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THE TWO METHODS OF ECONOMICS

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RESUMO

A teoria econômica emprega dois métodos: o método hipotético-dedutivo, utilizado principalmente pelos economistas neoclássicos, e o método histórico-dedutivo, adotado pelos economistas clássicos e Keynesianos. Ambos são legítimos, mas, desde que a economia é substantiva, não uma ciência metodológica, onde o objeto é o sistema econômico, o método histórico-dedutivo é o mais apropriado. O método hipotético-dedutivo permite que o economista desenvolva ferramentas para analisar o sistema econômico, mas falha ao analisar o sistema como um todo. Em contrapartida, o método histórico-dedutivo parte da observação empírica da realidade e da busca por regularidades e tendências. É um método empírico, apropriado para as ciências substantivas que tratam de sistemas abertos, como é o caso da economia.

PALAVRAS CHAVES

Método hipotético-dedutivo; método histórico-dedutivo; sistemas abertos; matemática; fatos históricos novos.

CLASSIFICAÇÃO JEL

A10, A12, B10, B20, B21, B22, B41, B50, B59

ABSTRACT

Economic theory employs two methods: the hypothetical-deductive method, used principally by neoclassical economists, and the historical-deductive method adopted by classical and Keynesian economists. Both are legitimate, but, since economics is a substantive, not a methodological, science, whose object is the economic system, the historical-deductive method is the more appropriate. The hypothetical-deductive method enables the economist to develop tools to analyze the economic system, but fails in analyzing the economic system as a whole. In contrast, the historical-deductive method proceeds from the empirical observation of reality and the search for regularities and tendencies. It is an empirical method, appropriate for the substantive sciences dealing with open systems, as it is the case of economics.

KEY WORDS

hypothetical-deductive method; historical-deductive method; open systems; mathematics; new historical facts.

1 The Two Methods of Economics

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A central theoretical problem facing economics and the social sciences generally is the choice of the preferred method of inquiry. Since John Stuart Mill's classical 1836 essay, and particularly after the neoclassical or marginalist school became dominant, many members of the profession adopted the hypothetical-deductive method, although the more specific method for a substantive discipline is the empirical-deductive, and, for a substantive social science, an historical-deductive method.[1] Only with Keynes and the macroeconomics revolution did the historical-deductive method, which had been used by the classical economists to understand the capitalist economic system and its long-run growth, come again to be fully used, this time to build a general theory of short-term economic fluctuations and of policies to achieve stability and growth. Soon, however, neoclassical economics, searching for the microfoundations of macroeconomics, began to return to the hypothetical-deductive method, which is more amenable to mathematical treatment. Yet, as economics deals with complex social and institutional realities which cannot be reduced to the simplicity and precision of a hypothetical-deductive method, this attempt failed, and macroeconomic theory today is a pragmatic constellation of models. In order to be reasonably consistent with its open and complex object, economists should recognize the substantive character of economics, and primarily use the historical-deductive method and only secondarily the hypothetical-deductive method. Yet, in their search of the mirage of full consistency, many

[1] I am assuming here a basic classification of sciences that distinguishes between the 'methodological sciences', like mathematics and statistics, which are methods but do not have an object, and the 'substantive sciences', which do have an object. The latter are subdivided into the natural sciences, like physics or biology, and the social sciences, like economics and sociology.

insist in giving priority to a method which is suited to building methodological tools rather than to directly understanding the economic system.[2]

The hypothetical-deductive method is specific to the methodological sciences, like logics, mathematics, and statistics. These are sciences that have no object except rational construction; they do not analyse external reality, but are methods of reasoning. Descartes, who is widely viewed as the main founder of modern thought, observed that mathematics was the only discipline which was endowed with evidence and certitude, and suggested that it should be applied to all sciences. Kant followed him in this matter. Although acknowledging that mathematics had no object apart from rational construction, he viewed it as science *per se*, in which *a priori* reasoning through precise deductive demonstrations is fully realized. Although an empirical science, physics partially embodies this ideal in so far as – with Galileo and Newton – it was able to build formal models to be verified empirically at a second stage. Thus, these two great philosophers established a mathematical ideal for the substantive sciences – natural and social – ignoring or underestimating the fact that, unlike mathematics and logics, the substantive sciences have an object or substance, and that this object is complex and can be effectively analysed only if it is empirically investigated, if induction and deduction are systematically combined. Kant insisted on this combination, but the idealistic precedence that he gave to *a priori* reasoning was an eighteenth-century principle which must be reconsidered after the growth of the natural sciences and, particularly, the social sciences.

In this paper, I discuss this central methodological question, which is related to the logic of discovery rather than to the logic of justification. This distinction it not fully valid, since the two logics are interrelated in that the justification of a theory depends on the logic of discovery employed; but is useful to stress that in the social sciences, where empirical observation is crucial but justification is always relative, discovery plays a major role. My claim is that the social

[2] Since the hypothetic-deductive and the empirical or historical-deductive method share the word 'deductive', that word could be dispensed with. Yet I retain it in order to emphasize the importance of deduction in any knowledge process, and also, in the case of the historical-deductive method, to avoid confusing it with mere historical analysis, which would not aspire to deducing a theory.

sciences in general and economics in particular have been victim of this arrogant Cartesian project of reducing complex reality by means of a method – the hypothetical-deductive method – which can be dominant only in the methodological or procedural sciences. Although natural scientists and economists readily admit the need for a positive or empirical method to study their respective subjects, they paradoxically aspire to an absolutely precise model of such reality which only a hypothetical-deductive method can provide. If such an ideal is not achievable in the natural sciences, even in physics, where the elements forming the systems under study have no freedom of choice, what can be said of the social sciences, where humans not only have such freedom but can learn from history, build institutions, and modify their behaviour accordingly? My claim is not that economists should not use the hypothetical-deductive method, but that that method should play a subordinate role to the historical-deductive one. The economist needs the hypothetical-deductive method to develop many of the concepts and tools or partial models that he utilizes, but, in so far as the object of his analysis is the economic system as a whole, how it is coordinated and how it changes, his principal method will be an empirical or historical one – a method that I call historical-deductive. It is 'historical' because it starts from the observation of an empirical reality, and 'deductive' because it involves a series of deductions, starting from the induction (or, more modestly, the abduction) of the facts or events. The objective will be to achieve a general vision of the economic system[3]. In this way, the historical-deductive method assists the formulation of historical models or of ideal types in Weberian terms, in which we have on the one side concepts and classifications, and on the other observed regularities and tendencies forming meaningful theories.

