PART I

Introduction
CHAPTER 1

Piero Sraffa’s contributions to economics: a brief survey

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In this note a brief summary of Sraffa’s contributions to economics will be given. This summary serves two purposes. It introduces the following discussion and it informs the reader about some contributions to economics by Sraffa not dealt with at all, or dealt with only in passing, in the essays contained in this book. In addition, some of the important developments triggered by his contributions will be mentioned. The overall purpose of this note is to round up the picture of Piero Sraffa’s legacy in economics. It is not claimed that the account given is complete with regard to Sraffa’s own works or the body of literature inspired by them. Summaries imply selection and interpretation, and consequently reflect the predilection and views of the authors. Other people may see things differently from the way we see them. However, we have made an effort to present things as impartially as is possible to us.

1 Early works

Piero Sraffa was born in Turin, Italy, on 5 August 1898. After graduation from the local university he went to the London School of Economics (1921–22). In England he was introduced to John Maynard Keynes who invited him to contribute an article on the Italian banking system for the Manchester Guardian, and a paper entitled ‘The Bank Crisis in Italy’ for the Economic Journal (Sraffa, 1922). This article, which contained an attack on the Fascists, provoked fierce reactions

1 In what follows we draw partly on a book and papers written together (see, in particular, Kurz and Salvadori, 1995, 1997).

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from the Mussolini government. Nevertheless, in November 1923 Sraffa was appointed to a lecturership in Political Economy and Public Finance at the University of Perugia. The preparation of his lectures stimulated him to write his first influential work in economics, ‘Sulle relazioni fra costo e quantità prodotta’ (1925), which contains an analysis of the foundations of decreasing, constant and increasing returns in Alfred Marshall’s theory and a critical discussion of the entire partial equilibrium approach. Not least due to this article, Sraffa was appointed to a full professorship in Political Economy at the University of Cagliari, a post he held in absentia to the end of his life, donating his salary to the library. Francis Y. Edgeworth’s high opinion of the article led to an invitation to publish a version of it in the Economic Journal (cf. Sraffa, 1926). This paper starts with the observation:

A striking feature of the present position of economic science is the almost unanimous agreement at which economists have arrived regarding the theory of competitive value, which is inspired by the fundamental symmetry existing between the forces of demand and those of supply, and is based upon the assumption that the essential causes determining the price of particular commodities may be simplified and grouped together so as to be represented by a pair of intersecting curves of collective demand and supply. This state of things is in such marked contrast with the controversies on the theory of value by which political economy was characterised during the past century that it might almost be thought that from these clashes of thought the spark of an ultimate truth had at length been struck. (Sraffa, 1926, p. 535)

Sraffa did not agree with this view, which was the ‘mainstream’ of the time, at least in England and in the English-speaking countries. He objected that in ‘the tranquil view which the modem theory of value presents us there is one dark spot which disturbs the harmony of the whole’. This ‘dark spot’, he added, is the supply curve, based upon the combination of the laws of increasing and diminishing returns. Its foundations, he maintained, ‘are actually so weak as to be unable to support the weight imposed upon them’ (ibid., p. 536).

Consider the usual textbook partial equilibrium argument. A change in one market (e.g. a shift in the demand curve for wine) is taken to have first an effect on the equilibrium of that market (e.g. a change in the price and the quantity of wine produced), and then perhaps an effect on the other markets as a consequence of the change in price and quantity determined in the market where the original change took place (e.g. a shift in the demand for grapes, used to produce wine, and in the demand for beer, a wine substitute). If it can be assumed that the effects on the other markets are of a second order of magnitude with respect to the
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effect obtained on the equilibrium of the market in which the original change took place, and if these former effects are assumed to be so small that they can be neglected, at least at a first stage, then the supply and demand curves of a given market can be considered, in regard to small variations, as independent both of each other and of the supply and demand curves of all other commodities.

