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Sraffa on Marshall’s Theory of Value in the Cambridge Lectures: Achievements in an Unfinished Criticism

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Abstract

In his Cambridge lectures, Sraffa argues that classical political economy and marginalist economics present two alternative theoretical structures. This was a major achievement reached during the preparation of the lectures. The understanding of these two theoretical structures was however still unfinished: as known, he had already identified the need for simultaneous determination of prices and distribution – a result comprehensibly not made explicit in the lectures; but the critical implications of this result for the interpretation of Marshall's position were probably not yet evident to Sraffa. He in fact still accepted the Marshallian thesis that classical political economy and marginalist economics identified two single alternative “ultimate standards of value”.
Sraffa’s failure to also overcome this limitation of the debate on the ultimate standard bears witness to his, albeit critical, initial adherence to the Marshallian theoretical framework. The road towards *Production of Commodities* was open but still unfinished.

Keywords: Sraffa; Piero Sraffa Papers; Marshall; Theory of costs.

JEL codes: B12; B13; B24; B31.

1. Introduction

Among Sraffa’s unpublished manuscripts, the lectures delivered in Cambridge between 1928 and 1931[2] and the associated preparatory materials have been at the centre of

[1] I thank S. M. Fratini and A. Campus for numerous discussions on Sraffa’s papers over the years. I am grateful to T. Aspromourgos, H. D. Kurz and D. Pignalosa, for their comments on previous versions of the paper and suggestions. The final responsibility is of course mine alone.

[2] Sraffa delivered his lectures on “Advanced theory of value” at Cambridge University over the three successive academic years from 1928-29 to 1930-31. His papers include a long manuscript with the same title catalogued D2/4, consisting of 243 pages and divided into three parts. The first part of the lectures occupies the first 71 pages of Manuscripts D2/4.

efforts to understand the evolution of his ideas. The first part of the lectures is considered the manifestation of the turning point reached in Sraffa's theoretical positions between the summer of 1927 and the spring of 1928.[3]

Following his reconstruction of the transformation of the conception of cost from classical political economy to marginalist theories,[4] Sraffa put forward a first major result, namely recognition that classical political economy had a theoretical structure alternative with respect to that of the analyses based on marginal utility. This has been identified as the "turning point" in Sraffa's positions.

The present essay focuses instead on an aspect of the lectures that, though significant, has not been discussed in the literature on the reconstruction of the evolution of Sraffa's positions.

Sraffa also develops a critique of Marshall's thesis, which was the dominant view of the evolution of economic theory at the time. Marshall presented his theory as a synthesis of two compatible lines of economic analysis: the analyses of classical economists and those based on marginal utility put forward since the 1870s. On the basis of an analysis of the different notions of cost that can be traced back to marginalist principles, Sraffa argues that that of the Austrians and that of opportunity cost are the most coherent and criticises Marshall's attempt to reconcile cost and utility as the two determinants of value. This criticism stems from Sraffa's interpretation of the debate on the *ultimate standard of value* originated by Marshall's *Principles.*

This criticism of Marshall is significant for two reasons: first, it attests to Sraffa's theoretical turning point, i.e. the discovery of the diversity of the theoretical structure of classical political economy and modern economics. Second, this criticism is also significant because it is to a certain extent still to be developed.

Regarded in the light of his more mature contribution, the interpretation of that debate and of Marshall's position seems to be a picture of Sraffa's work in progress taken at a moment when he had already understood some crucial points in his reconstructive work but not yet fully developed the critical implications of them.

[3] The reconstruction of the evolution of Sraffa's thinking on which the present paper is based was originally put forward by Garegnani (2004) and (2005). It has been developed in Kurz and Salvadori (2005a and 2005b), and Kurz (2006), which are essential to any complete understanding of the evolution. They indicate the role of the lectures as attesting to the 'turning point', a role analysed in detail in Signorino (2005), the first paper focusing on the lectures. Marcuzzo (2005) is instead important to an understanding of the work environment in which Sraffa developed his theoretical positions. Kurz (1998) is essential for an overview of the unpublished manuscripts of Sraffa.

[4] The second part addresses the issues discussed in the 1925 and 1926 articles, and the last part imperfect competition, questions regarding utility and demand, and the general equilibrium formulations of marginalist theories.

2. Two approaches, two conceptions of cost

In the very first part of the lectures, Sraffa points out the crucial importance of the study of the history of economic thought and the need to reconstruct the transformation of the conception of cost in order to understand the theory of cost and value as it then stood. [5]

Sraffa starts by presenting two *conceptions* of cost. He compares the two extremes of the transformation process, namely the notion of Petty and the Physiocrats, and that of Marshall, the former representative of classical political economy and the latter of marginalist theories, i.e. modern economics:

> Marshall regards the "real cost of production" of a commodity as the sum of "efforts and sacrifices" involved in the abstinences or waiting and in the labour of all kinds that is directly or indirectly required for the production of a commodity.
> Real cost therefore is an aggregate of the unpleasant feelings of various sorts felt by the individuals connected with production.
> For Petty and the Physiocrats cost, i.e. what in their theory plays the role of cost, is nothing so subjective; on the contrary, it is a stock of material, that is required for the production of a commodity; this material being of course mainly food for the workers.
> But Petty wants to make it quite clear, that his notion of cost has nothing to do with the pleasant or unpleasant feelings of men, and he defines "the common measure of value" as "the days food of an adult Man, at a Medium, and *not* the days labour".[6]
> This cost is therefore something concrete tangible, and visible, that can be measured in tons or gallons. It stands therefore at the opposite extreme of Marshall's cost, which is absolutely private to each individual, and can only be measured (if at all) by means of the monetary inducement required to call forth the exertion (D2/4/3: 20-1).

