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Theories of value and ultimate standards in Sraffa's notes of summer 1927

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Abstract

The group of manuscripts titled 'Notes/London, Summer 1927/Physical real costs, etc.' (D3/12/3) is recognized as extremely important for the reconstruction of the evolution of Sraffa's thought after the articles published in 1925 and 1926. The present paper is aimed at analysing some relevant passages and ideas expressed by Sraffa in those manuscripts.

We shall focus, in particular, on Sraffa's arguments about the existence of two different theories of value, with different aims: one aimed at determining the value of large aggregates of commodities, such as the national product, the necessary consumption and the social surplus, and the other aimed at determining the price of a single commodity, separately from the others.

In Sraffa's view, if the values of many commodities are to be determined simultaneously, then the theory cannot dispense with an ultimate standard of value. That idea led Sraffa toward the conception (or the rediscovery) of the physical real cost.

Keywords: Sraffa; Ricardo; Marshall; theory of value; physical cost

JEL codes: B12; B13; B24; D24; D46

1. Introduction

At the end of May 1927, Sraffa was appointed 'Lecturer in Economics' by the Faculty of Economics of the University of Cambridge. In July of the same year he moved to England and the beginning of his course on Advanced Theory of Value was scheduled for October. During the summer, Sraffa began preparing his lectures, which, however, proved to be more complicated than expected, so the course was postponed by one year.¹

Among Sraffa's manuscripts, there is a group of notes – usually called '*pre-lectures*' – that refers specifically to this period. It is a folder with about 70 pages titled: 'Notes/London, Summer 1927/Physical real costs, etc.' (Sraffa papers: D3/12/3). According to Garegnani's reconstruction (2005), this set of manuscripts is very important for interpreting the evolution

¹ Sraffa delivered the course at Cambridge in the academic years 1928–29, 1929–30 and 1930–31. For an in-depth analysis of his lectures, see Signorino (2005) and Trezzini (2018a).

of Sraffa's thought. Between 1927 and 1928, as Garegnani showed, a turning point took place in Sraffa's interpretation of the classical theory of value. In particular, in his articles of 1925 and 1926, Sraffa essentially accepted Marshall's supply-and-demand approach and, accordingly, believed that 'the old and now obsolete theory which makes [value] dependent on the cost of production' (Sraffa 1926: 541) – i.e. the classical theory – rested on the assumption of constant returns to scale. This erroneous belief – as stressed by Garegnani – was instead absent in the text of the lectures delivered from October 1928, proving that a change occurred in Sraffa's theoretical and interpretative position in the meanwhile.

The present paper is largely based on this reconstruction and is aimed at investigating some issues that Garegnani, in wanting to provide an overall view of the evolution of Sraffa's thought, did not examine in detail. They concern, in particular, Sraffa's identification of two different theories of value, with different aims. The first, that of Ricardo, was aimed at determining the value of large aggregates of commodities. The second, Marshall's one, was instead built to determine the price of each single commodity separately. According to Sraffa, in order to restore Ricardo's approach, in contrast to what Marshall wrote, an ultimate standard of value was required. As we shall see, that idea led Sraffa toward the conception (or the rediscovery) of the physical real cost – namely the amount of commodity necessary to enable production – and it was the first step on his path toward the price equations.

2. Ricardo and Marshall: two theories of value

Despite Marshall's attempt – in Appendix I of his *Principles* (Marshall 1920: 813–821) – to mend Jevons' rift between Ricardo's theory of value and the marginalist approach, Sraffa, in the *pre-lectures*, recognized that a deep transformation occurred in both the role and the meaning of the theory of value. As he wrote in a possible 'general scheme' of his lectures:

General Scheme

The adventures of the Theory of Value. The problems which were prominent in the mind of the older economists were the national wealth, and later its distribution. Ricardo's definition of Political Economy.² How this was later reversed to the consideration of

² Here Sraffa refers (cf. Sraffa papers: D3/12/3: 8–9) to the definition of Political Economy given by Ricardo in a letter he wrote to Malthus (9 October 1820):

Political Economy you think is an enquiry into the nature and causes of wealth – I think it should rather be called an enquiry into the laws which determine the division of the produce of industry amongst the classes who concur in its formation. (*Works*, vol. VIII: 278).

