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# 1

## Early Life and Writings: The Critique of Marshallian Theory

### 1.1 The early writings: Money and banking

Piero Sraffa was born in Turin on 5 August 1898. His mother, Irma Tivoli (1873–1949), and father, Angelo Sraffa (1865–1937), both came from Jewish families. His father was a well-known professor of commercial law and – for many years – rector of the Bocconi University in Milan. Piero was their only child, born about a year after their marriage, which took place in Courmayeur on 4 July 1897.

Following his father's career from one university to another, the young Sraffa began primary school in Parma, and continued his education in Milan (1906–13) and Turin (1913–17). In Turin, he attended a secondary school which specialised in classical studies (*liceo classico Massimo d'Azeglio*) and went on to enrol in the Faculty of Law at the University even though his family had moved back to Milan, so his attendance was by no means assiduous; in particular he shunned the lectures of Achille Loria (1857–1943), holder of the chair in political economy, whom Sraffa did not hold in great consideration. In fact, he spent the period 1917–20 doing military service, and at the end of the war was assigned to the secretariat of the 'Royal Commission for the Investigation of Violations of Human Rights Committed by the Enemy', which concluded with the seven volumes of reports published between late 1919 and early 1921. He was thus able to take his exams in uniform, a condition which used to gain the favourable attention of the examiners.

In November 1920 he graduated with a thesis on *L'inflazione monetaria in Italia durante e dopo la guerra* (*Monetary Inflation in Italy During and After the War*). The supervisor of the thesis was Luigi Einaudi

(1874–1961), professor of public finance, a liberal senator since 1919 who was to become Budget Minister, Governor of the Bank of Italy and president of the Italian Republic after the Second World War. Sraffa remained on friendly terms with him for the rest of his life. However, the subject of the dissertation seems to have been suggested by Attilio Cabiati (1872–1950), a friend of Sraffa's father, who was professor of economics at Genoa at the time.<sup>1</sup>

The graduate thesis was also his first publication (Sraffa 1920). A sharp rise in prices was associated with expansion in the circulation of money, in line with the dominant tradition of the quantity theory of money. Nevertheless the empirical analysis contained in it distances itself from that theory to consider pragmatically the differentiated trends shown by the various price indexes, their significance being sought in the consequences for the various groups taking part in economic life, and in particular the social classes of workers and entrepreneurs. The point is worth stressing, as it is precisely the non-univocally determined nature of the concept of a general price level (and of its inverse, the purchasing power of money) that underlies Keynes's criticism of the quantity theory of money in the opening chapters of his *Treatise on Money* (Keynes 1930).

This analysis implies that monetary policy can affect income distribution. That point is not stressed or discussed in this work, but it is to be noted here since it would assume a central role in the development of Sraffa's (as well as Keynes's) thought.<sup>2</sup>

The most significant original contribution offered by Sraffa's thesis lies in the distinction between stabilisation of the internal and of the external value of money, or in other words between stabilisation of the average level of domestic prices and stabilisation of the exchange rate. According to traditional gold standard theory the two variables coincide, but in principle, at least, they should be kept separate.

<sup>1</sup> For fuller details of Sraffa's biography at this stage, cf. Naldi (1998a, 2004); D'Orsi (2001). Among other things, Naldi suggests that Sraffa may have collaborated on the report of the Royal Commission of Investigation, and in particular on the parts concerning economic issues, such as the long section dedicated to the Cassa Veneta dei Prestiti. On Einaudi and Sraffa, cf. also Faucci (1986).

<sup>2</sup> Panico (cf. for instance 2001: 287) attributes to Sraffa in this context a 'conventionalist' standpoint, 'according to which the *level* of economic variables under examination is not determined by natural or material forces [...], but can establish itself at any level considered *normal* by the common opinion'. However, at this initial stage of development of Sraffa's thought such a standpoint is still neither explicit nor, possibly, conscious.

The distinction becomes essential both when considering short-period issues and inconvertible paper money systems, and hence was crucial for the economic policy of the time.<sup>3</sup> Moreover, the point is also connected with the development of Keynes's thought: while Keynes made no use of the distinction in *Indian Currency and Finance* (1913), he did bring it into his *Tract on Monetary Reform* (1923), having in the meantime (in August 1921) met Sraffa (who was to edit the Italian edition of the *Tract*).<sup>4</sup>

Sraffa's earliest publications continued to address monetary issues: an article of 1922 on the crisis of the Banca Italiana di Sconto in the *Economic Journal* and one on the bank crisis in Italy – again of 1922 – in the *Manchester Guardian Supplement on Reconstruction in Europe* edited by Keynes. The two articles reveal a thorough command of institutional and technical aspects of banking (probably owing in part to the practical experience the young Sraffa acquired in a provincial bank, the Banca di Legnano e Busto Arsizio, immediately after graduating), coupled with a strikingly well-informed approach and awareness of the interests at stake.<sup>5</sup>

The first of the articles reviews the story of the Banca Italiana di Sconto from its birth at the end of 1914 to bankruptcy in December 1921, illustrating the actual situation of the Italian financial system, with its systemic feeblenesses, collusive practices and frequent

<sup>3</sup> Cf. Roncaglia (1984); Ginzburg (1986); Panico (1988b); De Cecco (1993) and Ciocca and Rinaldi (1997).