Sraffa then undertakes detailed reconstruction of the transformation process. He actually identifies six different *notions* of cost, all of which can, however, be reduced to the two *conceptions* described above, one representing the *political economy* of the classical economists and the other the *economics* of the marginalist economists.[7]

In particular, Sraffa describes the cost notions of Smith, Ricardo and Marx as consistent with that of Petty and the Physiocrats, despite the fact of being expressed in

[5] This valuable methodological guidance today appears as unusual as it is necessary. See Trezzini (2018).

[6] Petty (1691), p. 181.

[7] The three terms *theoretical approaches*, *conceptions* and *notions* are used here to clarify an understandable ambiguity in Sraffa's terminology. Sraffa frequently uses *conceptions* or *views* to indicate different *theoretical approaches* to the theory of value. He states, for example, that he will address "two opposite *conceptions*: the cost and the utility" and then adds, "two opposite *views*, which I shall refer to as of Ricardo and of Jevons, each of whom thought that it was possible to group all causes of value under one single notion [cost or utility], at the exclusion of the other". In other passages, *conception* is instead used to indicate the way in which costs are conceived or described: "two *conceptions* of cost …as seen by Sir W. Petty and the Physiocrats and Marshall's conception". Sraffa then uses *notion* to indicate both the general conception and the specific form that the definition of cost assumes in the analysis of a single author. In an effort to be more precise, three different terms are used here: *theoretical approaches to the theory of value* to indicate classical political economy as a different theoretical approach with respect to marginalist economics; *conceptions* to indicate that cost is conceived as an aggregate of material goods consumed in production in one theoretical approach and as an aggregate of unpleasant feelings and sacrifices in the other; and *notions* of cost to indicate the differing definitions of cost given by the different authors and traceable back to the two different conceptions and the two theoretical approaches.

terms of quantity of labour.[8] The idea of abstinence appeared in the definition of cost after Ricardo's death, when Ricardian authors tried to overcome the problems left open in political economy. However, Sraffa argues, abstinence had different implications in the analyses of Senior and Mill from those it was to have later when associated with the notion of marginal utility in marginalist theories. Senior and Mill used abstinence as a moral justification of profits[9] and, in the classical tradition, attributed no role to utility and demand in determining prices (D2/4/3:14).[10]

It was the marginalist revolution that led to full development of the conception of cost as sacrifice or negative utility.

In addition to that of Marshall, Sraffa focuses on two other marginalist notions of cost, namely opportunity cost and the one developed by the Austrian school. It is through his analysis of these that Sraffa grasped the inconsistency of Marshall's position on the relation between costs and prices.

3. The Austrian notion of cost

According to Sraffa, neither the Austrians[11] nor the authors who developed the notion of opportunity cost[12] consider '*cost as a primary fact*'.

Even though costs are necessarily incurred in advance, they are supposedly determined exclusively by the value of the goods produced by their means. Costs amount to the value that is destroyed to produce the goods; the value of what is destroyed, however, derives from the *utility* of what is produced:

> they think that in the process of determining value the order of importance is reversed. That is to say they regard costs, as the sum of *values* destroyed in the course of

[8] It is worth noting that at the beginning of his work on reconstructing the evolution of the notion of cost, Sraffa saw the analysis of Smith but also those of Ricardo and Marx as a degeneration of the initial conception of cost as an aggregate of material goods developed by Petty and the Physiocrats, in that they introduced the notion of labour and, with it, a philosophical element into the analysis. See Signorino (2005) for an exposition of this initial position. He changed his mind, however, and in the lectures, Ricardo's and Smith's notions of cost are presented as fundamentally consistent with that of Petty and the Physiocrats. See Fratini (2018) and Trezzini (2018).

[9] According to Senior and Mill, profits are morally justified by the fact that capital accumulation requires abstinence from consumption, no abstinence being instead involved in the possession of land. Sraffa argues, however, that this asymmetry disappears when accumulated capital is inherited from past generations and continues to earn profits. According to Sraffa, it is abstinence from the direct consumption not only of capital, inherited or otherwise, but also of land that should be considered relevant, as direct consumption by the owner is possible in both cases (D2/4/3: 40-47).

[10] Moreover, when introducing the Austrian notion of cost, Sraffa argues that the notion developed by Senior and Mill is more in line with the conception of classical political economy than with that of marginalist economics. Like the classical economists, Senior and Mill regard cost as a primary fact whereby means of production and subsistence transfer value to the product. For the Austrians and the opportunity cost authors, means of production and labour instead derive their value solely from the utility of what they produce. See D2/4/3: 48.

[11] Sraffa explicitly refers to Menger (1871), Wieser (1884) and Böhm-Bawerk (1889).

[12] Sraffa refers to Davenport (1908), Henderson (1920) and Wicksteed (1894).

production, and these values, as all values, they hold to be determined by the utility of the product. It is not the capital goods and material that transfer their values to the product; but rather, they derive their own value only from the fact that they can be employed to produce a commodity that has utility (D2/4/3: 48).

According to the Austrians, all goods can be classified as goods of the first, second, third, etc. order. Goods of the first order directly satisfy human needs and are produced with goods of the other orders, which satisfy human needs only indirectly, in different proportions. Costs are conceived as the sum (in given proportions) of the values of the lower-order goods needed to produce a first-order good.

> Therefore [the value of] every consumable commodity is equal to the sum [of the values] of the goods of lower order used in producing it; and this sum is what the Austrians call cost (D2/4/3:48).[13]

Labour is simply conceived as one of the lower-order goods:

> The only difference being that it can be used in the production of a large number of different commodities. It enters the costs – according to the Austrians [...] in the form of a sacrifice deriving from not being available for other productive uses. It enters into cost, according to the Austrians, not as an effort or a sacrifice, but in the shape of the utility lost owing to *its not being available in other uses when it is applied to a particular production* (D2/4/3: 48-9; emphasis added).