technique of price-fixing and what is distribution regarded as price-fixing of factors of production. (Sraffa papers: D3/12/3: 5)

According to Sraffa, the classical economists and the modern scholars approached the theory of value in two different ways. The classical economists were mainly interested in the determination of the national wealth and its distribution among social classes. Accordingly, they were interested in the valuation of groups of commodities: national product, necessary consumption, surplus. By contrast, in the modern marginalist approach, income distribution is not a social but rather a market phenomenon: wage rate, interest rate and rent rate are understood as the prices of the factors of production – labour, capital and land. The marginalist economists wanted to apply the same principle, namely the equilibrium between supply and demand, to the determination of both the price of each commodity and the price of each factor.

In particular, focussing on the problems in view of which the theory of value was worked out, Sraffa distinguished three periods or phases:

The very concept of «theory of value» has undergone a deep transformation, according to the problem which most intensely attracted in each period the interest of economists. Accordingly, widely different things are covered by the same expression. We may, for the purpose in hand, distinguish three conceptions corresponding to three well-defined periods.

I Causes and nature of wealth (1776–1820)

II Distribution of product amongst classes (1820–1870)

III Determination of price of single commodities

(Sraffa papers: D3/12/3: 13)

Adam Smith, with his *Inquiry into the Nature and Causes of the Wealth of Nations* – whose first edition was published in 1776 – can be surely regarded as the most prominent figure of the first period. For the second and the third period we can make reference to Ricardo and Marshall, respectively.

The difference between Ricardo's and Marshall's approach to the theory of value is so neat that the path followed by the former cannot be considered a solution to the problem faced by the latter and vice versa. On the one hand, the labour theory of value, being designed for determining the relative value of large aggregates of commodities, is subject to notable exceptions when the relative price of two commodities is to be determined. Ricardo was very well aware of these limitations, as emerges, for instance, from his letters to McCulloch and Malthus.³ On the other hand, Marshall's partial equilibrium approach is crucially based on the

³ In Ricardo's analysis, capital is divided into two parts: circulating capital, which essentially consists of wages paid in advance, and fixed capital, which corresponds to the value of the durable capital goods employed. The amount of circulating capital invested is considered proportional to the employment of labour. Therefore, if circulating

ceteris paribus assumption – i.e. that the equilibrium on a single market is determined considering all the other prices and quantities as already fixed. It is, therefore, a methodology that can hardly be extended to the determination of the relative values of aggregates of commodities.

Hence, Sraffa wrote:

Considering the wide differences between the two theories of value (which, by the way, far from being contradictory, simply are attempts to solve altogether different questions) it would be convenient to designate them by different names. The older one has a right of priority to the name theory of value. Therefore the second one should change: when there is a danger of ambiguity it will be convenient to describe it as the theory of prices. (Sraffa papers: D3/12/3: 20)

3. Labour, utility and the law of supply and demand

In the second half of the nineteenth century, the class conflict in Europe was growing. Three dates can be considered particularly representative of what was happening at that time. The first meeting of the International Workingmen's Association was held in London in 1864. The first volume of Marx's *Das Kapital* was published in Germany in 1867. In 1871, in France, there was the bloody experience of the Paris Commune. It became clear that socialism was not just an idea, but was becoming a real danger for the ruling classes.

and fixed capital are in the same proportion in every sector, then the proportion of profits to labour is the same in every sector and the labour theory of value holds. However, significant deviations of the circulating to fixed capital ratio among sectors inevitably lead to deviations of the relative value from the relative quantities of labour embodied.

As Sraffa argued in his Introduction to the *Principles* (*Works*, vol. I: xxxix–xl), some of Ricardo's letters highlight his position, although this emerges in the *Principles* as well. In particular, in a letter to McCulloch on 13 June 1820, Ricardo wrote:

I sometimes think that if I were to write the chapter on value again which is in my book, I should acknowledge that the relative value of commodities was regulated by two causes instead of by one, namely, by the relative quantity of labour necessary to produce the commodities in question, and by the rate of profit for the time that the capital remained dormant, and until the commodities were brought to market. (*Works*, vol. VIII: 194)

and, in a letter to Malthus on 9 October 1820:

You say that my proposition "that with few exceptions the quantity of labour employed on commodities determines the rate at which they will exchange for each other, is not well founded". I acknowledge that it is not rigidly true, but I say that it is the nearest approximation to truth, as a rule for measuring relative value, of any I have ever heard. (*Works*, vol. VIII: 279)

When the labour theory of value is used for the determination of the relative value of aggregates of commodities, the approximation is even better since deviations with an opposite sign may compensate each other. But, clearly, there are problems – later highlighted by Marx – when it is used for the determination of the relative price of single commodities.

