

## **PROVISIONAL DRAFT**

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## **Review of**

### **General Equilibrium, Capital and Macroeconomics: A Key to Recent Controversies in Equilibrium Theory** (by Fabio Petri, *Cheltenham, Edward Elgar, 2004*)

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The neoclassical or marginalist theory of value and distribution treats technology, the endowments of factors of production, and the preferences of economic agents as exogenous data and determines the prices of goods and factors of production as the outcome of a process of equilibration between their respective demands and supplies. The most rigorous version of the neoclassical theory is the neo-Walrasian model of general equilibrium. According to a view widely held among economists, the various applications of neoclassical analysis, from macroeconomic models to studies on taxation, should be grounded in the general equilibrium framework. This particular theoretical vision has had a marked impact on all fields of economic analysis for many years now. It has provided the foundation for pioneering research, guided the basic teaching and training of new generations of economists, and deeply influenced the policy recommendations developed by the research centres of central banks and major international economic institutions.

With the passing of time, however, some misgivings have emerged as to the methodological and theoretical validity of general equilibrium framework, not only among members of the schools of critical thought but also among influential neoclassical economists. With his customary bluntness, Frank Hahn has compared the neo-Walrasian equilibrium to a mock-up of an aeroplane that will never be able to fly because it overlooks some crucial characteristics of the real world. The approach, Hahn argues, is vitiated by inherent defects to the point of being incapable of providing any plausible description of how Adam Smith's 'invisible hand' actually operates. Not all economists have been so sweeping. According to Olivier Blanchard, for example, the neo-Walrasian general model should be seen as an ideal system devoid of the imperfections typical of real economies and hence serving solely to provide a rigorous definition of the set of restrictive conditions that would have to exist in order to see the invisible hand concretely at work. It would instead be the task of macroeconomic models to incorporate the asymmetries and externalities as well as all the typical 'imperfections' of the real world in general so as to make the analysis

correspond as closely as possible to the actual operation of market economies.

The 'imperfecionist' approach can be regarded as the new mainstream in the neoclassical sphere. It claims to establish a compromise between pure neo-Walrasian theory and the most recent macroeconomic applications, some of which are described as New-Keynesian. But is it a tenable compromise? Fabio Petri's answer is decidedly negative, regardless of whether the neo-Walrasian model is interpreted as representing the concrete functioning of a market economy or, more modestly, as an ideal framework serving to show how the market would work if it were free of imperfections. Petri's book is a painstakingly rigorous work of historical reconstruction designed to show that the neo-Walrasian general model proves logically indefensible in any case and constitutes the latest and most glaring proof of the blind alley in which neoclassical theory has been groping for over seventy years. The language is clear and the arguments will be accessible to readers encountering the critique of the neoclassical theory of capital for the first time. The use of mathematics is kept to the bare minimum. The book could serve as a supplementary reference for an advanced course in economic theory for graduate students.

Petri's basic thesis is that the neoclassical approach has now exhausted all its possibilities of development and the time has come for contemporary economic analysis to explore new and different avenues of research. His expressly declared objective is a return to the 'surplus' approach typical of the classical economists and Marx, a line rooted in the work of Piero Sraffa and Pierangelo Garegnani. In arguing his case, Petri develops an idea put forward by Garegnani, namely that present-day dissatisfaction with the neo-Walrasian general equilibrium can be traced back to the abandonment of the traditional long-period method—common to the classical economists and the first generation of marginalists—and its replacement with the method of 'very short-period' equilibrium analysis typical of contemporary neoclassical models. A summary of the salient points of Petri's historical reconstruction will make it easier to understand the great importance attributed to this methodological change.

The classical economists, especially Smith and Ricardo, regarded the balance of power between social classes with conflicting interests as a primary characteristic of capitalism. They believed that the state of relations between the classes determined the real wages allocated to workers, and they understood profits as the appropriation of a surplus on the part of capitalists after paying these wages. On this view, once wages are known, it also becomes possible to determine relative prices and the profit rate. The balance of power can of course change over time along with the wages and hence also prices and profits. The classical economists believed, however, that social relations tended to change slowly, so that the level of wages could be regarded as a quasi-permanent element of the system. The corresponding prices and profits could then be seen as the points of reference around which the actual values observed in the market gravitate in the long-period.