Costs, understood as the value of what is destroyed and of the labour used in production, are therefore determined by the value of what could be produced with them. Sraffa concludes:

> |||The notion of cost does not play an important part in the Austrian theory, ||| which is almost entirely based on the utility or demand side of value. […]
> The chief fault with the Austrian theory of cost is that it is entirely useless for the determination of the value of the product: since the components of cost derive their value from the product, this value must be taken by them as a starting point, it must be determined before they begin to speak about cost (D2/4/3:50).

4. Opportunity cost

Opportunity cost involves a similar position. According to Sraffa, this notion was originally developed in the attempt to overcome the difficulty of connecting the actual expenses incurred by the firm with the Marshallian notion of ‘real cost of production’. The latter is conceived as the sum of ‘efforts and sacrifices’ required to produce a commodity. Actual expenses incurred by firms are the most obvious notion of cost from the viewpoint of the individual firm, while the ‘real cost of production’ as a sum of efforts and sacrifices is a better notion when the viewpoint of the community as a whole is considered and a moral justification of profits is required.

[13] Sraffa does not use the term ‘value’ in this passage. It has been inserted for the purposes of symmetry with the other passage on the Austrians quoted above and the sense of the sentence.

In Marshall's argument, the 'expenses of production' actually paid by any firm are 'the prices that have to be paid in order to call forth the supply'[14] and hence a monetary measure of *real cost*. The latter must therefore necessarily be equal to the sum of the normal/long-run remunerations of the factors of production.

Conversely, the expenses of production *actually incurred by a firm* are an aggregate outlay in which it is impossible to distinguish the amount that corresponds to the normal remuneration of "efforts and sacrifices" and the (possible) amount that is further expenditure. Actual expenses may in fact contain quasi-rents, when factors are paid more than their normal remuneration and land rents.[15] Moreover, it is possible for the use of certain factors to result in no actual expenditure when they are directly owned by the firm.

The problem arises precisely in these terms and in relation to the Marshallian notion of *real cost* in the analysis by Davenport (1908) and (1911). In the same pages, Sraffa also quotes Wicksteed and Henderson, who instead consider the problem of a particular ability of the entrepreneur (a particular factor of production) that does not give rise to actual expenses.

Costs incurred must be evaluated by the firm itself not in terms of actual expenditures but of the remunerations that the resources employed would have earned elsewhere, i.e. in terms of the opportunity costs. These *opportunity costs* make it possible to assess costs at the normal levels of remuneration of the factors, the only ones that can in turn be conceived as the normal remuneration of efforts and sacrifices.

Sraffa argues, however, that this line of reasoning ends up completely ignoring the notion of 'real cost'. He quotes Henderson (1920):

> The real cost … is thus the loss of *utility* which arises from the fact that these agents of production are not available for alternative employments that is measured by the money costs of a commodity at the margin of production.[16]

Sraffa adds a comment and a quotation of Davenport and finally a meaningful comment on Wicksteed:

> Prof. Davenport does not seem to have a very high opinion of the value of his own invention. In a footnote he says: 'But it must be admitted that this opportunity cost line of explanation even where it is complete, [...] is not ultimate. It explains some values merely in the light of competing values. It resolves values of products into values of costs [...] The competing opportunities are themselves also value-derived rather than value explaining. It is at this point that on ultimate determinants, the situation, the

[14] Marshall (1890), p. 339.

[15] This reasoning is made more complex both in Sraffa's argument and in Davenport's original analysis by the fact that, as is known, the rent of land is not regarded in Marshall's analysis as a component of the prices of commodities. On this assumption, a further difficulty in connecting actual expenses of production and real cost arises from the fact that rents certainly enter into the first but are precluded by the second notion of cost. Examination of the notion of opportunity cost leads Sraffa to identify a weakness in Marshall's position on rent and to argue that it is inconsistent with marginalist principles.

[16] Henderson (1920), pp. 164–65.

> actually controlling conditions, the man-and-environmental general state of things, assumes its place as ultimately the causal fact' (Value & Distribution p. 383).[17]
> Wicksteed views are more interesting: most stimulating book Common Sense.[18] He says that the cost of production one meets in textbooks is merely an appearance, under which utility is hidden. The supply curve doesn't exist. What then of the construction of intersecting supply and demand prices? Reserve prices of those who possess the commodity (D2/4/3: 71).

Therefore, both for the Austrians and for these authors, *value must be known before cost can be determined.* The Austrians realised, however, what is implied by the notion of opportunity cost: once the actual costs incurred by firms in production are conceived as the remuneration of sacrifices and efforts, it is impossible to curb the power of utility as the *sole determinant of the value*. The notion of cost thus loses its independence. Cost is only an intermediate manifestation of other phenomena, those that determine the value of the goods being produced.

5. Sraffa's criticism of Marshall's position

On this basis, Sraffa develops a critique of Marshall's theory of value. Once it is conceived as 'sacrifice' or negative utility, cost cannot be used to determine value. In Sraffa's words:

> Abstinence is the sacrifice involved in not consuming certain goods which are used productively: but these capital goods, being machines or raw materials, could not be consumed in any case by the capitalist: therefore [,] the sacrifice consists only in the abstinence from the other things, consumable goods, that might have been obtained in exchange for them - that is to say, the sacrifice is proportional to the value of the goods abstained from. Thus value must be assumed to be given, before we can speak of abstinence; and thus abstinence cannot be used again to determine value, without falling into a vicious circle (D2/4/3: 51).