[3] Abduction is a concept proposed by Pearce (1878), who saw logical reasoning as composed not only of induction and deduction but also of abduction. Abduction, which Peirce also called the 'method of hypothesis', is the process of inferring a hypothesis by proceeding from one or a few facts – facts that will be more interesting in so far as they are surprising. Thus, as Hands (2001: 224) observes, 'abduction is the stuff of all insight… it is a relatively loose notion of inference'. Abduction is part of the logic of discovery. As Chong Ho Yu (2005: 7) says, 'for Peirce, progress in science depends on the observation of the right facts by minds furnished with appropriate ideas. Definitely, the intuitive judgment made by an intellectual is different from that made by a high school student'.

In the first section of this paper I introduce the discussion of the two methods; in the second, I situate both methods in a broader context; in the third, I concentrate on the hypothetical-deductive method, and in the fourth on the historical-deductive method. In this section, I make a reference to my own specific form of working with the historical method – what I call the 'new historical facts method' – but my main concern is more general: to explain why the historical-deductive method is more appropriate to a substantive science such as economics than the hypothetic-deductive method, which is more suited to developing methodological tools than to building an explicative model of real economic systems.

1.1.1 The object of economics and the two methods

It is often said that economics is a box of tools, or a collection of models. Yet, although correct, this claim is partial. If it were to be accepted, economics would not be the science of production and distribution but a mere collection of tools to be used in the analysis of the economic systems. Such a definition fails to include the central objective of economic analysis: to provide a theory of economic systems, to show how to stabilize an economy that is permanently changing, and how to coordinate it, grow it and distribute income. An economic system is a social or historical system based on work and oriented to the production of wealth. Social systems may be seen from other perspectives than the economic one, among which the political perspective is central. The more relevant social system in capitalist societies is political, namely, the nation-state. Yet the economic function is important and self-directed enough to allow for and require a separate although not fully autonomous analysis.

The object of economics is the modern economic system. While mathematics or statistics does not have an object, since they are methodological sciences, economics is a substantive or ontological science dealing with an existing social reality.[4] Economic systems are based on two major economic institutions regulated by the state in each country: the market and money. Both are socially constructed institutions which allow for the exchange of goods and the corresponding division of labour, and determine the allocation of resources and the distribution of income. As is

[4] Lawson, 1997, 2003.

the case with all systems, the economic has an underlying principle or logic. All living systems have survival as their basic foundation. The economic system's organizing principle is more than just survival: since work is its basic constitutive element, the logic of the system is to achieve the material welfare of its members. In modern capitalist economic systems, an additional step is involved: since each modern society has a major tool to organize collective action – the state – such an underlying principle is not just well-being, but economic stability and sustained economic growth.

Economics aims to understand actual economic systems at several levels of abstraction: from the more general, international and national levels, to the industry and local levels. On the one side, the problem is to know how these systems allocate resources and distribute income; on the other, how they remain stable and grow. Microeconomics offered a general and compelling answer to the first problem; Keynesian macroeconomics to the second. In fact, however, neither the Walrasian general equilibrium model nor the Marshallian partial one offers an effective view of the whole economic system. They are, rather, major market models, without money and other institutions which are essential to a minimally comprehensive picture of the whole. More generally, microeconomics contains major tools for understanding the economic system. Yet a general theory of how economic systems effectively operate in the short run was first formulated by Keynes's macroeconomics. A looser theory of how economic systems grow through time had already been developed by the classical economists, particularly by Smith and Marx. Smith and Marx understood that the object of economics – or of 'political economy', as they called the discipline in their time – was the capitalist system. They were interested in understanding the logic behind the way capitalist economies allocated resources, which both identified as the labour theory of value and prices, and in understanding how they grew, which Smith attributed in the division of labour and in capital accumulation, and Marx to capital accumulation and technological progress. Keynes, again, was concerned with understanding the actual economic system, but from the short-term perspective of stability and full employment rather than that of growth. In between, the neoclassical or marginalist school attempted to build a microeconomic alternative to the classical and what would be Keynesian theory, but was able to achieve only an

extremely abstract view of a market system which, although having heuristic qualities, has little connection with actual capitalist economic systems.

In fact, while classical and Keynesian economics had been able to offer an analysis of the economic system, neoclassical economics was, rather, capable of offering the tools for understanding it. Why did that happen? Why does neoclassical microeconomics remain at a level of abstraction that limits its role to providing a box of tools or a collection of models, instead of an analysis of the economic system? Why are neoclassical economists often constrained to adopt concepts and tools which are inconsistent with the foundation of microeconomics[5] when they want to pragmatically understand the macroeconomic system?

My answer to these questions, the central claim of this paper, is that neoclassical economics uses a hypothetical-deductive method, which is intrinsically no more than a tool, while classical and Keynesian economics uses an historical-deductive method which is able to gauge the economic system. Economics uses two methods, both of which have limitations and potential. In so far as the object of economics is an existing economic system, i.e., an aspect of the social systems involving the production and distribution of goods, the method which is directly applicable is an empirical one, the historical-deductive method. Yet, in so far as the production of goods and services is subject to quantification and rational reconstruction in terms of prices and money, and in so far as some simple assumptions are postulated about human behaviour and economic performance (such as the *homo economicus* and the law of diminishing returns), it allows for the development of tools of analysis such as the hypothetical-deductive method.

In order to understand economic systems, economists have developed essentially three different economic theories: the long-term growth model of classical political economy; the general and partial equilibrium models of microeconomics; and the Keynesian macroeconomic model. The second theory adopted an essentially hypothetical-deductive method, while the other two adopted an historical-deductive method. Although classical economists did not use the term

[5] As when, for instance, neoclassical economists use the empirically tested Philips curve, or the practical 'Taylor rules'.

'macroeconomics', and had their own microeconomics, they mostly thought in macroeconomic terms. While they developed a kind of development economics, Keynes founded macroeconomics. [6] What to say of 'neoclassical macroeconomics'? My understanding is that, strictly speaking, there is no such thing in so far as Lucas's attempt to reduce macroeconomics to microeconomics, i.e., to make macroeconomics hypothetical-deductive, failed. Neoclassical economists' contributions to macroeconomics, beginning with Friedman's adaptive expectations theory, were possible only in so far as they adopted an historical or empirical-deductive approach, and looked for microfoundations *a posteriori*, not *a priori* as is done in micro theory.

The two perspectives are legitimate. Despite the inability of the micro approach to gauge the actual economic system, it is unthinkable not to use this extraordinary tool to understand and to develop policies aiming to protect market competition. The economic system gains transparency with the use of both methods, but at a cost. In the case of the micro approach, the cost is that of missing the object of economics: of not really providing a realistic and operational analysis of the economic systems. In fact, the general equilibrium model does not allow for much more than proposing policies or reforms to realize the obvious gains involved in market competition. In the case of the macro approach, the object is reached and gauged, and from its analysis it is possible to deduce sensible macroeconomic policies, but at the cost of a certain degree of imprecision in the drafting of the model – something that is unavoidable when one deals with complex, open-ended social systems such as economic systems.