It was in this scenario that the marginalist theory of value and distribution was born and spread quite rapidly as a sort of theoretical reply to socialism.⁴ Specifically, it is clear in the words of Jevons, Menger and the other founders of this approach that the marginalist theory was intended as a criticism of the labour theory of value and, at least implicitly, as a reaction to the radical conclusions that the Ricardian socialists were drawing from it.⁵ As Jevons wrote, the theory of value based on marginal utility is aimed at displacing Ricardo's labour theory of value:

Repeated reflections 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. I show, on the contrary, that we have only to trace out carefully the natural laws of the variation of utility [...] in order to arrive at a satisfactory theory of exchange, of which the ordinary laws of supply and demand are a necessary consequence. (Jevons 1888: 1, 2; emphasis in the original)

Jevons' attack on Ricardo's theory was very strong. He wrote that 'that able but wrong-headed man, David Ricardo, shunted the car of Economic science on to a wrong line' (Jevons 1888: 1). Then, when Marshall, a few years later, tried to present the modern approach as a development of the classical theory of Smith and Ricardo – 'a neoclassical theory', as Veblen called it – he had to put the conflict between Jevons and Ricardo in different terms.

According to Marshall, there are two standards of value: utility and cost.⁶ Jevons emphasized the role of the former and Ricardo that of the latter, but neither of them was right since neither utility nor cost are ultimate determinants of value:

There are few writers of modern times who have approached as near to the brilliant originality of Ricardo as Jevons has done. But he appears to have judged both Ricardo and Mill harshly, and to have attributed to them doctrines narrower and less scientific than those which they really held. And his desire to emphasize an aspect of value to which they had given insufficient prominence was probably in some measure accountable for his saying, 'Repeated reflection and inquiry have led me to the somewhat novel opinion that value depends entirely upon utility' (*Theory*, p. 1). This

⁴ On the rising of the marginalist approach, cf. Campus (1987). As for the development of the marginalist theory as a reaction to socialism, cf. in particular Fetter (1923) and Clark (1924). See also Fratini (2018) for Sraffa's standpoint on that.

⁵ As is known, the Ricardian socialists associated the validity of the labour theory of value with the idea that labour is the only productive agent. In their view, since the entire output comes from labour, the entire output must go to workers. Therefore, when the wage rate allows the workers to buy commodities that embody less than one unit of labour, according to the Ricardian socialists this is an 'unequal exchange'.

Even Marx – who wrote pages of harsh criticism against the Ricardian socialists – was initially perceived by various authors as a Ricardian socialist. Sraffa, however, was very clear that he was not:

Marx's surplus value does not depend upon labour being the only cause, or even one cause of value, but to its being proportional to value [...]. Ludicrous belief that Marx says «labour is the only cause of value, therefore all value must go to labour». (Sraffa papers: D3/12/3: 7)

⁶ For an in-depth analysis of the cost-utility controversy and Marshall's theory of value, cf. Campus (2000).

statement seems to be no less one-sided and fragmentary, and much more misleading, than that into which Ricardo often glided with careless brevity, as to the dependence of value on cost of production; but which he never regarded as more than a part of a larger doctrine, the rest of which he had tried to explain. (Marshall 1920: 817)

In Marshall's theory, the cost of production and the marginal utility are both involved as component parts of the 'law of supply and demand', which is the mechanism by which prices are determined:

The 'cost of production principle' and the 'final utility' principle are undoubtedly component parts of the one all-ruling law of supply and demand; each may be compared to one blade of a pair of scissors. When one blade is held still, and the cutting is effected by moving the other, we may say with careless brevity that the cutting is done by the second; but the statement is not one to be made formally, and defended deliberately. (Marshall 1920: 820)

As for the cost of production – in Marshall's view, the production of commodities is the result of 'efforts and sacrifices', namely labour and abstinence from consumption. This is the real cost. The measure of its amount is expressed by the money expenses of production needed in order to compensate for the sacrifices, and thus to induce labourers to work and capitalists to save. This monetary quantification of the cost is the supply price.