Sraffa’s criticism focuses on variable returns, distinguishing between the following cases: variable returns that are (i) internal to the firm; (ii) external to the firm but internal to the industry; (iii) external to both the firm and the industry. Variable returns of type (i) are obviously incompatible with the assumption of perfect competition, whereas variable returns of type (iii) are incompatible with the method of partial equilibrium. Only variable returns of type (ii), whose empirical importance is doubtful, are shown to be compatible with Marshall’s analysis of the supply curve of an industry in conditions of perfect competition.

Sraffa (1925, 1926) showed that variable returns of type (iii) are incompatible with the method of partial equilibrium in terms of the following argument: it cannot be excluded that a change in the quantity produced by a variable cost industry at the same time entails a change in the costs of firms in other industries as it entails a change in the costs of firms in the industry in which the change in the quantity produced took place. A typical example is that in which the same quality of land is used to produce two different commodities, say grapes and hops. An increase in the production of grapes, for instance, may lead to a rise in the cost function of the producers of grapes because of an increase in the rent paid for the use of the land, but this rise in rent would likewise affect the cost function of the producers of hops. The changes in costs would be of the same order of magnitude in both industries, so that it would be illegitimate to disregard the changes in the cost functions of firms outside the industry in which the quantity produced has changed (i.e. hops), while only taking into account the changes obtained in the cost functions of firms inside the industry in which the variation in quantity took place (i.e. grapes). The necessity to take other industries into account is accentuated in the case in which these industries provide means of production to the industry in which the implications of a change in quantity is studied.

When a change in the quantity produced by a variable cost industry does not entail a change in the costs of firms in other industries, the variable costs are said to be internal to the industry. A typical example is that in which returns are decreasing because land is in short supply and each quality of land is specific to the production of a single commodity only. If the economies or diseconomies responsible for variable costs are external to the firm and internal to the industry, variations in the quantity
produced by one industry may affect the cost functions of the firms outside that industry only as a consequence of the change in the equilibrium price and quantity of the commodity produced by the industry in which the variation took place. This would be an effect of the second order of magnitude only, the presence of which, it could be contended, is perhaps compatible with using the ceteris paribus clause (see also Roncaglia, 1978; Panico, 1991; Samuelson, 1991; Kurz and Salvadori, 1995, chaps 1 and 13).

From this, Sraffa (1925) concluded that with regard to small variations in the quantity produced, the assumption of constant returns is the most convenient one for the analysis of the supply curve of an industry under competitive conditions. This view is repeated towards the end of the first part of the 1926 paper and interpreted as giving support to the classical doctrine: ‘the old and now obsolete theory which makes it [the competitive value] dependent on the cost of production alone appears to hold its ground as the best available’ (1926, p. 541). Yet this proposition could not leave Sraffa satisfied. He was confronted with two alternatives: either to abandon the assumption of perfect competition or to abandon partial equilibrium analysis. As is well known, Sraffa initially hinted at the first route, but soon embarked on the second.

In his 1926 paper the second alternative was ruled out on the grounds that an examination of ‘the conditions of simultaneous equilibrium in numerous industries’ is far too complex: ‘the present state of our knowledge...does not permit of even much simpler schema being applied to the study of real conditions’ (ibid., p. 541). There remained the first alternative, which was also motivated in terms of two related arguments. First, ‘[e]veryday experience...that a very large number of undertakings—and the majority of those which produce manufactured consumers’ goods—work under conditions of individual diminishing costs’ suggests the abandonment of the hypothesis of perfect competition (ibid., p. 543). Secondly, it is argued that the chief obstacle against which [business men] have to contend when they want gradually to increase their production does not lie in the cost of production...but in the difficulty of selling the larger quantity of goods without reducing the price, or without having to face increased marketing expenses. This...is only an aspect of the usual descending demand curve, with the difference that instead of concerning the whole of a commodity, whatever its origin, it relates only to the goods produced by a particular firm. (ibid.)