Why don't we unify the two theories? Why don't we determine the microfoundations of macroeconomics – the Holy Grail for so many theoretical economists – in such a way as to have only one encompassing economic model? Several answers have already been given to this question. Bresser-Pereira and Lima (1995) offered the answer which I am using to define the two methods of economics. They are not reducible one to the other because scientific theories depend on the method they use. While microeconomics and the general equilibrium model adopt a

[6] Particularly Smith and Marx. Ricardo is a special case.

hypothetical-deductive method, macroeconomics is based on an historical-deductive method.[7] In other words, we could say that the general equilibrium model adopts a radical methodological individualism, while macroeconomics adopts a holist historical-institutional approach. But I will argue that this distinction does not correspond to the one that I am proposing, and is less useful. The central argument of this paper is that the essential methodological distinction that is necessary for understanding economics is the hypothetical X historical distinction. Since scientific theories depend on the methods they use, in so far as a science uses more than one method, two consequences follow: first, it is essential to have a broad view of the discipline; second, any attempt to reach its full unification meets an intrinsic impediment. A reasonable unification, however, is possible provided that we understand that the basic method to be used is the historical-deductive, which is appropriate to social science as it is economics, and reserve for the hypothetical-deductive method the secondary but important role of building tools that will be useful in the analysis of the economic systems.

The historical-deductive method may also be called empirical-deductive, which is the more appropriate denomination when we refer to the natural sciences. While the hypothetical-deductive method and the empirical deductive method are principally analytical, the historical method is both analytical and dialectical. While the analytical method is applicable to the methodological and the natural sciences, particularly to physics,[8] in the case of the social sciences it is practically unavoidable to think also in dialectical terms. In the social realm, causes and consequences are blurred, the consequence often feeding back to the assumed cause. Social reality is intrinsically historical because it is permanently changing, and is intrinsically contradictory because social systems are constituted by individual actors who, although socially conditioned or determined, are free and responsible to make choices which are often conflicting;

[7] I initially developed this idea in a paper which, however, ended up only as a sketch (Bresser-Pereira e Lima, 1996). Besides expanding the discussion of the two methods, in the present paper I adopt more appropriate terms by substituting 'historical-deductive' for 'historical-inductive', and 'hypothetical-deductive' for 'logical-deductive'. I eliminate only a tautological element that impaired the previous terminology; I also make it clear that the historical method to which I refer is deductive, as every theory-building process is.

[8] It is less applicable to biology, where causal relations are often replaced by functional ones.

because they are learning actors, who change with experience; and because, in doing so, they permanently change the social structures and principally create culture and institutions that, in their turn, change individual preferences.[9] Economic systems are, essentially, open systems, requiring open models.[10] Their complexity is much greater than the general equilibrium model presumes. Their variables are so numerous that many, although relevant, cannot be formally included in the model. Thus, macroeconomic models are partially undetermined. The economist who uses macroeconomic models is supposed to know that her or his model is incomplete, and that, in studying the actual system and in proposing policies, he is supposed to be modest, and to take decisions which involve uncertainty. There is no reason for an economist to be confined to one or the other method. We have great economists who dedicated themselves mainly to one method or the other, and they are great because they did it well. Sometimes, they realized that the use of both models leads to contradictions,[11] but they were great enough – and this was typically so with Marx, Schumpeter and Keynes – to live their contradictions instead of attempting to impose comprehensive and absolutely consistent theories. Why, in economics, should the hypothetical-deductive method be used only as a device to support the historical or empirical method? To answer this question, we first have to define more precisely the two methods.

1.1.2 The two methods in historical perspective

A key assumption of economic theory in its hypothetical-deductive form is the rationality of agents. Even though economists know that economic agents do not always act rationally to

[9] I limit myself to this justification of the claim that the method suitable for understanding social sciences should be dialectical. This is complex concept, which is not the specific subject of this paper, but it was unavoidable to mention it.

[10] This view of economic methodology was particularly developed by Sheila Dow (1996) and Victoria Chick (2004). The former defines an open system as a system in which 'not all the constituent variables and structural relationships are known or knowable, and thus the boundaries of the system are not known or knowable' (1996: 14).

[11] Consider, for example, Schumpeter, who loved to say that the general equilibrium model was the highest achievement of economic theory, but based his own theory of innovation and the entrepreneur on the critique of the circular flow – a simplification of that model.

maximize their utility, I will not discuss here the validity of the *homo economicus* assumption, although we know that, in fact, this rationality is bounded, and that economic agents are permanently optimizing but making choices under uncertainty.[12] Nevertheless, the rationality assumption is a more 'reasonable' assumption for economic theory than for other social sciences. Economic models deal with market relations, where agents legitimately promote only their economic interests, while the other social sciences deal with more complex behaviours – in the case of political science, for instance, the moral values prevailing in modern societies require that politician make trade-offs between self-interest and the public interest. Yet this relative reasonableness of the *homo economicus* does not justify its abuse. In much the same way as economists begin with the assumption of perfect competition, the law of diminishing returns, and the tendency of the profit rate to equalize, they also begin with the assumption of rationality, assuming that later they will be able to relax such assumptions. There is, however, a fundamental difference in how the different schools relax this and other assumptions. Since the general equilibrium model essentially uses the hypothetical-deductive non-historical method, the assumptions of rationality and perfect competition are the *a priori* basis for it: thus, when the macroeconomist adopting a neoclassical approach needs to lower the level of abstraction to study the real economic system, he will find a theoretical and practical difficulty in relaxing such assumptions. In contrast, in classical development economics and in Keynesian macroeconomics, where the economist does not work with armchair models, but with open models built from the historical observation of reality, most of those assumptions have been already duly abandoned when the analysis begins. Thus, not being committed to a hypothetically general and comprehensive rationality and consistency of the whole economic system, economists are able to formulate more sensible and pragmatic explanations of reality.

The coexistence of two methods is not exclusive to economic theory. It also exists in philosophy and in political science. While the philosophers who use primarily a hypothetical-

[12] Herbert Simon (1957) showed that economic rationality is 'bounded', and that economic agents are able to achieve 'satisficing' outcomes rather than maximum ones. This is consistent with Keynes's microeconomics behind the *General Theory*, which is already a microeconomics of choice rather of maximization.

deductive method tend to be idealists, recognizing reality just as it is represented in ideas, philosophers adopting primarily an historical-deductive method are realists. Plato and Descartes are in the first group, while Aristotle, Marx and the American pragmatists are in the second. Kant is in the first rather than in the second group, although he was able to formulate the great synthesis between the two philosophies. But he formulated an analytical synthesis, which clearly privileged the methodological sciences, specifically mathematics, and the natural sciences, particularly the one closest to mathematics, namely, physics. Yet, with Hegel, still an idealist, the central concern changes from physical nature to society and history, and from analytical to dialectical reasoning. Marx, the American pragmatists, and the phenomenologists after Husserl completed the change from the certainty of mathematics and physics to the open questions relating to human life and society – questions subject to contradiction and change, and often more suitable to interpretation than to the definition of a unique truth.