In Marshall's theory, costs are the basis of the supply function of a good, which determines the price of the good together with its demand function, based on the notion of utility. Costs must be conceived as effort and sacrifice because cost and utility must be two quantities of the same nature, one positive and the other negative, so that they can be *balanced against one another*, which is the fundamental symmetry.

Once costs are conceived as sacrifice, they *are ultimately determined by utility*, as shown both by the Austrians and by the authors who developed the notion of opportunity cost. Costs can therefore have no autonomous role in determining prices.

Marshall's conception of cost, although aligned with marginalist principles, is used inconsistently. Marshall attempted to combine elements that are mutually incompatible: the conception of costs as an aggregate of physical goods, the value of which determine

[17] Davenport (1908), p. 383.
[18] Wicksteed (1910).

prices (classical theories), and utility as a determinant of prices, which requires costs to be measured as sacrifice and determined by utility (marginalist theories).

The passage that opens the reasoning on the notion of cost is significant in this connection:

> The point I wish to make, is the independence in the development of the two opposite conceptions, of cost and of utility. In Marshall's theory they appear as closely connected, in fact they are for him two quantities of the same nature, one positive and the other negative; they can be added or subtracted and balanced against one another. But this unification, and therefore the statement of the symmetry between cost and utility, and through them of supply and demand, has been to a large extent the result of Marshall's work – not of the historical development of the theory of value.
> Their origin has to be traced to entirely distinct sources, and their development has been quite independent of one another. Then Marshall has brought them together and has made an attempt to conciliate the two opposite views, which I shall refer to as of Ricardo and of Jevons, each of whom thought that it was possible to group all causes of value under one single notion, at the exclusion of the other (D2/4/3: 17).

Additionally, in a passage added in 1931, Sraffa writes:

> I think that Marshall has attempted *to reconcile two things which are utterly incompatible*. He wishes, first to have a kind of real costs which are comparable with utility, so as to be able to balance them against each other, equalise marginal utilities and marginal sacrifices and generally maintain what he calls "the fundamental symmetry" between supply and demand and secondly he wishes his costs to be different in their nature from utility, so as not to be identified with mere loss of utility. I don't think it is possible to have it both ways. The first point of view leads straight to opportunity cost and the identity between real costs and negative utility […]. The second leads to the classical theory of cost, which being a quantity of material and not of feelings, cannot be balanced nor equated with marginal utilities. (also, makes possible distinction between advances and surplus, or, in other words, between necessary costs and rents). (D2/4/3:62; emphasis added).

6. The background of Sraffa's criticism of Marshall: the debate on the ultimate standard of value

In order to better understand Sraffa's criticism of Marshall, it is crucial to refer to Marshall's position on Ricardo as put forward in appendix I of the *Principles* and to the debate this inspired on the "ultimate standard of value".

Marshall presented Ricardo's theory of value as characterised by the absence of an explicit analysis of the role of utility in determining value but stated that this role was implicit in it. Similarly, he stated that even though Ricardo knew that different goods could be produced in three different cost regimes, he assumed constant returns for simplicity and without stating it explicitly. He also presented Ricardo's analysis of the "exceptions" to the labour theory of value as a sign of his awareness of the role of time, conceived as 'waiting', in the determination of value. Conversely, Marshall argued in the same appendix that Jevons' interpretation of Ricardo was ungenerous and completely overlooked the elements that, according to Marshall, were implicit in Ricardo's theory, namely the roles of utility and time. He also criticised Jevons for completely disregarding the role of costs in his analysis. According to Marshall, Jevons therefore believed his theory to be complete, unlike Ricardo, who was aware that his analysis, based on the relevance of cost in determining value, needed to be conceived as part of a broader theory. While the contributions of these two major authors were presented by Marshall as both incomplete formulations of the same theory, Marshall's intellectual sympathies lay with Ricardo, who, in his view, put forward a comparatively more complete explanation of value and showed some awareness of its shortcomings.

Marshall's position on Ricardo and Jevons gave rise to what is known as the debate on the "ultimate standard of value" (Böhm-Bawerk, 1894; Edgeworth, 1894; Clark, 1893), which fascinated Sraffa and played a crucial part in his theoretical evolution.[19]

The search for an ultimate foundation of value is as old as economic theory itself. Since the works that in the 70s of the 19th century proposed the notion of marginal utility as the foundation of value theory, however, that of the classics and that of the emerging marginalist economists were contrasted as different positions on the "ultimate standard of value". Labour on the one hand and utility on the other were identified as two alternative ultimate standards of value.

A comparison in these terms can be traced back to Jevons himself who in 1870 presented his theory with these words:

> Repeated reflection and inquiry have led me to the somewhat novel opinion, that value depends entirely upon utility. Prevailing opinions make labour rather than utility the origin of value; and there are even those who distinctly assert that labour is the cause of value (Jevons, [1870] 1888, Ch. I. Introduction, page B).

Marshall's position on Ricardo, in which labour was identified with cost, was an attempt to combine the two positions, which Jevons regarded as opposites, and obtain a single theoretical framework: *the scissor*.

In the debate on the ultimate standard that followed, some non-Marshallian marginalists, especially Böhm-Bawerk, supported Jevons's position, while the Marshallian marginalists Edgeworth and Clark maintained the consistency of Marshall's position.

It should be noted that the term *standard* is ambiguous in itself, having long been used to indicate both the cause and a measure of value, thus generating the "extraordinary confusion" noted by Sraffa (D1/22:15). It is, however, unquestionable that Jevons and Marshall were addressing the cause of value and Böhm-Bawerk, Edgeworth and Clark[20] were discussing this position.[21]

[19] Among Sraffa's manuscripts we find one, D1/22, entitled "Standard and Cause of value" and dated pre-1928. From this we can argue that Sraffa dedicated himself directly to the study of this debate during the preparation of the lectures.