The approach of the classical economists fully recognised the conflictual nature of capitalism. It is therefore no coincidence that Marx took it as the basis for his theory of exploitation. Moreover, the long-period position of the classical economists did not necessarily entail equilibrium between the supply and demand for labour, and was therefore compatible with persistent mass unemployment. John Bates Clark, Knut Wicksell, Alfred Marshall and the other early marginalist economists, Petri tells us, rejected the classical theory but preserved the classical method. They denied the idea of distribution being

determined by the balance of power between the classes, and put forward a new theory according to which substitution in production and consumption led the economy to utilise more intensively the factors of production whose relative prices are decreasing. In conditions of free competition, this mechanism ensures that all the factors are fully employed and that each is remunerated according to its marginal productivity. They thus arrived at the determination of an equilibrium in which all the prices and all the distributive variables are determined simultaneously and, above all, every factor is fully employed and remunerated in proportion to its specific contribution to production. The new model contended that the capitalist system tended to promote the full and efficient employment of all the resources and just remuneration for their owners. The intrinsically conflictual dimension of capitalism constituting the basis of the classical approach was refuted, and the concept of exploitation investigated by Marx was consigned to oblivion.

While it is hard to imagine a more radical change of course in theoretical terms, Petri argues that the early neoclassical economists remained entirely faithful to the long-period analytical method of their predecessors. The initial data are obviously different in the neoclassical analysis, where endowments of the factors of production take the place of real wages determined by the balance of power. Like the wages of the classical economists, however, the endowments of factors are regarded by neoclassical theory as sufficiently permanent to constitute points of reference for all the other variables of the system. It was thus argued that economic agents could move towards the equilibrium position through a process of trial and error involving production and exchange at non-equilibrium prices. These actions in a non-equilibrium state would, however, have no effect on the system's long-period equilibrium position, which was determined by the initial data and was independent of the process of adjustment.

Implicitly adopting a clear epistemological stance, Petri repeatedly describes the method shared by the classical economists and the early marginalists as 'realistic.' Both schools focused their analysis on the persistent features of the system, while believing that little could be said about the transitory day-to-day behaviour of market values other than that they would gravitate around their long-period levels. However, as Petri points out, the neoclassical economists were soon faced with a logical difficulty, concerning the definition of capital, that eventually forced them to jettison the long-period approach.

If a long-period method is adopted, the convergence on equilibrium takes time and involves errors that require adjustments in the production of the physical amounts of the various capital goods, which tend to adapt gradually to the composition of demand. That is to say, the composition of the capital stock cannot be treated as part of the data of the system: it is determined by the equilibration process. In order to cope with this difficulty, the early neoclassical economists adopted a particular conception of capital as capable of changing in form (i.e. physical composition) without changing in amount (expressed in value terms). This solution looked promising at first but was soon seen to contain irreparable logical flaws. On the supply side, some of the neoclassical theorists themselves realised that in order to express the endowment of capital in value terms, it was first necessary to know the prices of the individual capital goods. For this very reason, however, the endowment of capital could not be taken as an exogenously given datum; the analysis presented an obvious fallacy of circular reasoning. On the demand side, Piero Sraffa's work and the Cambridge capital controversy results reswitching and reverse capital deepening

called into question the factor substitution mechanism upon which neoclassical distribution theory was based.

Petri presents historical evidence to argue that it was precisely these two problems that drove neoclassical theorists to develop an unprecedented remedy based on the abandonment of the long-period method. Having recognised that it was impossible to include 'capital' expressed in value terms among the data of their analysis, they replaced it with the physical endowments of the individual types of capital good. But since the physical amounts of the individual capital goods are continuously changing, their inclusion among the exogenous data of the analysis was thought to necessitate the abandonment of long-period equilibrium in favour of a different sort of equilibrium, one that applied to the very short period. This marked the birth of the modern neo-Walrasian version of the neoclassical theory of general equilibrium. The shift occurred in the mid-20th century, notably via sophisticated contributions by Kenneth Arrow and Gerard Debreu in the field of intertemporal equilibrium (with complete futures markets) and John Hicks in the field of temporary equilibrium (with incomplete markets and given expectations).

The new type of analysis presented even greater difficulties than its traditional counterpart. Neo-Walrasian models are based on the wholly unrealistic hypothesis of a mysterious auctioneer who authorises actual production and exchange only when market-clearing prices obtain in all markets. If the unlikely hypothesis of the auctioneer is eliminated from the analysis, however, errors will inevitably occur and transactions will be undertaken at non-equilibrium prices. These disequilibrium transactions will entail changes in the physical amounts of capital goods, i.e. in the very data of the analysis. As the neoclassical theorist Franklin Fisher observes, this change makes any calculation of equilibrium based on the initial data wholly irrelevant; the equilibrium becomes a sort of 'moving target' that is almost impossible to determine. Moreover, as Petri notes, even if we admit the hypothesis of the auctioneer and eliminate the equally unrealistic hypothesis of complete futures markets, the problem of impermanence reappears in any case in the form of continually changing expectations.

In light of these complications and many others analysed in the book, it is hardly surprising that the neoclassical theorists themselves should have manifested increasing doubts as to the relevance of the neo-Walrasian equilibrium to an understanding of the real functioning of market economies. And this, it should be noted, is wholly independent of and above all logically prior to the imperfections and asymmetries upon which the contemporary New-Keynesian mainstream has focused at such length. Petri's long list of critical objections thus appears to leave no room for doubt: the change of method implicit in the new neo-Walrasian formulation has led mainstream analysis of a neoclassical character into a blind alley.