Yet the temptation to base the social sciences on more 'solid',[13] hypothetical-deductive foundations was always present. First, in the political theory of the state. Following the historical tradition founded by Aristotle, the state was seen as the result of historical evolution, as the outcome of a process of increasing division of labour, of the passage from the tribe to the clan, the village, the city, the nation, the city-state, and the empire. With Hobbes, however, and the contractual theory of state, a radically new approach emerges. The state is logically deduced from the theoretical assumption of the existence of a state of nature, where war between all men was the sole reality, and from the decision of men, at a certain point, to establish a contract through which they renounced their original freedom in favour of a legal order imposed by the state. It doesn't matter whether the state of nature had an example in history, nor whether it was possible to find the moment when free men and women decided to exchange their freedom for the protection of a sovereign. By adopting this theoretical strategy, contractualist philosophers were able to logically deduce the state from society; the monarch's legitimacy rooted in tradition was replaced by a new politics arising from the social contract. Even if Hobbes, with his theory,

[13] Discussing this paper with me, Ramon Garcia noted how strange it was that something so abstract could, nevertheless, be viewed as 'solid'.

intended to strengthen the power of the absolute monarch, what he and his great enlightened successors did was to open the way to the modern concept of citizenship. By legitimizing the king by the citizens' consent, he established a rational legitimate basis for political power which opened the way to the rule of law and democracy. Contractualism, albeit unrealistic, set up powerful normative bases for the future political development of nation-states, and was a tool for the affirmation of civil and political rights. Whereas the historical-deductive thinker could arrive at the concept of the state only from the analysis of political and social events and struggles, and from the 'logic' which those events somehow obey, the hypothetical-deductive theorists were able to infer it from a theoretical assumption. But whereas the latter could not explain how the state changed from absolute to liberal, and from liberal to democratic, since the original assumption remained constant, the former was more successful in such an endeavour.[14]

Historically, economics adopted the hypothetic-deductive method after contractualist political theory had done so, but used it in a more radical way. Economic theory began as an historical-deductive science with the great mercantilist and classical economists, but after the 1870s neoclassical or marginalist revolution it experienced a major turn. Microeconomic theory, crowned by the general equilibrium model, soon became the most radical hypothetical-deductive of all substantive sciences. It also became strongly ideological since its main concern was to demonstrate the superiority of market economies. The Keynesian revolution pointed in the opposite direction, since it was essentially an historical-deductive theory, but soon mainstream economics was again attracted by the consistency and precision allowed by the use of a hypothetic-deductive method.

In the other social sciences, particularly in sociology and anthropology, the historical-deductive method remained dominant after Marx, Durkheim and Weber. The latter opened the way for the *a posteriori* search for rational explanations, with his theory of action, but remained

[14] Note, however, that the analysts who used primarily the hypothetical-deductive method, and proceeded from the same assumption of the state of nature, arrived at quite different conclusions, as Hobbes and Locke demonstrate. This fact gives an idea of the limitations that such method confronts.

an essentially historical analyst.[15] The same happened to the modernization and functionalist school of sociology that had in Talcott Parsons its main representative.

In the second half of the twentieth century, rational choice theory appeared in political science, having as its basis neoclassical microeconomics. As in the case of contractualist theories, it allowed for several interesting developments in discussing political institutions. Yet I am a critic of such theory in so far as it radically presumes that political agents behave like economic agents trying to maximize their personal utility, and establishes a perfect analogy between market and politics.[16] When, however, it is just concerned in finding *a posteriori* rational explanations for social and political phenomena which are analysed historically, as often by Adam Przeworski, this approach may be fruitful particularly in imparting precision and internal consistency to reasoning.[17] After using the historical-deductive method to grasp the economic or the political system, one can complement it with the use of a moderate variety of methodological individualism concerned with the search of the underlying rational causes. Yet, in doing that, political scientists (more than economists) should take into account, as Jon Elster suggests, that their concept of rationality should be broader, including public interest issues, since the laws ruling the market are not the same as those governing the forum.[18] And they should take into consideration the social or historical constraints imposed on agents by the structural, cultural and institutional features of society, which are eminently historical. It is also important not to fall in an error typically associated with the hypothetic-deductive method: determinism. In the social sciences, the assumption that it is enough to have the initial conditions defined to know what the consequences will be is as attractive as it is false. According to Prigogine, methodological determinism is timeless, implying perfect or logical causality.[19] Economic variables are determined by initial conditions. Non-predicted irregularities arising from the actual historical

[15] Weber, 1922: chapter 1.

[16] Downs, 1957.

[17] Przeworski's classical analysis of social democracy (1985) is the perfect example of this approach.

[18] Elster, 1997.

[19] Prigogine, 1997.

processes are ignored: there is no 'path dependence'.[20] There is nothing further than this from the kind of reasoning that I am trying to develop here.

Economic science works, therefore, with two methods. Only in the case of more general and abstract theories, such as the general equilibrium or Sraffa's theory of the production of commodities by means of commodities, does the aprioristic method enjoy precedence and dominance. These theories, however, are already developed and are self-contained. In the case of macroeconomics and development economics, by contrast, the fundamental research tool is the historical-deductive method, or, more specifically, a variety of it that I call the 'new historical fact method'. It also uses induction and deduction, but, in so far as it begins with the analysis of a reality that displays few regularities, it resorts to abduction and searches for the new historical facts or events.. The economist who analyses a real social system must be constantly looking for new historical facts that change reality and require new explanatory models. Then, using his experience and the economic tools available he will try to develop his own model of the system. The search for microfoundations with the use primarily of a hypothetical-deductive instrument should occur later, so that the social mechanisms behind the observed macroeconomic relations can be established.