On the other hand, the marginal utility of the commodity is measured by its demand price, namely the amount of money a consumer is willing to pay.

The equality between the supply price and the demand price of a commodity determines its equilibrium price. The law of supply and demand is the mechanism that tends to push the value of a commodity toward its equilibrium level:

When [...] the amount produced (in a unit of time) is such that the demand price is greater than the supply price, then sellers receive more than is sufficient to make it worth their while to bring goods to market to that amount; and there is at work an active force tending to increase the amount brought forward for sale. On the other hand, when the amount produced is such that the demand price is less than the supply price, sellers receive less than is sufficient to make it worth their while to bring goods to market on that scale; so that those who were just on the margin of doubt as to whether to go on producing are decided not to do so, and there is an active force at work tending to diminish the amount brought forward for sale. When the demand price is equal to the supply price, the amount produced has no tendency either to be increased or to be diminished; it is in equilibrium. (Marshall 1920: 345)

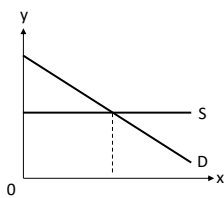
Following this argument, as previously mentioned, both the cost of production and the marginal utility, in the form of their money counterparts – supply and demand prices – are needed in determining the price of each commodity. There is no ultimate standard of value.

Sraffa, however, as we shall see in the next section, was not fully convinced about the general validity of this conclusion.

4. Sraffa and the ultimate standards of value

With reference to Marshall's reasoning that we have very briefly summarized in the previous section, Sraffa, in the *pre-lectures*, raised two objections. The first is essentially very close to the position he had already expressed in the articles (Sraffa 1925 and 1926). He maintained that if constant returns to scale are assumed, then the cost of production alone can be seen as the ultimate determinant of the price:

The belief that, since it is the equating of cost and utility (Supply and Demand prices) that determines equilibrium, neither utility nor cost can be said to be determinant of price, is entirely unfounded. It can be easily shown by the diagram of constant costs that in this case, although at the position of equilibrium supply price and demand price equate, it is exclusively the former that determines price. The equilibrium price is always equal both to supply and demand prices, but this is not sufficient to prove that both of the latter are determinants. (Sraffa papers: D3/12/3: 29)



The second objection is, by contrast, new and closely connected to the arguments presented in the previous two sections. According to Sraffa, Marshall could avoid referring value to an ultimate standard thanks to his partial equilibrium approach, but as soon as we try to extend the analysis to the determination of the value of many commodities together, it is necessary to refer to an ultimate standard of the value.⁷ In Sraffa's words:

If we are inquiring into the general problem of the causes of value, it is no use for us to argue that the value of bread is determined by the price of corn and by the money wages of bakers, that the price of corn is determined by the money wages of labourers and by the price of agricultural implements, that the money wages of labourers depend upon the prices of foodstuffs, and so on ad infinitum – this would be a perfectly futile way of reasoning in a circle. In this general problem we must find some ultimate standard, independent from the variables we are considering, such {as} utility or disutility or labour.

But if we confine our inquiry to such a question as that of how, being given all the prices and amounts consumed and produced of all other commodities, what is the mechanism through which the price of a given article is caused to be what it is, and not higher or lower: or how an increase in its demand, *ceteris paribus*, would affect its price – the position is entirely different: there is no objection to our measuring costs and

⁷ As regards the debates about the 'ultimate standard of value' that Sraffa surely had in mind, cf. Campus (2000) and Trezzini (2018b).

utilities in terms of money – indeed we can entirely dispense with such conceptions. We can substitute to costs of production the much simpler «money expenses of production» and to marginal utility «marginal demand price». (Sraffa papers: D3/12/3: 17–18)

Hence, during the summer of 1927, Sraffa was becoming aware that what he had written in the 1925 and 1926 articles about the recovery of the old standpoint of the classical economists was not really correct. It is not by a horizontal supply curve – or by the assumption of constant returns to scale, which is the same – that we can revive Ricardo’s view, because the problem he wanted to solve was not that of the determination of the price of a single commodity. Ricardo was interested in determining the values of many commodities together and Marshall’s argument, grounded on supply and demand prices, cannot be adopted in this case. According to Sraffa, outside the partial equilibrium approach, supply and demand prices lead to ‘reasoning in a circle’. Sraffa started to believe that an ultimate standard of value was required in order to solve the problem.