[20] In manuscript D1/22, Sraffa states that Böhm-Bawerk wrongly claims that Clark confused measure with cause and claims that Clark was arguing, as Böhm-Bawerk, about the ultimate cause of value.

As argued by Campus (2000), the debate on the ultimate standard of value was also complicated by the fact that most of the participants misunderstood classical political economy and used economic terms in senses other than those they usually possess now. Campus (2000), a seminal paper unfortunately never translated into English, is essential to any understanding of this complex debate. The primary elements outlined above should, however, be sufficient to shed light on the advances and the incompleteness of Sraffa's criticism of Marshall.

7. Sraffa's position on Marshall: evidence of the turning point

The criticism of Marshall that Sraffa expresses in the lectures is a far cry from the initial position expressed in the articles and in the first part of the pre-lectures.

As Garegnani (2005, pp. 456–58) argues, this initial position was consistent with Marshall's theoretical approach and Sraffa's 1925/26 criticism was confined to the principles used to construct the supply functions of goods; ("cost of production […] must be regarded as constant in respect to small variations of the quantity produced", Sraffa, 1926, pp. 540–41). According to Garegnani (2005, p. 456), Sraffa was attempting to deny "the possibility of consistently considering the influence of demand on the price of the individual commodity and, more in general, […] to expunge the subjective elements of 'utility' and 'disutility' from that apparatus". At the same time, however, Sraffa shared Marshall's supply and demand apparatus for price determination, which he saw as having brought the "Theory of Value from the field of politics to that of economic theory" (D3/12/3.8). This apparatus eliminated the philosophical elements that Sraffa identified both in the classical emphasis on labour and in Jevons' emphasis on utility.

Moreover, Sraffa also shared Marshall's interpretation of the 'old and now obsolete theory' of Ricardo and the classical economists in terms of 'constant returns'. In other words, he implicitly attributed the same demand and supply apparatus to classical economists (see Garegnani, 2005, p. 456).

It is therefore possible to argue that Sraffa initially shared the Marshallian idea that the two distinct 'ultimate standards' of value were the results of two partial versions of a homogenous economic theory, and that the regarded Marshall's analysis as combining them both in a more general determination of prices capable of overcoming their respective limitations by means of the 'blades of the scissor'.[22]

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[21] The ambiguity of the term is increased by the fact that we are dealing with Sraffa whose mature contribution in *Production of commodities* would induce us to interpret *standard* as measure more than cause.

[22] In Garegnani's words:

> Sraffa describes the determination of prices by an 'equilibrium' between demand and supply functions, as an idea of 'immense scientific importance' […] Sraffa also attributes to it an interesting specific merit, that of having: 'wiped out the primitive notion that there had to be somewhere or other one single, ultimate cause of value'(p. 456).

Unlike all the authors involved in the debate on the ultimate standard and his contemporaries,[23] Sraffa realised that classical and marginalist theories of value intimately differed in their theoretical structures.

Classical political economy was not an immature version of marginalist theories, one lacking a proper analysis of utility and characterised by a simplifying assumption of constant returns. Conversely, Jevons' contributions and other marginalist theories, which rejected the role of costs in price determination, could not be regarded as extreme versions of the same theory of value that underestimate the role of costs.

Sraffa saw the flaw in this Marshallian position on realising that the classical notion of cost as an aggregate of material goods (albeit measured in quantities of labour) was another face of the notion of surplus, which lies at the very heart of classical political economy.

The notion of cost as negative utility was instead another face of utility, a notion extraneous to classical political economy and so crucial to the marginalists' determination of prices as to be conceived by some of them as the sole determinant of prices.

It is therefore possible to find an implication of the 'turning point', in this critical position, namely the discovery that the two theoretical approaches to the analysis of value differ fundamentally.

8. The evolution of Sraffa's thought in preparing the lectures

If we are to fully understand Sraffa's criticism, it is also essential to connect it to the evolution in his thinking during the few months spent preparing the lectures and to the part of it that is not made explicit in the lectures.

To this end, we can again refer to the description put forward by Garegnani (2005) and Kurz and Salvadori (2005a, 2005b) and shared by many other scholars studying the manuscripts. It was in preparing the lectures that Sraffa first realised the inadequacy of his initial theoretical position. The hypothesis of constant costs would not suffice by itself to eliminate the influence of demand/utility in the determination of prices. In some significant and widely quoted pages (37-40) of the pre-lectures (D3/12/3), Sraffa realises that equating prices with production expenses would in any case raise the question of what determines these expenses. And this could be nothing other than the remuneration of factors of production. As he saw from his study of opportunity cost and the Austrian notion of cost, however, this in turn could only be determined by the utility of the goods produced by means of the factors themselves. On the one hand, the

[23] Even Jevons and Böhm-Bawerk, who marked the break with Ricardo more than the Marshallian authors by excluding cost from the determinants of value, saw a certain degree of continuity and homogeneity between the classical and marginalist schools. As Böhm-Bawerk wrote (1894-95, p.150): "Since the time when Economics first became a science, there have been two rivals for the honor of being considered the ultimate standard of value."

subjective element that he sought to eliminate therefore remained a crucial determinant of price. On the other, he realised that "this method of reasoning is legitimate only in respect of one commodity at a time". And this pushed the analysis toward *simultaneity*, which he regarded as contradictory:

> But so soon as we want to analyse how the general equilibrium is reached — i.e. we want to analyse the interactions of one commodity upon the other, how they affect each other's conditions of production and utilities, and how the remuneration of common factors of production is determined — *then an ultimate standard of value is required*. We can no more refer the costs and utilities of one article to the costs and utilities of another one—in this case this would beg the question, and *we would be reasoning in a circle* (D3/12/3: 38-39; first emphasis added).