1.1.3 The hypothetical-deductive method

The hypothetical-deductive method used by neoclassical theory is essentially aprioristic. In order to build its major theory – that of general equilibrium – the microeconomist, sitting in his armchair, assumes that economic agents maximize their utility, and from this simple assumption, combined with some others such as stable preferences, decreasing returns, perfect information, etc., he deduces logically and mathematically his whole model. Since his basic assumption is a reasonable approach to the reality of economic behaviour, and since he works at a high level of abstraction, the results attained are interesting: they succeed in developing a highly abstract theory that is able to predict an also abstract economic behaviour. Yet the theory is so abstract

[20] See Prigogine's ideas applied to economics in Ferrari, 2003.

and so general that it represents a danger when it comes to predicting complex actual behaviours such as those involved in macroeconomic policy and development policy.[21]

There is a vast economic literature that questions the *homo economicus* assumption. Although this assumption doesn't apply to political and social behaviour,[22] because in these areas human beings take into consideration goals besides those related to the maximization of personal interests, it reasonably applies to economic behaviour, which is relatively less complex. Therefore, from the point of view of this paper, it is not the *homo economicus* assumption that sets the limits to the neoclassical economics, but the form in which this assumption is used, specifically the ambitions that are involved. Neoclassical economics hopes to derive the full bulk of economic theory from it, which is absurd. General equilibrium theory, which is its more general offspring, is the most radically hypothetical-deductive theory among the substantive theories that try to describe reality. It was built from an analogy with physics, but it is clearly more hypothetical-deductive than that already highly mathematical science. Even though a good portion of the physicist's research program is employed in deducing theories, such work is committed to the observation of reality, and it is always building more and more powerful and precise equipment to assist in its empirical research. In the general equilibrium model there is no commitment to reality: it is reality that should be adapted to the model. The numerous and persistent contradictions or anomalies do not lead to the model's rejection. The protective belt that envelops the core theory is absolute. All anomalies, such as monopoly power, externalities, path dependency, information asymmetry, and moral hazard, are elegantly defined and viewed only as disturbing factors of a model which is internally consistent. Institutions, even money, for a long time were just excluded as irrelevant or 'neutral'. When institutions were finally acknowledged, they were also 'deduced' from the concept of transaction costs, instead of being understood as historical realities permanently evolving through time as societies regulate social behaviour.

[21] The danger involved in what Schumpeter called the 'Ricardian vice' is present here.

[22] The rational choice school, which borrowed its tools from neoclassical economics, naturally rejects this assumption.

Although it intends to be general as long as it is extraordinarily abstract, neoclassical microeconomics is a partial achievement. It views economic system only from one angle, as a non-fleshed-out, non-spatial and non-historical market economy. Yet minds that have an internal demand for consistency, and feel particularly attracted by mathematics, often become fascinated when introduced to this theory. As is true of all sciences, the simpler the better. And mathematical formalization may be a good tool to achieve such simplification. However, formalization should not be confused with scientific work. In economics as in any other science, it is most important to observe new economic facts, connect them with the other social and with political facts, develop new ideas, new explanations; in a second stage, to develop models that are as simple as possible; and finally to look for empirical justification for them. Formalization is a mere expedient to facilitate – never to complicate – the communication of the model.[23]

Mainstream or conventional orthodox economics is presently neoclassical and, so, essentially hypothetical-deductive. Yet, discussing the concept of orthodox economics, Tony Lawson defines it not as neoclassical, but as illegitimately adopting mathematical tools. To deny its neoclassical character, Lawson accepts Colander et al.'s claim that orthodox economics is no longer neoclassical in so far as it is becoming increasingly distant from the main tenets of such an economic doctrine, namely, rationality, egoism, and equilibrium.[24] Although we should acknowledge that conventional economics is under permanent change, and that its brighter and more pragmatic adherents strive to adapt it to reality, it is wrong to infer from that fact that it does not define itself in terms of the use of the assumptions of rationality, egoism and equilibrium. Such an inference would be correct if we assumed that mainstream economics is coherent, but obviously it is not. Its more competent practitioners are realistic enough to use

[23] The assumption that formalization is an indispensable condition of economic thought is adopted even by neoclassical economists who do not limit themselves to doing normal science. This is the case with Krugman (1999), for instance, who did not hesitate to state that the true scientific work of inserting externalities in the theory of economic development through the *big-push* model – one of the central models of the theory of economic development – was not performed by Rosenstein-Rodan (1943), who created it, but by Murphy, Shleifer and Vishny (1989), who formalized it.

[24] Lawson, 2005; Colander et al. (2004).

models that lack the microfoundations that would make them so. In macroeconomics, for example, the Taylor rule, which today is widely used, is just a smart rule of thumb which emerged from the observation of the effective behaviour of central banks. Nothing is further from a true neoclassical hypothetic-deductive method based on microfoundations. Another example is the introduction of game theory in microeconomics textbooks. This was a major improvement in such books, but game theory has no relation to neoclassical economics. It is a strategic theory of decision-making under uncertainty, while, in pure neoclassical theory, there is no space for decision-making: the agents always maximize, always choose the optimal alternative. Yet the fact that currently mainstream economics is incoherent does not authorize us to say that it is not neoclassical. The abuse of mathematics and the reduction of economics to an infinite number of mathematical models can be explained only by the fact that economists use a hypothetical-deductive method which derives from neoclassical assumptions. It is only when one adopts a radical methodological individualism, and derives all models from one basic microfoundation – agents' rationality – that it is possible to fully reduce economics to mathematics. Debreu's claim that 'deductive reasoning about social phenomena invited the use of mathematics… for two of its central concepts, commodities and prices, are quantified in a unique manner as soon as the units of measurement are chosen…', only partly explains the use of mathematics in economics. Mirowski, who quoted Debreu, rejects the abuse of mathematics in economics by correctly criticizing the implicit 'notion that commodities exhibit a natural isomorphism to a real Euclidean vector space', and stresses that the mathematization of economics should be limited because 'symmetries and invariances existing in market activities' should be explained 'through the instrumentality of social institutions'.[25] Yet Debreu and his critic fail to realize that the central reason for the mathematization of economics does not lie in the nature of commodities but in the nature of the chosen method: the hypothetical-deductive method. Once the economist decides to derive logically the whole economic analysis from the assumption of the *homo economicus*, coupled with a few other assumptions like the law of diminishing returns, the analysis can be fully reduced to mathematics.

[25] Mirowski, 1991: 145 (Debreu's quotation), 153, 155.

In fact, the decision to adopt this method occurred before the neoclassical revolution. It was made by the last great classical economist, John Stuart Mill, whose aspiration it was that economics become as precise as mathematics. He knew that this was impossible, but, in his 1836 methodological essay, he realized that it was possible to get near to this objective with the assumption of the maximizing individual, *homo economicus*.[26] After developing pure theory according to this method, he believed that it would be possible to check it against the complex reality. This belief continues to haunt economics, and today is a main reason for its growing irrelevance, in so far as it enabled the development of economic models which have little relation with reality; or of partial and incompetent analysis of real economic systems, in so far as economists are supposed to start from perfect competition, and then, step by step, relax the corresponding assumptions, but eventually will not be able to follow such procedure, not only because it is tiresome and unpredictable, but also because they risk seeing themselves without any model, helpless.