{Marshall’s} method of reasoning is legitimate only in respect of one commodity at a time: we could of course apply it in succession to each of the other commodities [...] but not to all or several commodities at the same time.

We can therefore go without a conception of ultimate standard of value: our standard is – the value of other commodities: and this can be done, and is useful so far as we want to inquire into the internal organization of an industry and its methods of marketing.

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.

Two standards offered: they are the same thing – words. [...]

However there is one reality in cost, i.e. labour. (Clay) (Sraffa papers: D3/12/3: 38–39)

The ‘two standards’ Sraffa referred to in the final lines of this passage are ‘marginal utility’ and Marshall’s ‘real cost’ – i.e. ‘measurable efforts and sacrifices’. They were not seen by Sraffa as a satisfactory solution, essentially for two reasons. First, they are ‘psychological’ magnitudes: each individual can be the sole judge of her/his own willingness to pay, work and save. There is no possibility of objective measurement. Second, they are not really ‘ultimate’ standards. In Sraffa’s view they are ‘relative conceptions’: the utility or the disutility (sacrifice) of a certain item depends on the alternatives available.

Physical real costs

All the ultimate standards we have considered up to this point are psychological: that is to say their test is the willingness of consumers or producers to make a sacrifice in order to obtain a utility – or vice versa. Real costs interpreted as disutility are thus strictly dependent upon the alternative uses to which they can be put: the more attractive such alternative uses, the greater the disutility incurred in giving them up. But this is still, it may be said, a relative, not an ultimate, conception. The disutility of one thing is the utility of another thing: and what is the utility of the latter? – it is tested by the disutility involved in not acquiring a third thing – and so on ad infinitum {...}. So far as we are considering the utility of one article of consumption or the disutility of one sort of labour to a man who has the opportunity, if he chooses, to take up an alternative employment, the test is satisfactory. But when the field of our inquiry is extended, it soon appears that the larger the «industry», i.e. the number of commodities or of vocations, which we propose to investigate simultaneously (and this is necessary if we recognize that a considerable degree of interdependence exists between the conditions governing the production and the consumption of the most diverse commodities) we realize that the number of “alternative” uses (commodities or vocations) correspondingly decreases, and the basis of our test grows thinner and thinner. What happens then if, as it is necessary in a quest of an ultimate standard, we go so far as to consider the whole of the commodities produced and the efforts incurred at one and the same time? shall we not then entirely miss any alternative use, since *ex-hypothesi* we have included them all into our consideration? (Sraffa papers: D3/12/3: 42–43, emphasis in the original)

Sraffa’s reasoning can be summarized as follows. In order to solve the problem of determining the value of all commodities at once, we can use neither the supply and demand prices nor the standards of value Marshall set behind them, namely marginal utility and real cost. Once the partial equilibrium approach is left behind, the whole of Marshall's theory seems to have crumbled into Sraffa’s hands. Yet, he writes, there is something real, something true, behind the cost. There is labour, which enters all productions, and from here, as we shall see, Sraffa tried to start again.

5. The physical real cost

As we have just seen, in the summer of 1927, Sraffa thought that an ultimate standard of value was required in order to go back to the theory of value of the classical economists, namely a theory that allows the determination of the value of many commodities together, and so to use it within the surplus approach to income distribution. Moreover, he realized that none of the standards Marshall denoted as the principles behind the supply and the demand price – i.e. real cost and marginal utility – was a convincing solution to the problem, since: i) they are psychological; ii) they are not ultimate standards.

The 'physical real cost' appeared to be the right solution. This was, in Sraffa's view, the notion of cost of Petty and the Physiocrats, who understood the cost of a certain commodity as the bundle of commodities that is absolutely necessary to enable its production.⁸ This bundle includes mainly the workers' subsistence, but also other means of production.

Being absolutely necessary, the amount of commodities that forms the physical real cost can be observed and objectively measured.⁹ In fact, whenever commodities are actually produced, the physical real cost must be there because the employment of those commodities is needed to enable the production process.