In his 1926 paper, Sraffa therefore suggested retaining partial equilibrium analysis. This was possible, however, only at the cost of abandoning the concern with the free competition form of markets: in order to
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preserve the partial framework the analysis had to be limited to the study of economics internal to the firm. Sraffa’s proposal was taken up by several authors and triggered a rich literature on market forms which bloomed during the 1930s (see, especially, Joan Robinson, 1933). Apart from a contribution to the 1930 Economic Journal symposium on increasing returns, Sraffa did not participate further in the debate on the Marshallian theory of value. Keynes, in the ‘Note by the Editor’ introducing the debate, called Sraffa’s intervention a ‘negative and destructive criticism’. This assessment is confirmed by Sraffa’s concluding remark in his rejoinder to Robertson:

I am trying to find what are the assumptions implicit in Marshall’s theory; if Mr Robertson regards them as extremely unreal, I sympathise with him. We seem to be agreed that the theory cannot be interpreted in a way which makes it logically self-consistent and, at the same time, reconciles it with the facts it sets out to explain. Mr Robertson’s remedy is to discard mathematics, and he suggests that my remedy is to discard the facts; perhaps I ought to have explained that, in the circumstances, I think it is Marshall’s theory that should be discarded. (Sraffa, 1930, p. 93)

We know that Sraffa’s analytical concern following the 1926 paper was ‘the process of diffusion of profits throughout the various stages of production and of the process of forming a normal level of profits throughout all the industries of a country…[a problem] beyond the scope of this article’ (1926, p. 550; see also Eatwell and Panico, 1987).

2 The collaboration with Keynes and the controversy with Hayek

In the mid-1920s Sraffa was offered a lectureship in Cambridge which he assumed in October 1927, starting to lecture on advanced theory of value in the Michaelmas Term 1928–29. He was to lecture for only three years. A main reason for giving up teaching was that by that time Sraffa was convinced that Marshallian analysis could not be remedied and that an alternative analysis had to be elaborated, the beginnings of which took shape in the systems of equations of production Sraffa formulated in the late 1920s (see Kurz, 1998). In 1930 Sraffa was appointed to the position of librarian of the Marshall Library and was also placed in charge of the Cambridge programme of graduate studies in economics.

Shortly after his arrival in Cambridge, Sraffa showed Keynes the set of propositions which were to grow into Production of Commodity by Means of Commodity. However, his work on the manuscript was delayed both by the intense debate in Cambridge surrounding Keynes’
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*Treatise on Money* and, later, *The General Theory*, and by Sraffa assuming, in 1930, the editorship of the Royal Economic Society edition of *The Works and Correspondence of David Ricardo*. Sraffa participated in the famous Cambridge ‘Circus’ and was known for his breadth of knowledge and impeccable logic. This is neatly illustrated by a short note written by Joan Robinson to Keynes in 1932:

I think that like the rest of us you have had your faith in supply curves shaken by Piero. But what he attacks are just the one-by-one supply curves that you regard as legitimate. His objections do not apply to the supply curve of output [as a whole] – but Heaven help us when he starts thinking out objections that do apply to it! (Keynes, *CW*, Vol. XIII, p. 378)

There is evidence that the fastidious Sraffa did not think highly of the way Keynes wrote his books, and especially the *General Theory*. He gradually withdrew from the Circus. His collaboration with Keynes became largely restricted to the field of the history of ideas. Thus in 1935 the two edited David Hume’s *Abstract of a Treatise on Human Nature* (Hume, 1938). In their introduction they argued convincingly that the previous attribution of this essay to Adam Smith could not be sustained.

In 1931, Friedrich August von Hayek published *Prices and Production*, a book based on four lectures given at the London School of Economics (Hayek, 1931a), and the first part of his critical review in two instalments of Keynes’ *Treatise on Money in Economica*, entitled ‘Reflections on the Pure Theory of Money of Mr. J. M. Keynes’ (1931b). In both contributions Hayek rejected the explanation of economic crises in terms of a deficient aggregate demand. In his book he elaborated the ‘Austrian’ approach to the theory of money and economic fluctuations, tracing crises back to ‘misdirections of production’ caused by the banking system fixing the money rate of interest below the ‘equilibrium rate’. Keynes tried to answer the challenge, but like other Anglo-Saxon and American economists apparently had difficulties in understanding and countering Hayek’s view because of a lack of knowledge of the main building blocks of his analysis: Paretian general equilibrium theory and Böhm–Bawerkian theory of capital and interest. Keynes invited Sraffa, who was familiar with both intellectual traditions, to accomplish what he himself had difficulties in doing, that is, ward off Hayek’s attack.