Before we close this section on the hypothetical-deductive method, a final remark is appropriate. With the generalized adoption of game theory by microeconomics, general equilibrium theory loses its status as a general system for understanding a substantive market economic system in order to constitute just a chapter of a decision theory. Its founding acts would no longer be the works of great economists, such as Walras, Jevons and Menger, but rather those of Von Neumann and Morgenstern.[27] Instead of being a theory about reality, microeconomics transforms itself into merely a tool for taking economic decisions under uncertainty. According to Habermas, in this circumstance, 'it would be possible to understand economic theory as a specific theory of decision, concerning situations of economic choice'.[28] Yet economics definitely is not just a method of making decisions under uncertainty. It effectively seeks to analyse and achieve a better understanding of real economic systems. Yet, when it uses as its primary method one that is appropriate to methodological sciences, it cannot be more than that.

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[26] Stuart Mill, 1836.

[27] Walras, 1874-90; Jevons, 1871-79; Menger, 1872; Von Neumann and Morgenstern, 1947.

[28] Habermas, 1967: 71.

1.1.4 The historical-deductive method and new historical fact approach

In the analysis of complex economic reality, the alternative to the neoclassical hypothetical-deductive method is to start from more realistic assumptions by situating the problem within an historical context. It is to use what I call the historical-deductive method. It is historical because it is based on the observation of historical economic reality, in which each event is unique, but has sufficient relations with other economic events that it is possible to look for regularities or at least tendencies. Regularities will not necessarily be found. Actually, not all scientific explanation calls for them. There are no 'regularities' for the Big Bang, or for the Industrial Revolution; in economics, some objects of study are frequent, others not, and others take place only once.[29] Each social or economic event is unique, a regularity materializing only when certain events that share basic similarities tend to repeat themselves over a period of time. In some case, we cannot speak of regularity but of accumulativity: even when given events lack regularity, their emergence may be the outcome of the accumulation of several interrelated factors which permit the detection of a tendency.[30] When regularities materialize, they appear as historical events related to the conventions or institutions which give meaning to them and constrain their regularity.[31] Thus, contrary to the economist who sees economics as a 'natural science', this historical approach requires that the researcher includes in the social and economic reality which is the object of his explanatory models conventions, routines, or institutions, as Herbert Simon and Nelson and Winter so well argued,[32] because such reality is not natural but man-made – an artifact.

In the process of developing a theory or a model based on the observation of economic processes, the economist will, at a given moment, have a vision – a vision he will have to

[29] I owe this observation about regularities to Ramón Garcia Fernández.

[30] I owe this observation on the accumulativity of events to Marcos Ribeiro Ferrari.

[31] We know the importance that Keynes attached to conventions. Since the 1980s, institutions became a must in social sciences. Economists and other social scientists realized that it was impossible to understand society and the economy without considering formal and informal laws.

[32] Simon (1996); Nelson and Winter, 1982.

transform into a falsifiable hypothesis. First, he will submit his original intuition to the knowledge he already possesses of the economic process, using the tools and models at his disposal. But, if his vision involves real novelty, he will soon realize that he will have to develop new concepts and additional tools. Starting from the observation of reality, he will begin with the abduction of a tentative hypothesis from the observed facts, but he soon will have to resort to deductive reasoning, and finally he will have to inductively come back to the facts to check whether they confirm the theory. In the deductive part of the research process, he will have to make inferences, and relate inferences one with another in a reasonably consistent way. His objective will be to understand a real economic system, to have an understanding of this system as a whole. This economic system may be the Brazilian macroeconomic system, the European monetary system, or the Chinese development system. The essence is to understand the logic or the underlying principle that organizes this system, to understand how its several elements are interconnected and vary one with another; and it is also to be able to predict its tendencies, and how the system will change if certain policies or some more permanent institutions are introduced.

Once the researcher is able to understand the regularities or tendencies and develop a model of the economic system he is studying, he is supposed to check the predictions of the model against the data empirically observed, for which econometric methods will be particularly relevant. In this process, starting with the empirical observation of social facts or history, inductive, abductive and deductive reasoning will be intrinsically complementary methods of inference: each is impossible without the others. Yet, while the hypothetical-deductive method corresponds to logical time, the historical-deductive deals with historical time.[33] While the hypothetical method gives priority to deduction, the historical-deductive method starts with abduction and checks reality with induction. The researcher knows that induction does not lead to definitive truths, but he is content with provisional and probable ones. Economic facts or economic relations take place in historical time, are permanently changing, and, so,

[33] I owe this observation to Alain Herscovici.

generalizations, which must be made to develop a theory, are supposed to be modest and provisional.

Once the economist has developed a model using the historical-deductive method, he may try to reduce the degree of uncertainty of such a model through the search for rational microfoundations. This search gives consistency to the model. This heuristic strategy is somewhat similar to the methodological distinction made by Max Weber between understanding and explanation. The social scientist should first try to understand social and economic phenomena, find their regularities and their distinctive features, adopting an essentially historical analysis that leads him to propose some stylized facts and their logical connections. Afterwards, however, or even at the same time, he should formulate explanatory theories for which there should be rational motivations.[34] Finally, *a posteriori* and not *a priori*, as a consequence of the generalization of historical regularities and of their rational explanations, he concludes the drafting of his model, which doesn't aim to answer all questions, but to be abstract enough to constitute a scientific theory and a guide to action.

This is an historical method, but it is necessary not to mistake this kind of approach with that of the German historicist school of Gustav Schmoller and Max Weber, or of the American institutionalist school of Thorstein Veblen. It is true that the historicists didn't reject theory, but they saw narrow limits for the development of theoretical models of the type produced today by

[34] Weber, 1922: Chapter 1. Habermas (1967: 19) studies this methodological approach proposed by Weber and remembers that Weber begins his 1922 book stating that: 'sociology is a science which attempts the interpretive understanding of social action in order thereby to arrive at a causal explanation of its course and effects'. And Habermas (1967: 19) summarizes Weber's methodological vision stating that: 'Weber analyzed particularly the articulation between explanation and understanding... The general theories make it possible to deduce hypotheses related to the empirical regularities. Those hypothetical laws have an explanatory function. Unlike natural processes, however, the regularities of social action have the characteristic of being understandable. Social actions belong to the class of intentional actions, which we grasp by reconstructing their meaning.'

an historical-deductive method.[35] However, there are significant similarities between the historical-deductive method advanced here and the historical method adopted by Weber. In studying economic laws, Weber didn't define 'laws' in the narrow sense used by natural sciences, but as '*adequate* causal relationships'. The aim of political economy is 'the knowledge of the historical phenomena in their concreteness … the most general laws, because they are most devoid of content, are also the least valuable'.[36]