Correct definition of the classical conception of cost thus led Sraffa to the awareness that classical political economy was characterised by a conception of production as a circular flow and based on the twin concepts of cost as a physical aggregate of goods and social surplus. The correct development of this approach required, however, the simultaneous determination of prices and the rate of profit. As argued by Kurz and Salvadori (2005a, p. 420), the difficulties of the classical theories and their abandonment are the result of a 'mismatch between analytical concepts and the tools available to an economist'. As can be seen from the above passage, Sraffa had difficulty in conceiving this simultaneity with respect to both the overcoming of the limits imposed on Marshall's theory by the *ceteris paribus* condition and the reappraisal of the classical approach, which he began to see as the more promising path.

As argued by Garegnani, Sraffa came to think that the question of the ultimate standard of value had neither been solved nor been shown to be completely unsolvable. At the same time, his difficulty in conceiving the possibility of simultaneity led him to see the need for an ultimate standard so as to avoid 'reasoning in a circle'. The search for the ultimate standard rather than a primitive one was therefore the crucial issue.

Sraffa was, however, dissatisfied with the two standards he found in the literature. A note written in pencil in the manuscripts quoted above, perhaps during a second reading, reads as follows: "Two standards offered: they are the same thing—words" (D3/12/3: 39).

Sraffa therefore began his search for an ultimate standard of value, which had to be objective like the classical one and therefore opposed to the subjective nature of the marginalist standard. At the same time, however, it had to avoid the classical adoption of labour to measure cost as a physical aggregate of goods. Sraffa therefore developed the notion of *physical real cost*, which he tried to define as the subsistence required by the labour used directly and indirectly in the production of every commodity, a necessary composite commodity to which the value of individual goods could be reduced. While the wording *real cost* echoes Marshall's notion, the adjective *physical* suggests Sraffa's intention to give his ultimate standard the objective nature of the notion of cost of Petty and the Physiocrats.

It was in attempting this reduction that Sraffa developed the *first equations* and then the *second equations* as a means of determining the exchange rates between quantities of different commodities respectively in the cases of no surplus and a surplus and a uniform rate of profit.[24]

The attempt to study the reduction was then abandoned and with it the notion of 'physical real cost'. Sraffa understood that

> the physical conditions of production of the commodities and the need to allow production to be repeated are sufficient to determine relative prices quite independently of what are generally understood as 'demand and supply forces' (Garegnani, 2005 p. 469).

Sraffa obtained two interconnected results with these equations. First, the awareness of the possibility of determining prices independently of any forces of demand and supply led him to the radical formulation of a new view of classical political economy, clearly expressed in the lectures, as a distinct theoretical approach alternative to the marginalist approach to the determination of prices. This gave rise to what is correct in Sraffa's criticism of Marshall in the lectures, namely the idea that the latter's attempt was an incoherent synthesis of alternative theoretical approaches.

Second, he realised that there is nothing logically wrong in determining the prices of commodities in terms of the value of the goods needed to produce them once the appropriate tool, namely simultaneous equations, had been found. He had thus, in a way, overcome the 'mismatch between analytical concepts and the tools available to an economist" of classical political economy.

9. An unfinished process

Sraffa's awareness of the first achievement was complete and indeed evident in his criticism of Marshall. As for the second achievement, however, it is possible to argue that it had implications on the analysis of the theoretical structures of the two approaches that were not yet present in Sraffa's criticism of Marshall.

The path to the understanding of the need for simultaneity, as described so far, was anything but simple and linear.

Garegnani shows that, after developing the equations, Sraffa still continued to question the results achieved for quite a long time, and endeavoured to reconcile them with the determination of price on the basis of supply and demand.[25]

[24] In these equations, the quantities produced are taken as data; one distribution variable (the subsistence wage) was given and the other determined simultaneously with prices. As for the origin of these equations, see also Naldi (2018).

[25] Garegnani (2005, pp. 470–71) discusses some passages of manuscripts from the period of the lectures in which Sraffa tried, inconsistently, to reconcile the Marshallian determination of prices in terms of demand and supply functions with his new result of equations determining relative prices without demand functions. Sraffa attempted to delimit different fields of investigation for the two determinations. In the

Sraffa was comprehensibly reluctant to put forward in the Lectures his achievements, which he considered not solid enough for his very high standards. It is then no surprise that there is no trace of the equations. On the contrary, we may argue that he considered more solid and verifiable in the texts of the Classics his discovery of the centrality of the notion of surplus in classical political economy. So, this result was made explicit in the lectures and crucial to his criticism of Marshall.

As recalled, Sraffa was aware of the necessity of simultaneously determining prices and distribution, i.e. the necessity of using simultaneous equations. This issue was, however, relevant not only in the construction of a coherent theory of prices - constructive work - but also in the critical comprehension of existing theories - critical work.

Thus not only is Marshall's theory, based on partial equilibria, clearly in contradiction with this necessity[26], but so are Marshallian *representations* of classical political economy and marginalist theories which, since the appendix on Ricardo, have shaped the debate on the *ultimate standard*. Neither the theoretical structure of classical political economy nor that of marginalist theories can be represented in terms of single, albeit alternative, standards of value.

In his criticism of Marshall, Sraffa implicitly accepts the thesis that classical theories assumed labour or cost as the ultimate standard of value, while the marginalist theories identified this standard in utility. This thesis is at least an oversimplification due to Marshall’s method.

