

Sraffian Political Economy: History and Major Contemporary Themes

The obvious starting-point for an account of the history of something called ‘Sraffian political economy’ would seem to be the publication of Piero Sraffa’s *Production of Commodities by Means of Commodities* in 1960. However, as Sraffa indicated in his sub-title and explicitly stated in his Preface (1960, pp. v-vii), his purpose was to provide the basis for a *Critique of Economic Theory*, i.e. a critique of the marginal theory of value and distribution, and to revive the standpoint adopted by the old classical economists, that is, the surplus approach to the theory of value and distribution. It has meanwhile been demonstrated that the basis provided by Sraffa was sound. This implies, of course, that there is no such thing as a ‘Sraffian political economy’. What now exists is rather a logically coherent formulation of the theory of value and distribution in capitalist economies in conditions of universal free competition. While many authors have contributed to its development, its consistent modern reformulation is mainly due to Piero Sraffa’s seminal contributions to economic theory.

Sraffa’s work on the reconstruction of the surplus approach was begun already in the 1920s, immediately after his early critique of Marshallian partial equilibrium analysis (Sraffa 1925). It further involved his masterful edition of *The Works and Correspondence of David Ricardo* (1951-73), in the ‘Introduction’ to which he clarified the basic analytical structure of the surplus approach, and the particular formulation it was given by Ricardo. However, the surplus approach itself can be traced back to the writings of Petty, Cantillon and the Physiocrats – authors, who had put forward land-, land-and-labour-, and material-based value theories. The labour-based value theory adopted by Smith, Ricardo and Marx in order to determine the general rate of profit was thus merely a particular formulation of the surplus approach. Major analytical contributions to its modern reformulation prior to Piero Sraffa’s 1960 analysis were made by authors like V. K. Dmitriev, L. von Bortkiewicz, G. von Charasoff, and J. von Neumann (See Kurz and Salvadori, 1995, ch. 14).

The most important difference between the surplus approach to the theory of value and distribution and the neoclassical one concerns the treatment of capital (goods) in the analysis. The surplus approach starts from the following data: (i) the size and composition of the social product, (ii) the technical alternatives from which producers can choose, and (iii) the ruling real wage rate (or the rate of profits). From this data it determines long-period commodity prices and the normal rate of profit (or the real wage rate) compatible with cost-minimization in conditions of free competition. A fundamental characteristic of the surplus approach is the *asymmetric* treatment of the distributive variables, which is in sharp contrast with neoclassical analysis. The latter takes as given: (i) the initial endowments of the economy with goods and factors of production and their distribution among agents, (ii) the preferences of consumers, and (iii) the available technical alternatives. These differences in the data reflect, of course, a fundamental difference between the two approaches with regard to the determination of the distribution of income in capitalist economies in conditions of full competition. Traditional neoclassical theory has generally viewed the distribution of income to be

determined by the *relative scarcity* of the ‘factors of production’, i.e. labour, ‘capital’, and land. It thus sought to treat ‘capital’ in full symmetry with labour and land, i.e. it sought to extend the scarcity principle, which the classical economists had only applied to non-reproducible inputs like land, *symmetrically* to all ‘factors of production’. However, the formidable problem for traditional neoclassical theory was to find an expression for the given ‘amount of capital’ which is independent of the distribution of income. As the controversy in the theory of capital of the 1960s has shown, this is not possible other than in excessively special cases. The initial endowment with capital goods, i.e. with produced means of production, can therefore only be taken to be given in kind, which, however, implies that only short-period equilibria can be determined.