It is also necessary not to mistake the historical-deductive method for the search for a theory of economic change as proposed by Nelson and Winter.[37] The central criticism that these two distinguished economists have of neoclassical economics is that it doesn't account for processes of economic change. They therefore propose to replace it with an evolutionary theory. My main criticism of neoclassical economic theory is that it prefers to use a scientific method that is appropriate to methodological sciences rather than to substantive ones. It is for that reason that it fails to achieve the objective of a social science: to build theories which explain not only the present but the continuously changing process. In order to fulfil this objective, the social scientist will be powerfully helped by a specific variety of the historical-deductive method: the method of new historical fact. He will start from the assumption that there are relatively necessary relations between three major instances that we can detect in social systems – the structural, the cultural and the institutional – and he will search for new historical facts that change this reality.[38] In this way, he will not be able to understand the process of economic change itself, as Nelson and Winter wanted, but he will be able to understand how the economic

[35] I don't believe that Schumpeter (1959, vol.3: 80) was unfair towards Schmoller when he states that he used a conceptual apparatus but 'theorized weakly'. According to Schefold's observation (1987: 257), 'Schmoller's main work, the *Grundrisse*, remained rather traditional in its theoretical part – the treatment of value and price was not too far away from mainstream neoclassical economics'.

[36] Weber, 1906: 72.

[37] Nelson and Winter, 1982.

[38] By the 'structural' aspect of a society I mean its founding characteristics, like the level of technology and division of labor, the property system, and the class system. I do not assign a more important role to one or another aspect; this will vary from case to case.

system under analysis moves from one historical moment to another, and to identify the peculiar characteristics of the new historical phase, for which a new explanatory model is adequate. Yet, given that economic systems are open systems, he will, again, have to limit his ambitions about the precision of the economic theories, particularly when they involve change.

The starting point in the historical-deductive method is the assumption of imperfect markets. When markets are perfect, there is nothing new to analyse, and no policy needs to be proposed. Second, the identification of the new historical facts that are changing the picture is invariably necessary. The problem may have existed for a long time and not been solved, but, even in this case, it will be a new fact, since a new historical fact is defined as one that modifies reality, or creates new constraints or new liberties for social action, and thus requires new theories to account for reality. The new fact may be 'old' in so far as it was noted when it emerged, but it is having consequences and introducing change, and must be acknowledged and analysed. In the realm of the social sciences, the new fact gives birth to the problem to be solved at the scientific and practical level. In most cases the solution of the problem will be the product not only of a brilliant mind but of a group of people thinking and debating that problem. Continued, open, and respectful debate is fundamental in order to define the problem, find reasonable alternative explanatory models for it, choose one, and, finally, scientifically validate it through the quasi-consensus of peers.

Validation will depend on research – usually econometric research. Yet econometric tools are usually limited to the verification of some specific characteristics of a much broader problem. On the other hand, the results of such research are often disappointing, as causes and consequences are not clearly distinguished or in so far as relevant variables were not considered. For each economic problem, econometric evidence is usually found to justify opposite theories. Yet none of these limitations should prevent us from using econometric tools. On the contrary, if the historical-deductive method is supposed to start from the observation of reality, such observation can be powered by econometrics. However, when historical series of data are involved, the researcher often uses all the data available, not distinguishing historical phases or stages, not taking into consideration historical discontinuity, and ignoring crucial moments that change the economic problem being studied. According to the historical-deductive method,

econometric research must either start from assumptions about such historical discontinuities in order to make sense, or identify the occurrence of such discontinuities with the use of econometric methods.[39] In any circumstance, once both the new historical fact and the discontinuity have been identified, the subsequent econometric analysis will have to take them into close consideration.

Besides econometric tests, it is important to check the model in terms of its practical use in predicting outcomes and in formulating economic policy. In theoretical terms, there is no better validation for an economic theory than the possibility of deriving reliable predictions from it. In pragmatic terms, a theory is validated when it is possible to deduce economic policies which prove to be effective. In Brazil, for instance, the Plano Real, which in 1994 ended the high and chronic inflation, was based on the inertial theory of inflation which some Brazilian economists had previously developed. The success of the Real Plan in neutralizing inflation was a validation of the theory.[40]

The method used by the classical economists to analyse the capitalist revolution or the emergence of market-coordinated economies, as well as the method that Keynes originally employed to explain cyclical fluctuations and establish the foundations of macroeconomics, started from the observation of new historical facts, which involved ruptures or discontinuities requiring the acknowledgment of new regularities, and implied the definition of new concepts and the analysis of the logical connections between the relevant economic variables. Adam Smith acknowledged the beginning of the Industrial Revolution, and changed the focus of economic analysis from trade to production; for Marx, the new historical fact was the tectonic change that the capitalist revolution, in his time completed in England and France, represented; Keynes built the first full economic theory based on the historical-deductive method writing the *General Theory* after World War I, the Versailles Treaty, the hyperinflation in Germany and central

[39] We should not overlook the fact that in some cases a continuous change may eventually imply also a discontinuity.

[40] On the theory of inertial inflation, see Bresser-Pereira and Nakano, 1983, 1987; Resende and Arida, 1984; Lopes, 1984. For a survey of inertial inflation theory, see Bresser-Pereira, 1996.

Europe, and the Great Depression had changed the world economy. The *homo economicus* assumption was still present, but he was more modest: he had to choose under uncertainty rather than maximize. It was only after observing the new regularities and tendencies, after developing the new concepts, and after linking them in a meaningful way that those great economists were able to develop their open models. And only then did they or their followers look for rational explanations. Only then did they ask, on a case-by-case basis, what the underlying relevant social mechanisms were, assigning greater consistency to the theories developed. But this *a posteriori* search should not be confused with the *a priori* presumption that 'the microfoundations' of macroeconomics are already known. Differently from the general equilibrium model, there are microfoundations for macroeconomic and development economics models but they are *a posteriori*, not *a priori*, because, unlike with the hypothetical-deductive method, the historical-deductive method uses an essentially *a posteriori* form of reasoning. In general equilibrium, there is only one microfoundation – the maximizing agent – which serves for the hypothetical-deductive analysis; in macroeconomics there are many, because they will be found after the observation of the economic phenomenon and the development of the new model or the new theory.