With reference to this physical real cost, Sraffa saw two difficulties. The first problem concerned the substitutability among commodities in both production and consumption. If there are alternative methods of production for the same commodity and/or there are alternative bundles of consumption goods the workers can subsist with, then there is more than one set of commodities that represent the physical real cost:

Physical Real Costs

This conception would be tenable only if all the commodities considered (or at least one of them) had, each of them, no possible substitute (and therefore were absolute necessities, since luxuries are natural substitutes amongst themselves). But if commodities have substitutes, there is no more "one" real cost composed of a series of various quantities of commodities, which don't require common measure: so soon as there are substitutes, there is an infinite number of combinations of the different commodities, which satisfy the condition of maintaining life and efficiency of the producers. How are we to choose between these combinations? It is of course impossible to choose between 1 kg of bread + ½ kg of meat and ¼ kg of bread + 1 kg of meat, unless we introduce the common measure of their value – and that would beg the question. (Sraffa papers: D3/12/3: 44, emphasis in the original)

And in the left margin of this passage, Sraffa added: 'But in a community that produces just what is sufficient to keep it going, would there not be only one combination that satisfies the above condition? It would be «the cheapest».'

Hence, in order to circumvent the first difficulty, Sraffa wanted to introduce a 'common measure' for the commodities that form the physical cost, in order to find out which combination is the cheapest. This is the second problem: how could a set of heterogeneous commodities be reduced to a single quantity?

⁸ In Sraffa's manuscripts of the late 1920s, we can find his reconstruction of the history of the 'degeneration' of the notion of cost – from the 'right notion of cost' of Petty and the Physiocrats to Marshall's real cost. For a survey of these documents, cf. Fratini (2018).

⁹ On the notion of physical real cost that Sraffa referred to in his manuscripts, cf. also: Garegnani (2005); Kurz and Salvadori (2005) and Kurz (2006).

The two problems, in Sraffa's view, are connected between themselves. In fact, if there were no substitutability among the commodities, then Sraffa thought he could be found a 'necessary commodity' with which all the commodities are directly or indirectly produced, so as to measure the physical cost as a quantity of this commodity.

It should be remarked that if this difficulty (of no substitutes) were overcome and an absolutely necessary commodity found, the difficulty of reducing to a common measure the various things entering into real cost would solve by itself. In effect, it would be easy to find the cost of all the other things in terms of the necessary one, and thus by going back enough in the genealogy of production (and stopping along each branch so soon as we have resolved it into our necessary commodity) we might find exactly the total amount of corn (if this were the ideal necessary commodity, which it is not) that has actually entered into the production of, say, this book, and covers entirely its cost of production, at the exclusion of any other commodity. (Sraffa papers: D3/12/3: 44–45, emphasis in the original)

As Naldi argued in a recent paper (2018), here we can find the origin of the path that led Sraffa to his price equations. Referring to 'a community that produces just what is sufficient to keep it going' – i.e. to a 'subsistence economy' of the same kind as the one Sraffa considered in the first chapter of his book (Sraffa 1960: 3–5) – the problem of substitutability between bundles of commodities that can represent workers' consumption is figured out by assumption. That is probably the reason why Sraffa decided to focus his attention primarily on economies without surplus. Between the end of 1927 and the beginning of 1928, Sraffa discovered his 'first equations', namely the system whose solution determines the relative prices of commodities for an economy without surplus.

Moreover, once he had got the first equations, he realized that the reduction of the physical cost to a necessary commodity was not really needed. The physical real cost of each commodity could directly be represented as the set of different commodities employed in its production. Commodities are produced by means of commodities and the latter represent their physical real costs.

This idea of the physical real cost as the means of production employed appears in several passages of Sraffa's manuscripts, written in different periods. We may quote, for instance, the well-known passage titled 'Man from the moon':

MAN FROM THE MOON

{...} if a man fell from the moon on the earth, and noted the amount of things consumed in each factory and the amount produced by each factory during a year he could deduce at which values the commodities must be sold; {...} the conditions of exchange are entirely determined by the conditions of production. (Sraffa papers: D3/12/7: 87)

And a very similar sentence can also be read in the first section of *Production of Commodities* (Sraffa 1960), where Sraffa – having introduced the methods of production of a very simple subsistence economy – wrote that there is a unique set of exchange values that is compatible with the repetition of the production process and ‘such values spring directly from the methods of production’.¹⁰

6. The physical interpretation of Ricardo’s theory of value

According to Sraffa, notwithstanding some ambiguous statements, Ricardo’s labour theory of value was actually based on the physical conception of the cost of production. In Sraffa’s view, Ricardo adopted the quantity of labour embodied as a common measure of the amount of commodities that form the physical real cost.