The capital critique. Until the 1950s it was commonly taken for granted that a lower rate of interest (that is, a higher real wage rate) can be associated with the choice of relatively more ‘capital-intensive’ methods of production. This principle is known as *capital deepening*. It was shown to be not generally valid in contributions by Joan Robinson, Pierangelo Garegnani, and Luigi Pasinetti to what has later been dubbed the ‘Cambridge capital controversies’. The first target of criticism was the concept of a ‘quantity of capital’ and the aggregate production function. Joan Robinson demonstrated that the value of capital depends on the distribution between wages and profits. In constructing a ‘pseudo-production function’ she found the possibility of *reverse capital deepening*, i.e. that a technique that becomes eligible at a higher real wage rate may be more labour-intensive than that which is chosen at a lower wage rate. Therefore one cannot, in general, suppose a monotonic inverse relationship between the rate of profit and the capital/output (or the capital/labour) ratio. In an attempt to counter Robinson’s ‘perverse relationship’, Paul Samuelson constructed a ‘surrogate production function’ which allowed for heterogeneous capital goods but exhibited all the nice properties required for the validity of the neoclassical ‘parables’. Pierangelo Garegnani (1970) then demonstrated that Samuelson’s results are not valid in general but only for the special case of uniform ‘organic composition of capital’, i.e. equal proportions of labour and capital in all sectors. The basis for this critique was laid in Sraffa’s 1960 book, which carried the subtitle *Prelude to a Critique of Economic Theory*. Sraffa demonstrated that a technique can be cost-minimizing at a low level of the rate of profit, be substituted by another technique which is less costly at a higher rate of profit, and then become cost-minimizing again with a further increase in the rate of profit. This ‘reswitching of techniques’ is a sufficient but not a necessary condition for the existence of ‘reverse capital deepening’. Obviously, these findings are relevant to economic theory whenever capital is involved. These findings destroy, for example, the general validity of Heckscher-Ohlin-Samuelson trade theory (as authors such as Sergio Parrinello, Stanley Metcalfe, Ian Steedman, and Lynn Mainwaring have demonstrated), of the Hicksian neutrality of technical progress concept (as Steedman has shown), of neoclassical tax incidence theory (as Steedman and Metcalfe have shown), and of the Pigouvian taxation theory applied in environmental economics (as Gehrke and Lager have shown).

A theme that occupied political economists during the 1960s and 1970s has been the clarification of the implications of Sraffa's analysis for Marx's theory of value and surplus value. The single-most important contribution to this debate was Ian Steedman's *Marx after Sraffa* (1977), in which it was argued with impeccable logical rigour that in the further development of the surplus approach the labour theory of value must be dispensed with. Steedman also made clear that this is of no consequence for the surplus approach as such.

Apart from spelling out the implications of Sraffa's analysis for Neoclassical and Marxian theory, economists working in the Sraffian tradition have also been concerned with extending, generalizing, and (where necessary) correcting Sraffa's analysis. Important **recent developments** concerned particularly the analysis of joint production, fixed capital and rent.

In the case of joint production the problem of overproduced commodities and negative prices may arise. Whereas von Neumann (1937) adopted the *rule of free goods*, Sraffa (1960) assumed that by an appropriate combination of processes the proportions in which commodities are demanded can always be met by those in which they are produced, i.e. he based his analysis on square systems of production. Justifications for Sraffa's (indirect) approach were provided for the special cases of (i) „all-productive“ systems by Schefold or (ii) for an economy which grows steadily at a rate which is equal to the rate of profit by Steedman. However, in the general case Sraffa's assertion of square systems cannot be sustained. Salvadori (1982) stressed that a system of production can be defined only with respect to given requirements of use, since „demand“ will generally influence which processes will and which will not be operated. Hence the „non-substitution theorem“ (i.e. demand does not affect prices) does not, in general, hold in the presence of joint production. Following the direct approach provided by von Neumann, Salvadori proved the existence of cost-minimizing systems of production. For a survey of joint production analysis see: Salvadori and Steedman (1988).

Sraffa's approach to the analysis of fixed capital was based on the simplifying assumptions that (i) every industry utilizes only one type of fixed capital good and (ii) that the efficiency of this capital item remains constant throughout its life. Sraffa's model has been generalized in various contributions by Baldone, Varri and especially Schefold (1989) to allow for increasing, decreasing or varying efficiency of capital. In the case of decreasing or changing efficiency a choice of technique problem arises, i.e. one has to determine the optimal life (or optimal truncation period) of a capital good. It was shown that appropriately truncated systems exhibit positive prices. The return of the same truncation period appeared as a special case of reswitching of technique. The device of the „plant“, i.e. a composite fixed capital good, allows for utilization of more than one machine. Salvadori generalised this concept to account also for intra-sectoral transferability of used fixed capital items.