In 1932 Sraffa published ‘Dr. Hayek on Money and Capital’ in the *Economic Journal* (Sraffa, 1932a). Hayek replied in the same year (Hayek, 1932), followed by a short rejoinder by Sraffa (1932b). Sraffa’s criticism in his review article was purely internal: he scrutinized the consistency of Hayek’s argument in the context of the latter’s own analytical frame-
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work, and showed that Hayek had committed a number of serious blunders which deprived his analysis of all explanatory value. By assuming that money had only a single function – that of a means of exchange – and thus ignoring its role as a store of value, Hayek had been dealing with an economic system with ‘emasculated’ money. How could such an economy behave differently from an economy without money, that is, a barter economy? Apparently, Sraffa argued, Hayek must have introduced an element that is extraneous to the discussion which causes the difference. This element is said to become visible in Hayek’s treatment of what he called the case of ‘voluntary saving’ on the one hand and that of ‘forced saving’ on the other. The first of the polar cases concerns a change in one item of the ‘fundamental’ data of economic equilibrium: intertemporal preferences. In Hayek’s marginalist setting, an increase in ‘voluntary saving’ means the decision of agents to forgo present for future consumption. In an economic system with a given and constant labour supply and a given and constant technical knowledge, this involves that more ‘roundabout’, or ‘capitalistic’, processes of production will be adopted, characterized by a higher consumption output per capita. This, in turn, involves a change in the proportion of gross income spent on consumption and the proportion spent on capital goods, that is, a change in gross savings. Net savings will be positive only during the transitory phase until a new and stable equilibrium is reached.

While in Hayek’s view this case is unproblematic, the other concerns interventions into the ‘voluntary decisions of individuals’ and thus infringes upon their freedom of action. A money rate of interest fixed below the ‘equilibrium’ rate by the banking system leads to an expansion of producers’ or of consumers’ credit. In the former case producers will find it profitable to lengthen the ‘average period of production’. This is only possible, however, if labour and nonspecific factors of production are shifted from lower stages of production, that is, those that are close to the ‘maturing’ of the consumption goods, to higher stages, thereby imposing on agents a reduction in consumption, that is, ‘forced saving’. Eventually incomes will rise and since the preferences of agents have not changed, consumption demand will go up. Prices of consumer goods will rise, indicating to producers that it is profitable to adopt less ‘roundabout’ processes of production. As a consequence, capital has to be reduced again – a process that ‘necessarily takes the form of an economic crisis’ (Hayek, 1931a, p. 53). After a costly trip and on the assumption that the banking system eventually corrects its error, the system is bound to return to its original equilibrium.

Interestingly, while in Hayek’s opinion the ‘artificial stimulant’ of inflation in the shape of producers’ credits can do no good, such a
stimulant in the shape of consumers’ credits is said to do harm, because it tends ‘to frustrate the effect of saving’ (ibid., p. 57). Accordingly, inflation through consumers’ credits would effectively decrease capital and push the system to a new equilibrium with a lower consumption output per capita. Sraffa’s dry comment reads: ‘Thus Dr. Hayek will have it both ways’ (Sraffa, 1932a, p. 48). Hayek’s claim that the two cases are not analogous finally reveals the ‘error or irrelevancy’ which is responsible for the fact that, contrary to what one would have expected, a rise or fall in the quantity of ‘emasculated’ money can make a difference.

Sraffa also took issue with Hayek’s claim that a difference between the actual or money rate of interest and the ‘natural’ or ‘equilibrium’ rate is a characteristic of a money economy (ibid., p. 49). He illustrated his argument in terms of an example which introduced the concept of the own-rate of interest, or, as he preferred to call it, the ‘commodity rate of interest’. Both in the monetary and the barter economy, loans are made in terms of all commodities for which there are forward markets. Out of equilibrium these own rates will be different for at least some commodities. Hayek’s opinion that in a ‘disequilibrium’ caused by a sudden increase in money supply (in the propensity to save) the natural rate of interest would be above (below) the money rate does not make sense, because out of equilibrium there is no such thing as the ‘natural’ rate; there will rather be a multiplicity of ‘natural’ rates.