The starting point of Sraffa’s argument is a problem we have already met: that of the substitutability between the various combinations of commodities that can support a labourer during a working day. He said that the difficulty would be avoided if a common unit of measure was found for heterogeneous commodities. In particular, he wrote that the best measure of cost available is the amount of commodities necessary to support a labourer during a unit of labour time and, if several of such sets of commodities exist, the physical cost is the one that embodies the minimum quantity of labour.

There is however something to be said for this conception of real cost. It is true that there is an infinite number of combinations of commodities which would be «the minimum» necessary to support permanently a labourer working 8 hours a day at a given standard of efficiency. But this difficulty arises only in so far as we abstain from using a unit of measure for the different commodities, and simply say that the real cost of producing a given article is a given set of diverse commodities – and this would be an «ultimate» conception if there were no possible substitutes for those commodities.

This not being the case, we must find a unit of measure for cost: the necessity for this unit arises, not from a desire of actually measuring – it is prior to it, and is required even for thinking of cost. The best measure available is the amount of various commodities that is required to support, during an hour, a common average labourer: if

¹⁰ As is known, Sraffa started his book with the case of a subsistence economy with just two commodities: wheat and iron. The methods of production are the following: ‘280 quarters of wheat and 12 tons of iron are used to produce 400 quarters of wheat; while 120 quarters of wheat and 8 tons of iron are used to produce 20 tons of iron’ (Sraffa 1960: 3). In this economy there is no surplus since the amount of means of production employed – i.e. 280+120 qr. wheat and 12+8 t. iron – equals the total (gross) output. At the end of each production cycle, the producers in the wheat industry must purchase 12 t. iron from the producers in the iron industry and the latter must purchase 120 qr. wheat from the former. Therefore 120 qr. wheat are exchanged for 12 t. iron, namely: the relative price of 1 t. iron is 10 qr. wheat.

there are many of such sets of commodities, we can choose the one that can be produced with a minimum of labour (this is ambiguous!). Of course, not all individuals in one trade require the same amount of necessaries, and persons in different trades require different amounts – and to this extent our measurement is inexact, and real cost is slightly different (in excess or deficiency) from number of hours of labour. I contend however that the amount of necessaries varies much less between different workers, than vary a) their disutilities, b) their wages. (Sraffa papers: D3/12/3: 45–46)

Therefore, the quantity of labour embodied in commodities is recovered by Sraffa as a possible (approximate) measure of the physical real cost. This paved the way to the interpretation of Ricardo's theory of value in terms different from those based on Marshall's supply and demand. Ricardo's theory was not based on Marshall's psychological notion of cost – i.e. 'efforts and sacrifices' – it was grounded on a physical notion of cost.

Thus to Ricardo's T{heory of} V{alue}, based on amount of labour, two interpretations can be given: 1) the subjective (psycholog{ical}), disutility one, 2) the objective (physical), necessaries of existence one. He probably had not always clear in mind the distinction, but I believe that the latter is the one that underlies his T{heory of} V{alue}.

{...}

The striking insistence of Ricardo in affirming that quantity of labour, and not the wages received by labour (the quantity of labour required to produce a commodity, not the quantity of commodities commanded by labour) shows that the physical interpretation is right. For, in addition to real costs, the labourer receives a part of the surplus as part of his wages, and therefore wages and cost (labour) are different; but in a perfectly competitive system, wages would be proportional to marginal disutility of labour. Therefore, if the physical interpretation of real cost is accepted, quantity of labour is the best measure of cost; if the disutility interpretation is accepted, wages are the best measure of cost. A large part of Ricardo's Chap{ter} on Value is given to {prove} this. Sect{ion} 1 of Ch{apter} 1 is by himself headed with this summary statement: «The value of a commodity ... depends on the relative quantity of labour which is necessary for its production, and not on the greater or less compensation which is paid for that labour».¹¹ (Sraffa papers: D3/12/3: 47–48)

In the final part of this passage Sraffa seems to maintain that Ricardo's reference to quantities of labour embodied, rather than to amounts of wages paid, proves that he was trying to measure the cost of production in terms of workers' subsistence. The validity of this point does not seem certain, however, since the *relative* quantity of labour, to which Ricardo actually referred, seems suitable for measuring both the relative quantity of workers' subsistence necessary for the production of the commodities and the relative amount of wages paid.