Sraffa (1960) was also concerned with the reformulation of the classical theory of differential rent on land. Discussing extensive as well as intensive diminishing returns, Sraffa stressed that the scarcity (of land) is reflected by the coexistence of two or more processes to produce the same commodity. In a

„square“ system, i.e. a system where the number of processes equals the number of qualities of land plus the number of products, the rent on land and the prices of the commodities can be determined. Thus Sraffa concluded that more complex cases such as the multiplicity of agricultural products would not give rise to any complications. Recent contributions have demonstrated that this proposition cannot be sustained and that in the case of many agricultural products a long-period position need not exist or need not be unique. Additional cases of rent on land were found by Abraham-Frois and Berrebi (external rent) and by Salvadori (singular rent). Salvadori proved the existence of a cost-minimizing system for a general model which exhibits all forms of rent as well as multiplicity of agricultural products. Other important contributions to the theory of rent can be found in several publications by Quadrio-Curzio, Bidard, D'Agata, Kurz or Montani.

Contemporary themes. A topic that still ranks highly on the research agenda of Sraffian economists is the attempt to integrate Keynes's principle of effective demand and the surplus approach to value and distribution. An immediate outcome of the work done in this area has been the rejection of the 'old' Post-Keynesian theory of growth and distribution developed by Kaldor, Pasinetti and others, in which the (normal) rate of profits was taken to be determined, via the 'Cambridge equation', by the rate of accumulation. The argument that the latter, in order to be compatible with the former, cannot be taken to be given exogenously, determined by 'animal spirits' or suchlike, was taken on board also by authors working in the Post-Keynesian and/or Kaleckian tradition. Consequently, economists working in the Sraffian and in the Post-Keynesian tradition have recently started to investigate the implications deriving from the possibility of varying degrees of capacity utilization for short- and long-period analysis. Clearly, this research is closely related to and indeed inseparably intertwined with attempts to develop a coherent theory of growth and distribution.

Another contemporary theme is to fit depletable and renewable resources into the classical concept. Following Ricardo, Sraffa thought that mineral deposits can be treated like land and both resources will generally pay a rent to their owner. Whereas Schefold provided some rationalizations for the Sraffian-Ricardian approach, Parrinello questioned the method of long period positions for the treatment of exhaustible resources. Going beyond the long period Salvadori and Kurz and Salvadori (1995, Chap. 12) developed an intertemporal Linear Programming model. Other formulations were provided by Roncaglia or Quadrio-Curzio. A model for renewable resources and a survey of the existing literature is contained in Kurz and Salvadori (1995, Chap. 12)

Another major concern is with refuting Hahn's claim that the classical model as exemplified by Sraffa's analysis is but a special case (characterised by appropriately adjusted endowments) of the neoclassical model of intertemporal general equilibrium. Against this claim the following arguments were put forward by authors including Garegnani, Kurz and Salvadori, Schefold and Dumenil and Levy. (i) Since endowments of produced means of production are given at the beginning of the first period it seems that the „problem of capital“ has been successfully circumnavigated: All productive inputs, including capital, have the character of primary factors that can be dealt with according to the

principle of scarcity. However, the problem of capital and its reproduction is still present. It finds its expression in the form of unstable equilibria caused by perversely shaped investment demand functions due to reverse capital deepening. (ii) Prices of production are not simply prices of a short-run equilibrium model assuming short run clearing of markets and appropriate endowments, as viewed by Hahn, but, as defined by the classical economists, are results of a process of gravitation of actual market prices towards a long run equilibrium position. Consequently the classical concept is not a special case of the general neoclassical model but is a *different* concept. Whereas the former is long-period the latter is short-period. (iii) The intertemporal general equilibrium is the result of a dynamic process of market clearing, the Walrasian tatônnement, which is very particular, highly unrealistic and, above all, will not work in the case of instabilities. (iv) It has been demonstrated that, under fairly general conditions, the intertemporal models converge to long-run positions. Consequently not the classical concept is special, but the intertemporal equilibrium can be viewed as a special case of the classical process of gravitation.

Particular formalisations of the classical gravitation process were provided by Nikaido, Boggio, Dumenil and Levi, Franke, Kubin, Steedman, and others.

For a detailed discussion of single production systems see Pasinetti (1977). Kurz and Salvadori (1995) provided a comprehensive account of modern classical economic theory. Collections of important articles in that field were edited by Steedman (1988) and Bharadwaj and Schefold (1990).

See also: Cambridge revolution, capital reversing, capital theory debates, circular processes & vertical integration, competition in Sraffa, gravitation and convergence, heterogeneous capital and labour, international trade in Sraffian PE, invariable standard of value, joint production, rent, reswitching of techniques, Sraffa, surplus approach to economics.

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Christian Gehrke and Christian Lager, University of Graz, Austria.