The historical-deductive method is realistic because it assumes that objective knowledge of social reality is possible provided that the researcher is modest, and because it requires the use of realistic assumptions. By being realistic, wouldn't the method also be 'positivist', in Friedman's sense of the word? Friedman tried to justify the neoclassical microeconomic model (he hadn't yet developed his own macroeconomic model) with the argument that, despite the unrealistic assumptions this model was based on, the predictions were realistic, and their confirmation made the model 'positively' true. This argumentation is rhetorical rather than positivist. It is supposed to have originated in Popper's classic claim about the impossibility of proving the veracity of a certain scientific hypothesis: a scientific hypothesis will be valid if, being falsifiable, it has not yet been falsified.[41] From that Friedman concluded that Popper was

[41] Popper, 1959. Popper is often defined as a positivist; to be sure, he is not a relativist, but it would be fairer to view him as a realist. See, particularly, Popper, 1982.

not concerned with realism or the veracity of the assumptions, but only with the falsifiability of hypotheses, which he identified with the models' predictive power. Since general equilibrium and partial equilibrium models enable, at a very general level, predictions about agents' behaviour, Friedman concluded that neoclassical economic theory was positively validated. Thus, he adopted a pragmatic approach, following the lesson of the founder of pragmatism, Charles Peirce, for whom the truth of an idea resided in its predictive power and in its ability to guide action.[42] Yet Friedman's analysis was rhetorical rather than scientific, and, eventually it did not do justice to Peirce. He ignored the fact that the alleged predictive capacity of neoclassical economics is too general, so that it is of limited utility in guiding economic policy. It is useful for letting us understand, in very general terms, how a hypothetical market coordinates a hypothetical economic system, but it tells us little about how to act when we confront actual economic problems involving the analysis of real economic systems. Eventually, it becomes a dangerous model when it aspires to become the general framework within which macroeconomic models and development economics models should be built. Horkheimer, in criticizing subjective and instrumental reason, which became dominant from the industrial age on, and from the widespread identification of reason with personal interest, remarks that there is a significant affinity between positivism and pragmatism. By losing its particular autonomy while presuming the existence of an objective reason, reason became instrumental and formal. Whereas the formalism of reason, usually expressed through the abuse of mathematics, was stressed by positivism, its instrumental aspect was underlined by pragmatism.[43]

1.1.5 Conclusion

In conclusion, my claim in this paper is that economics uses two methods: an historical-deductive method and a hypothetic-deductive method. Neoclassical economics uses mainly the first; classical and Keynesian economics, principally the second. The more appropriate method for a

[42] Peirce, 1958 (date of publication of his selected papers). Although founder of pragmatism, Peirce cannot be considered a relativist unless we have a broader understanding of relativism. See Wiener, 1958, and Hoover, 1994.

[43] Horkheimer, 1947: 30.

substantive or ontological science is originally empirical, based on the observation of reality; in the case of most of the natural sciences, the method is only empirical; in the case of social sciences, historical. Only an historical method is able to analyse the social system as a whole, and to understand how it changes over time. In contrast, the hypothetical-deductive method is suitable for the methodological sciences, like mathematics and statistics, i.e., for sciences that lack an object, except the one that they build rationally. In so far as neoclassical microeconomics primarily uses this method, it sets limits to its capacity for analysing economic systems as a whole, while classical development economics and Keynesian macroeconomics are able to draw broader and more realistic theories explaining how social systems work.

Neoclassical economics risks becoming increasingly irrelevant in so far as it is based on unrealistic assumptions, and adopts a hypothetical-deductive method which favours the use and abuse of mathematics at the expense of realism and pragmatism. When orthodox models, particularly macroeconomic models, become more realistic, it will be a sure sign that they are giving up the internal consistency that is made possible by the hypothetical-deductive method, and acknowledging the open character of economic systems. On the other hand, when microeconomics adds game theory to its textbooks, it is admitting that it is a tool for reasoning rather than a theory of how economic systems work.

The truth about economic relations and the working of economic systems is a complex one, and may be seen from different angles. Thus, to complement the historical-deductive method with a hypothetic-deductive one is legitimate, provided that the latter is assigned an auxiliary role, not the main one. The validation of models or economic theories depends on the empirical test to which they are submitted, on their ability to make practical predictions, on the effectiveness of the economic policies that are based upon them, and on the degree of consensus that is formed around them. The hypothetical-deductive method was effective in developing microeconomics and in devising economic decision tools, but it is unable to provide the whole picture of the economic system and is dangerous when extended to other areas, while the historical-deductive method provides such a picture and has been successfully applied in solving macroeconomic problems and in development economics. The first method is based on a radical view of methodological individualism, the second on the assumption that economics, as a social

science, is essentially historical. The historical-deductive method is also based on a holistic perspective according to which the whole is not the mere sum of its parts. Finally, it is deliberately eclectic, pragmatic, and humble. It is eclectic because it asserts that it is possible to combine the historical comprehensive perspective of economic reality with the search for rational explanatory social mechanisms, and attributes to microeconomics a relevant role in providing tools for social analysis. It is pragmatic because it is concerned with the practical quality of the predictions provided by the economic models, and, particularly, with the guidelines that they offer to successful economic policy. It is humble because it acknowledges the open character of economic systems, and so knows well how limited economic theory is. The economist, confronting an actual economic system, cannot just apply ready-made models. He is supposed to think in depth, analyse conflicting data, and finally take decisions which involve uncertainty and risk.

In this setting, the search for microfoundations for macroeconomics and development economics is legitimate, but it will be a search *a posteriori* for the rational motives behind the aggregate behaviours that are being studied. It is legitimate as long as it gives a rational explanation for the observed phenomenon. But this elucidates why neoclassical economists have failed in the search for a unique microfoundation of macroeconomics. It is impossible to reach it. Or, when it is reached, the macroeconomic models will have become so abstract and general that they will have lost explanatory power.

In order to think about the economy, to formulate the hypotheses that explain its functioning, and to propose the economic policies necessary for socially accepted objectives (stability, growth, distribution), the economist, whose problems are today essentially of macroeconomics and of economic development, should observe the reality, verify how the phenomena occur and are repeated or show tendencies, and from this analytical process, which is initially abductive but actually inductive–deductive, he will infer his model or his explanation. The skeptical objection that no inductive inference is justified – Hume's well-known 'induction problem' – although interesting, cannot be accepted – not only because it is against common sense, against the evidence that knowledge results mostly from inductive inferences, but also because, as Foster argues, inductive inference is justifiable whenever it represents the 'best

explanation' for the problem under examination.[44] Therefore, the economist, in these two great areas, adopts the classic form of scientific research in the natural sciences: he examines reality and searches for regularities. But he does so much more modestly. He uses mainly induction, but naturally also deduction. The researcher's job is essentially to generalize from the study of reality, which, for the social sciences, is always an historical reality. The market and money – the two main elements in economic systems – are themselves institutions, and thus historical realities.

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[44] Foster, 1982: 334.

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