Apparently, Keynes was very pleased with Sraffa’s performance: it had effectively countered the assault on his intellectual project launched by Lionel Robbins and his circle at the LSE and allowed him to develop the General Theory undisturbed from any further interventions by the Austrian economist. In Chapter 17 of the General Theory, ‘The Essential Properties of Interest and Money’, Keynes wanted to pay tribute to Sraffa by making use of the concept of own rates of interest, arguing that the money own rate of interest is determined by liquidity preference, which, in a given time and place, is a conventional datum (cf. Keynes, CW, Vol. VII, pp. 222–44). As we know from his yet unpublished papers, Sraffa was not at all happy with what Keynes had done and was rather critical of his liquidity preference theory. His main objection was ‘that the advantages involved in holding a commodity have no relation to its “own particular rate of interest”’; and indeed no properties of that commodity (apart from expected price change) have any relations to the difference between its rate and other rates.’ Keynes was wrong in assuming that the own rates of interest on different articles corresponded to the different advantages or disadvantages (yield, carrying cost, liquidity) associated with their possession. If no changes in price are expected, all commodities will have the same rate of interest.
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3 The edition of Ricardo’s Works and Correspondence

By the late 1940s, the publication of the Ricardo edition had been long delayed (see Pollit, 1990). The first volumes of the Works and Correspondence of David Ricardo were finally published in 1951 (Ricardo, 1951–73). This edition, for which Sraffa was awarded the golden medal Söderström in 1961 by the Swedish Royal Academy, is widely acknowledged to be a scholarly masterpiece. In his ‘Introduction’ to Volume I, Sraffa presented an interpretation of the classical approach to the theory of value and distribution which differed markedly from the then dominant interpretation that had been put forward by Alfred Marshall. As we know from the manuscript of Sraffa’s lectures on advanced value theory in the late 1920s and early 1930s and from his 1926 characterization of the classical theory of value, Sraffa had originally read Ricardo through the lens of Marshall’s interpretation. (Indeed, for quite some time Marshall was economics for Sraffa.) A careful reading of Ricardo’s writings eventually convinced him that this interpretation did not stand up to close examination.

The new interpretation centres around the concept of social surplus. Since in Ricardo’s view the problem of income distribution ‘is the principal problem in Political Economy’ (Works, I, p. 6), Ricardo’s main concern was with elaborating a coherent theory of the rate of profits, based on that concept: ‘Profits come out of the surplus produce’ (Works, II, pp. 130–31; similarly Works, I, p. 95). According to Sraffa, the development of Ricardo’s thoughts on the matter can be divided into four steps (cf. Sraffa, 1951, pp. xxxi–xxxiii). These steps reflect Ricardo’s consecutive attempts to simplify the problem of distribution.

The first step consisted of eliminating the problem of the rent of land in terms of the theory of extensive rent developed in Ricardo’s Essay on the Influence of a low Price of Corn on the Profits of Stock, published in 1815 (see Works, IV). This allowed him to focus attention on marginal, that is, no-rent, land: ‘By getting rid of rent, which we may do on the corn produced with the capital last employed, and on all commodities produced by labour in manufactures, the distribution between capitalist and labourer becomes a much more simple consideration’ (Works, VIII, p. 194). The theory of extensive rent also provided the basis for a first criticism of what Ricardo called Smith’s ‘original error respecting value’ (Works, VII, p. 100), that is, the latter’s doctrine that ‘the natural price itself varies with the natural rate of each of its component parts, of wages, profit, and rent’ (Smith, WN, I.vii.33). As Ricardo stressed in the Principles, the price of ‘corn is not high because a rent is paid, but a rent is paid because corn is high’ (Works, I, p. 74).