Given this situation, one would naturally expect the theory to be called into question along with the macroeconomic applications more or less directly related to it. In actual fact, nothing of the kind has happened so far. Albeit with countless stipulations and variations, the neo-Walrasian version of the neoclassical paradigm still appears to constitute the basis of mainstream economics. How can we account for this? Petri suggests that while the most widely adopted neoclassical models are presented as simplified versions of neo-Walrasian general equilibrium, above all in macroeconomic analyses, the truth is that in many cases

the models implicitly adopt the old conception of capital in value terms and hence the old method of long-period positions. One example is the Solow growth model, whose determinacy in a multisectoral system can only be ensured by assuming that capital is a homogeneous factor expressed in terms of value. Similarly, the 'natural' equilibrium of the macroeconomic models described in the standard textbooks rests on investment and labour demand functions that, Petri shows, can only be constructed on the basis of capital conceived in value terms. Hence these models too rest on the traditional conception of capital as a value magnitude and are therefore vulnerable to the criticisms of that conception.

Petri's book exposes the many confusions that pervade contemporary economics concerning the methodological and theoretical foundations of the tools of analysis most commonly used today. Contrary to those who, misguidedly, have sought to keep economic analysis and the history of economic thought separate both in the sphere of new research and in teaching, he provides crystal-clear proof that they must always be considered together if we are to avoid falling into and above all repeating gross errors of logic and interpretation. Interestingly, he traces the causes of the confusion not only to resistance to change on the part of economists brought up on the neoclassical canons but also to the errors committed by some advocates of the critical approach at the time of the Cambridge capital controversy. In this connection, Petri regards Joan Robinson as greatly to blame for initially focusing her attacks on the versions of neoclassical theory based on the aggregate production function and thus helping to spread the belief that the objections to the dominant theory were confined exclusively to such versions, while the logical inconsistencies had actually been identified from the very outset in the disaggregated analyses of neoclassical general equilibrium theory. He also criticises her for failing to distinguish between the classical concept of a long-period position and the neoclassical concept of full employment equilibrium. Robinson regarded long-period equilibrium as equivalent to full employment, overlooking the fact that one did not entail the other at all for the classical economists. This misunderstanding led her to believe that the only way to defend the Keynesian thesis of the persistence of unemployment was to focus attention on uncertainty, expectations and 'animal spirits.' A similar tendency characterises the Post-Keynesian literature most closely connected with Robinson's original contributions. Petri questions the theoretical robustness of this line of research, however, on the ground that that its incapacity to conceive a long-period position alternative to the neoclassical version makes it weak in its foundations and ultimately subordinate to the orthodox definition of equilibrium.

Careful examination of the mistakes and misunderstandings in both the neoclassical and the heterodox spheres leads Petri to the conclusion that the classical concept of the long period is the only one possessing the requisite methodological and theoretical solidity to constitute a new cornerstone of contemporary economic analysis. He appears in some passages to believe that the classical approach is capable of winning disciples, even among the neoclassical economists, and, in time, of challenging the supremacy of the mainstream. He may be unduly optimistic about this. Of course, there is nothing at the analytical level to rule out the idea that the conflicting forces of the different social interests operating in a capitalist economy can constitute the best basis for a realistic and consistent long-period theory of distribution and prices. But the ideological and anti-apologetic implications of such a theory are inevitably critical of the existing social order and hence completely

inappropriate for acting within it as the new mainstream. It might be more realistic to hope that the heterodox authors will eventually resolve the current disputes about the classical concept of the long period so that it can become the conceptual core for the construction of a rigorous and widely accepted critical theory of capitalism. This possibility can indeed be described as concrete, not least due to the clarifying contributions of authors like Petri. One necessary condition is, however, that the long-period method and the classical theory of prices must be seen as points of departure rather than goals of analysis. In this connection, Petri comes close to suggesting in the last chapter of the book that we already have at our disposal a fully formed critical approach based on the idea that the classical view of prices and distribution is entirely compatible with the Keynesian principle of effective demand. But if the aim is to develop a fully-fledged alternative theory of capitalism, the project remains a work-in-progress. A great deal remains to be done in order to define the epistemological status of the critical theory with greater precision and to establish a rigorous connection between the processes of physical reproduction and the processes of monetary reproduction of a market capitalist economy. In particular, if we want to provide a comprehensive and critical interpretation of the current economic crisis or other real phenomena, we need to make explicit a clear link between the theory of value and distribution and monetary theory (recent work on the possible relationship between the classical surplus approach and the Monetary Circuit approach may be useful in this regard).

While there appears to be a long way still to go between the prelude and the postlude to the critique of the dominant theory, Fabio Petri's book will unquestionably help us to take an important step in the right direction.

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