Sraffa’s mature contribution has generated a broad reconstruction of the two approaches to the theory of value. It is now known that in all the consistent formulations of both the classical and the marginalist theories – those which, *mutatis mutandis*[27], properly take the *necessary simultaneity* of the determination of value and distribution into account – the conditions of equality between costs and prices are implicit in the determination of normal prices. Costs cannot, however, be regarded ‘*as a primary fact*’ in either theoretical framework.

Costs are determined by distributive variables and should therefore be regarded in both theoretical approaches as simultaneously determined by the same circumstances as determine distribution. This necessary simultaneity makes it impossible to find a single phenomenon, either utility or cost, to be taken as the “ultimate standard of value”.

In the classical theories and in their reformulation in terms of Sraffa’s price equations, the level and composition of real wages[28], technical conditions and produced quantities simultaneously determine the (uniform) rate of profit and the relative prices of commodities, where the latter correspond to the *costs* of production.

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same group of manuscripts Garegnani also identifies a probably later manuscript – known as “The man from the moon” – in which the meaning of the equations is instead very clear.

[26] Sraffa began to realize this contradiction since the 1925 and 1926 articles.

[27] As is known, prices are determined simultaneously with all the distributive variables in marginalist theories but simultaneously with one distributive variable (the rate of profit or the surplus wage rate) in surplus approach theories while another (the real wage or profit rate) is taken as given and rent is determined separately.

[28] See fn. 25.

In general equilibrium formulations of marginalist theories, consumer tastes, available amounts of productive factors and available techniques simultaneously determine the quantities produced and exchanged, actual techniques of production, rates of remuneration of factors and therefore *costs* corresponding to prices of goods.

Costs are therefore not a *primary fact* in either the classical or the marginalist approach. They are a manifestation of the different sets of circumstances that are assumed as given in each theoretical framework and *simultaneously* determine prices and distribution.

Sraffa's criticism of Marshall shares the general lines of the debate on the ultimate standard, which were drawn up by Marshall, as recalled above, and determined, we argue, by the *ceteris paribus* hypothesis that defines the partial equilibrium method. This hypothesis separates the determination of value and the determination of distributive variables in such a way that it becomes possible to identify a single circumstance – different in each approach – as the ultimate standard of value.

In marginalist theories, this assumption would block direct and indirect substitutability between factors and determine techniques and factors allocation, making them apparently irrelevant in determining prices. Consumer tastes, i.e. utility, would appear to be the only price determinant.

Within the theoretical approach of the classical economists and its reformulation in terms of Sraffa's equations, assuming a given distribution, i.e. both the real wage *and* the rate of profit, means selecting only the technical conditions and cost as determining value.

Like most of Marshall's analysis, his reasoning as regards Ricardo and Jevons was based on this separation, which also appears, however, to have been implicitly taken up by most of the economists involved in the debate on the ultimate standard of value.

Jevons, who introduced the opposition between cost and utility, was not aware of the need for the simultaneous determination of prices and distribution in the theoretical approach that was to develop from his contribution. On the other hand, many authors who actually took part in the debate on the ultimate standard were "Marshallian" and therefore accepted the method of partial equilibrium. The only partial exception is Böhm-Bawerk, who appears to perceive the complexity of the relations between value and distribution while asserting that utility is the ultimate standard of value.

The fact that, in his criticism of Marshall, Sraffa had not yet developed the implications of the needed simultaneity on the representations of the two theoretical frameworks appears to be a hangover from his initial acceptance of the separation, brought about by the Marshallian method of partial equilibria, between the determination of prices and that of distribution. Because of this separation, the terms of the debate on the ultimate standard appeared consistent.

10. Further evidence of an unfinished process

Further evidence of the initial difficulty in understanding the connection between the determination of value and the determination of distribution can be found in the lectures together with signs of a more advanced position on the same issue.

An initial elementary observation concerns the fact that the title "Advanced theory of value" – the result of a precise choice originally made by Sraffa in a letter to Keynes[29] – was not changed to "Theory of value *and distribution*", as due recognition of the necessary connection and simultaneity might have suggested.

Moreover, Sraffa does not address the different theories of distribution associated with the different theories of value directly in the lectures. His position on this point is somewhat surprising. While grasping subtle distinctions, he failed to note the radical differences in the determinants of the distributive variables. The subtle distinction in question is the "different conception of income distribution" implied by the different notions of cost of Petty and Marshall:

> For Marshall, wages, interest and profits, are simply shares in the product; they are coordinate quantities, that can be regarded as acting upon the value of the product in the same way. Both are the inducement required to call forth certain sacrifices, which are equally necessary for production, and they are also the reward of those sacrifices. [...] Petty and all the classics, on the contrary, take the opposite view. They don't regard at all wages as an inducement; they regard them as a necessary means of enabling the worker to perform his work (D2/4/3: 22-3).

While all forms of income are seen by the marginalists as inducements, wages are seen as a prerequisite for the worker to do his job by the classical economists. Awareness of this subtle logical difference is not, however, accompanied by a clear statement that the determinants of the level of wages and of the rates of profit and rent are different in the two theoretical approaches.

While we find an exposition of Ricardo's theory of wages, we find nothing regarding relative scarcity or demand and supply of factors as determining distributive variables in marginalist analyses. Nor is there anything on the symmetry of the determinants of the distributive variables in marginalist theories as opposed to the separate determination, based on different principles, of the distributive variables in the surplus theories.

In some passages, Sraffa also appears to criticise the identification of the analysis of value with that of distribution.