¹¹ Cf.: *Works*, vol. I: 11.

7. Conclusion

At the very beginning of the Preface of his book – introducing his theory of value in which commodity prices depend on their methods of production and, therefore, on their physical costs – Sraffa wrote:

Anyone accustomed to think in terms of the equilibrium of demand and supply may be inclined, on reading these pages, to suppose that the argument rests on a tacit assumption of constant returns in all industries. If such a supposition is founded helpful, there is no harm in the reader's adopting it as a temporary working hypothesis. In fact, however, no such assumption is made. No change in output and [...] no change in the proportions in which different means of production are used by an industry is considered, so that no question arises as to the variation or constancy of returns. (Sraffa 1960: v)

And on the following page he added:

The temptation to presuppose constant returns is not entirely fanciful. It was experienced by the author himself when he started on these studies many years ago—and it led him in 1925 into an attempt to argue that only the case of constant returns was generally consistent with the premises of economic theory. (Sraffa 1960: vi)

Actually, these passages can be seen as the synthesis of the results achieved by Sraffa through the reasoning that we have tried to reconstruct here.

In the articles of 1925 and 1926, Sraffa himself was 'accustomed to think in terms of the equilibrium of demand and supply' and, accordingly, experienced 'the temptation to presuppose constant returns'. He maintained that the hypothesis of constant returns to scale – which he claimed to be the only case 'generally consistent with the premises of [Marshall's] economic theory' – made it possible to recover the standpoint of the classical economists according to which commodity values depend on their costs of production. This claim – as argued by Garegnani (2005) – was in fact grounded on a Marshallian supply-and-demand equilibrium in which, however, the supply curve is horizontal due to the assumption of constant costs.

Then, during the summer of 1927, Sraffa realized he could not use Marshall's supply-and-demand equilibrium with the aim of representing the theory of value of the classical economists. As we have shown, in the *pre-lectures*, Sraffa stressed that Ricardo developed his theory of value in order to study the distribution of the national income among social classes. He was interested in the value of large aggregates of commodities: national product, necessary consumption, surplus. By contrast, Marshall's theory was aimed at determining the price of a

single commodity, considering all the other prices and quantities as already fixed. Accordingly, Sraffa saw that Marshall's theory was not suited to solving Ricardo's problem.

Through his law of supply and demand, Marshall had tried to bring together two opposing and alternative views about the determinants of the value of commodity: the cost of production principle and the marginal utility principle. In Marshall's approach, none of them is an ultimate determinant of value. Cost and utility, expressed in money terms, become the supply and the demand price, respectively. Thus, the equilibrium price is determined by the equality of supply and demand price.

According to Sraffa, '[t]his method of reasoning is legitimate only in respect of one commodity at a time: we could of course apply it in succession to each of the other commodities [...] but not to all or several commodities at the same time' (Sraffa papers: D3/12/3: 38). Therefore, it cannot be adopted for determining the value of large aggregates of commodities – which was the goal of Ricardo's theory of value. But once Sraffa had left behind the partial equilibrium approach, he felt the need to refer commodity value to an ultimate standard. Hence, he discovered (or rediscovered) the physical real cost, understood as the commodities that are necessary to enable production.

This was the first step Sraffa took on the path that led him, in a few months, to the price equations. By the equations, Sraffa realized that 'the conditions of exchange are entirely determined by the conditions of production' (Sraffa papers: D3/12/7: 87) or, which is the same, that 'values spring directly from the methods of production' (Sraffa, 1960: 3). And this was achieved independently of any assumption about returns to scale. In other words, Sraffa was able to recover the standpoint of the old classical economists, without the need for assuming constant returns to scale and, in fact, 'no such assumption is made' in his book.

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