relative to other groups. The strategic role of prices results from the need of firms to develop competitive strategies with which to achieve their marketing objectives in the face of competitive strategies adopted by their rivals, the setting of a limit-price to deter new entrants being an example of the strategic role of prices. The financial role, in turn, enables firms to generate sufficient funds for their investment and other objectives, Eichner's (1973) notion that firms adjust profit margins so as to generate internal finance for investment being an example of this role.

Truly enough, mark-up pricing can be easily derived either from standard optimizing principles (Dutt, 1990) or using an optimizing framework involving Nash bargaining (Sen & Dutt, 1995). In fact, Kalecki (1939-40) himself somehow provided the basis for such an interpretation of mark-up pricing. He later gave up such attempts, for these theoretical excursions were only a digression (Kriesler, 1987). For instance, one might well assume that the mark-up is determined by profit maximization in the manner suggested by Cowling & Waterson (1976), where it is assumed that there are n firms in the industry and that firms aim to maximize profits subject to well-defined cost conditions and to their conjectured demand conditions. Along similar lines, Lavoie (1989) shows that under certain conditions, in particular when the price elasticity of demand is greater than one, mark-up pricing is easily derivable from profit maximization. Agliardi (1988), in turn, uses a maximizing framework to demonstrate that this pricing behavior may arise from a Bayesian process of learning. The moral of this literature is that the consistency of a macromodel based on mark-up pricing is logically independent of the latter being derivable or not from a constrained choice microfounding framework, thus showing the relativistic nature of a given microfounding structure. Hence, to dismiss mark-

up pricing on the grounds that it is an *ad hoc* assumption unless it is based on maximizing behavior is in fact a clearly *ad hoc* way of justifying the logical necessity of searching for a single microfounding framework.

Besides, the type of macroeconomic structure that prevails in an economy at a given point of time depends on the historical and institutional conditions, in the sense that the macroeconomic structure is a product of history as well as of institutional design. Macrotheory follows a primarily historical-inductive method because the macro structure of a society is historically as well as institutionally determined, thus rendering an overly single and deterministic specification of the prevailing macro relationships a reductionist analytical procedure. Though neoclassical economists do not necessarily deny the influence of institutional and historical factors on individual behavior, it is implied that such influence can be analyzed only through the effects on the preferences and initial endowments of those individual agents. Institutions are usually seen as the optimal outcome of a maximizing procedure on the part of nature, which maximizes the scope for optimal decisions on the part of individuals. It is thus hardly surprising that to learn more optimization mathematics is considered more important than to learn about history and institutions within the mainstream. In Lucas' (1981) view, for instance, though the time pattern of hours that an individual supplies to the market is admitted to be affected by social convention and institutional structures, it is argued that conventions and institutions do not simply come out of the blue. On the contrary, institutions and customs are designed precisely in order to aid in matching preferences and opportunities satisfactorily. But as Skott (1989) replied, Lucas seems unaware of the problems involved in the infinite regress — individual behavior being affected by institutions being affected by individual behavior, and so forth — which could equally well support a sort of holistic methodological institutionalism.

In this context, reference should be made to the suggestive contribution by Lavoie (1992), which shows that a consistent theory of household choice can be built upon the substantial role played by habits and social conventions, by procedural (meaning bounded) rationality and a more proper psychological foundation than that used by neoclassical theory. For Lavoie, when they take decisions, or even when they set their preferences, both entrepreneurs and households rely on habits, conventions and norms. This means that when proceeding to analyze the economy as a whole, we can dispense with going into the intricate details of individual behavior and content ourselves with the study of the interaction between the various groups and classes of society based on the received conventions. From this perspective, models based upon conventions and rules of thumb, such as mark-ups, standard rates of utilization, propensities to consume, and so on, are perfectly legitimate since they rely on a type of rationality which is appropriate for the usual economic environment; in a world of uncertainty and of limited computational abilities, the economic agent cannot but adopt, except in the simplest of problems, a rationality which of the procedural type. Models built on rules of thumb are not *ad hoc* constructions. Rather, they reflect the rationality of reasonable agents. As such they have microfoundations which are just as solid, if not more from a realist point of view, as those of the standard mainstream models. There is thus no need to demonstrate that such or such element

results from some maximizing procedure. Indeed, optimizing procedures may well have some legitimacy when the problems to be solved are simple, but they describe neither the means nor the results of rational economic behavior under the more realistic conditions of uncertainty or of limited information processing.¹⁶

As regards the logical consistency of the notion of conventional behavior, reference should also be made to the contribution by Tokeshi (1991), who shows that a macrotheory of inflation can be provided with sound microfoundations without resorting to any optimizing framework. More precisely, he provides logically sound microfoundations to the theory of inertial inflation developed by some Brazilian economists using Keynes' notion of conventional behavior in the presence of uncertainty. Informal indexation is shown to be a rational behavior in chronically inflationary situations, and the rigidity of this kind of behavior is shown to be an equally rational procedure. Given the uncertainty surrounding the pricing decisions in an economy with high and chronic inflation, indexation emerges as a rational decision rule. If the demand for microfoundations rests on the (correct) argument that the individual decision process should be fully and logically specified, it is hardly denying that Tokeshi's contribution meets such requirement. As regards a possible reply that his emphasis on conventions and bounded rationality is *ad hoc*, simply because it was not derived from standard neoclassical axioms about individual behavior, we would readily rejoin that *ad hocery* is in fact involved in that potential reply, for the pedestrian reason that it is intended to preserve the alleged universality of the standard microfounding framework.

In our view, what these alternative formulations show is that to insist on a single microfounding framework is to contribute to the enlargement of the gulf between academic macrotheory and policy-oriented macroeconomics. There is no dispute on the relevance of academic macrotheory as an important source of theoretical background for practical macroeconomics. Yet, such role as provider of sound theoretical foundations for macropolicy is condemned to be the less effective the greater is the insistence on following a single microfounding framework. The insistence in viewing the economic system as a fully rational and logical system, and economy theory as a model that provides a single and fully encompassing explanation for the whole system is unrealistic if not arrogant. If we conceive economics as providing various approaches, using different methods, and reaching conclusions which are not necessarily consistent ones, we will be closer to the truth that scientific method looks for. Micro theory and macro theory use different methods and illuminate different angles of the economic system. To reduce one to the other or vice-versa will just represent a loss to our understanding of economic reality.

¹⁶ In the recent mainstream literature, reference should be made to a contribution by Choi (1993), who presents a conventions-based alternative to the standard approach of a rational maximizing model. Using a game-theoretic framework, his basic conclusion is that utility maximization is hardly a general theory of humanity and society: "Maximization simply cannot be a model of individual decision-making in the face of uncertainty. Surely, the idea of utility-maximizing consumers conjures up an image of rational decision makers. But securing the rationality of choices requires a heroic amount of assumptions that either ignore or take as given what is important in decision-making under uncertainty" (p. 150).

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