[29] As Marcuzzo (2005) recalls, Keynes suggested a course to Sraffa in three parts, the first on the theory of value, the second on the theory of distribution, and the third on an applied subject. Sraffa proposed instead to limit the course to the theory of value with an initial section on the theory of supply and a second on demand-side and exchange questions. He excluded the distribution theory because, as he specified, of his 'fragmentary, confused ideas on the subject'. Marcuzzo's reconstruction of the episode is based on the letter in which Keynes officially announces the appointment and suggests the three subjects (JMK to PS, 31 May 1927; KP: L/S/37 – 9) and Sraffa's reply, in which he outlines a different syllabus for his course (PS to JMK, 5 June 1927; KP: L/S/40-1).

> A further disturbing element is that in the background of every theory of value there is a theory of distribution. The real problem to be solved by a theory of value, that is "Why is a commodity exchanged with another in a given ratio?" is constantly *transformed* into the *entirely different one*: "How is the price received for the product distributed between the factors of production?" There is a continuous attempt at visualising in the microcosm of any one particular commodity a process which takes place only in all commodities as a whole considered simultaneously, that is in society as a whole.
> [Written by Sraffa in the margin:] "Sviluppare. {Develop} Cost of production of an article is always reduced to remuneration of factors (i.e. sharers in distribution): it might be done otherwise (physical costs) (D2/4/3: 4).

The note in the margin refers once again to the search for an ultimate standard of value independent of distribution, which – as argued above – is incompatible with any complete understanding of the connection between value and distribution and the need for simultaneous determination that this entails. Moreover, Sraffa develops the entire argument on the different notions of cost in marginalist analyses including this uncritical assertion:

> Of course the whole treatment of the process through which the prices of particular commodities are determined, is carried out on the assumption that the remunerations of the factors of production are given (D2/4/3:54).

On the other hand, in the lectures we also find signs of an advanced understanding of the connection between distribution and prices and even an explicit indication of the need for a simultaneous determination of them. Meaningful passages are connected with attempts to further develop his criticism of Marshall of the articles of 1925 and 1926.

Garegnani (2005, p. 460) quotes two passages in this connection, one from the 'pre-lectures' (D3/12/3 37-39). More advanced is an assignment in which Sraffa implicitly asks students to discuss his own former position, i.e. whether constant returns are sufficient to eliminate the significance of demand. It ends with these words: "This point of the relations between theories of value and distribution is one of the most neglected by Marshall and his treatment is very unsatisfactory" (D2/4: 8 recto-verso).

Awareness of the necessary connection between theory of value and theory of distribution and the need for a more satisfactory treatment here appears to be related to the structure of marginalist theories. The necessary connection is however implicitly stated as a general question.[30]

A last evidence of the growing although unfinished awareness of the need of simultaneous determination of price and distribution is that in the third part of the lectures, Sraffa provides a precise description of the theories of general economic

[30] It has to be noted that, as already recalled, Sraffa delivered his lectures over three consecutive academic years and added notes to the manuscripts on the old pages or on entirely new pages each year. The assignment is written on a separate sheet and cannot be precisely dated. This is unfortunate, as this indication of Sraffa's awareness of the relationship between value and distribution could be the result of a late development that did not, however, prompt him to make any radical change to the lectures explicitly addressing the question. On the contrary, in the case of other issues, such as Marshall's theory of rent, Sraffa did instead revise the lectures between the first academic year and the second so as to include the advances he had probably made in the meantime.

equilibrium, with explicit reference to the *Elements* of Pareto. We cannot discuss here the content of these pages, but it is worth noting that until 1926 Sraffa considered the formulation of general equilibrium

> a well-known conception, whose complexity, however, prevents it from bearing fruit, at least in the present state of our knowledge, which does not permit of even much simpler schemata being applied to the study of real conditions (Sraffa, 1926, p. 541).

This change cannot but be considered as a sign of the awareness – unfinished for the aspects considered in the previous section – of the need for the simultaneous determination of prices and distribution.

Conclusion

Sraffa made a great deal of progress in the few months during the preparation of his lectures. By developing his criticism of the *ceteris paribus* hypothesis originally put forward in the article of 1925, he became increasingly dissatisfied with partial equilibrium analysis, and had major insights into the links between distribution and price theory.

This prompted him to resume the search of an ultimate standard of value and to work on an original notion, physical real cost, that led him in the autumn of 1928 to a system of simultaneous equations determining prices. These equations had many of the relevant features of his mature contribution and appeared to Sraffa, in a sufficiently clear way, as the core of a determination of prices coherent with the approach of the Classical economists based on the notion of surplus.

In the lectures, we only find as a major sign of this advancement the explicit recognition of the difference between the structures of the two theoretical approaches. Sraffa identified then two conceptions of cost corresponding respectively to the classical and the marginalist approaches. By deepening the analysis of the different notions of cost that correspond to the marginalist conception of cost, Sraffa also developed a criticism of Marshall’s position. Analysis of the Austrian notion of cost and opportunity cost led Sraffa to understand that once it is conceived as sacrifice or negative utility, cost loses autonomy with respect to the utility of the goods produced. This insight led Sraffa to criticise Marshall’s description of the partial-equilibrium price determination through the supply and demand functions as a synthesis of classical and marginalist theoretical positions. Far from overcoming a contrast between two extreme positions internal to the same theory, Marshall attempted to reconcile principles belonging to two alternative and irreconcilable approaches to the theory of value.

Sraffa’s acceptance of the terms in which the two theoretical approaches are presented both by Marshall and in the debate on the ultimate standard, however, shows that Sraffa had not yet completely understood the implications of his own insight about the interdependence of prices and distribution and the entailed need for a simultaneous determination of them. This insight also had implications on the critical understanding of the different theories. It led to reject the possibility of identifying a single ultimate standard of value for each theoretical approach.

Sraffa's acceptance of the general terms of this debate is significant as it seems to be a residue of his initial adhesion to Marshall's partial equilibrium method, which, in fact, shaped those terms of the debate.

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