<sup>4</sup> Sraffa was introduced to Keynes with a letter that Gaetano Salvemini (1873–1957) obtained for him from Mary Berenson, wife of the famous art critic and a friend to Keynes as well as to Salvemini, the anti-Fascist historian, himself a friend of Sraffa's family. Mary Berenson introduced Sraffa as 'a great friend of the Salvemini [...] Professor Salvemini thinks very well of him', Cf. Roncaglia (1983, 1984). Berenson's letter is kept in the Keynes Archives at King's College in Cambridge; it was found by the author when the papers were in the Marshall Library and were being catalogued by Ms. Barbara Lowe.

<sup>5</sup> We should recall that Piero's father was a celebrated commercial lawyer, well acquainted with the Italian business and financial community; an uncle of his was Mariano D'Amelio (1871–1943), who was to become in 1923 the first president of the Supreme Court (Corte di Cassazione) of the Italian Kingdom, and who was also to help Sraffa in his actions in favour of the imprisoned Gramsci. We can therefore take Sraffa's word for it when he illustrates a secret agreement among the main Italian banks to set agreed maximum limits for passive interest rates and minimum limits for active interest rates and commissions (Sraffa 1922a: 179–81); he explicitly writes, referring to the press account of the events, 'This explanation is [...] inadequate', going on to refer to unspecified 'competent authorities' for 'the true' explanation (Sraffa 1922a: 182).

resort to subterfuge, if not outright violation, with respect to laws and regulations. Sraffa concluded with some pessimistic remarks on the risks involved in direct relations between banks and enterprises and on the inevitability of such relations given the backwardness of Italy's financial markets, as well as the difficulty of bringing about any change in the situation, due in the first place to the lack of real will on the part of the politicians. New laws were called for 'to prevent the formation of trusts, to protect the independence of banks, to regulate the reserves to be held on banking deposits', although events in other countries showed that legislative reforms are in themselves insufficient to prevent crises. In Italy these risks were aggravated by connections between the fascist government and the financial elite, as Sraffa stressed in a strongly worded final sentence: 'But even if these laws were not futile in themselves, what could be their use as long as the Government is prepared to be the first to break them so soon as it is blackmailed by a band of gunmen or a group of bold financiers?' (Sraffa 1922a: 197).

All these points remain extremely relevant today, often cropping up in the debates on the choice between a specialised banking system (based on separation between short-term credit and medium- and long-term credit, adopted in Italy – and in many other countries – in the face of the difficulties subsequent to the 1929 world crisis) and a universal banking system (re-introduced, 60 years later and after a long debate, with the Italian bank bill of 1993). Sraffa saw both advantages and disadvantages in each of the two settings, universal ('mixed') banking favouring the channelling of funds to industrial investments but increasing the risk of dangerous connections between industrial companies and banks. Sraffa's attack on the role of cross-shareholdings and interlocking directorates foreshadows Berle and Means (1932); his remarks on the perverse connections between top politicians and financiers have also proved to retain enduring relevance on a number of occasions in recent years, such as in the bankruptcies of Michele Sindona's Banca Privata Italiana (1974) and Roberto Calvi's Banco Ambrosiano (1983).

The second article (Sraffa 1922b) highlights the weakness of Italy's three leading commercial banks (Banca Commerciale, Credito Italiano and Banca di Roma), casting serious doubts on the correctness of their official accounts and of the institutional expedient (resorting to a consortium for industrial stock subsidies) adopted to sidestep the law which had set limits on the support that issuing banks could lend to commercial banks.

The first article, published in an academic journal,<sup>6</sup> went unnoticed in Italy. The second article, however, was soon noticed and signalled to Mussolini, who, seriously irritated and possibly worried by the impact the article could have on international financial circles in the presence of impending risks of a banking crisis, telegraphed Angelo Sraffa demanding – to no avail – a public recantation from his son.<sup>7</sup> The Banca Commerciale also threatened to sue him, but then failed to implement the threat. Its chairman, Toeplitz, wrote a letter of protest to Keynes, the editor of the *Manchester Guardian Supplement*, who published it in a subsequent issue (29 March 1923) with a curt rejoinder.

Given these circumstances, Keynes decided to invite the young Italian economist to Cambridge. Sraffa accepted, but was refused entrance to the UK when he landed at Dover in January 1923, possibly because the British authorities had kindly complied with a request to this effect from the Fascist government (which was both Sraffa's and Keynes's interpretation of the event), or possibly because Sraffa had already been labelled as *persona non grata* on account of the relations he had entered into with the British Marxist left on his previous visit in 1921.<sup>8</sup>

Monetary issues were subsequently to re-emerge among Sraffa's interests. He wrote in Piero Gobetti's (1901–26) *Rivoluzione liberale* in 1923 a brief, biting attack against an article published in *Popolo d'Italia* on the exchange rate movements of the lira; two letters on the

<sup>6</sup> As Sraffa later recalled (in a private conversation with the author), some time after their acquaintance in Cambridge in August 1921, Keynes requested of him a short contribution on the Italian banking system for the *Manchester Guardian Supplement* he was editing. The young Sraffa, recently graduated, set out to do his best and wrote the article on the Banca di Sconto, clearly outdoing his assignment. On receiving the paper, Keynes found it unfit for the *Manchester Guardian Supplement*, but it was so good that he decided to publish it in the *Economic Journal* instead. Sraffa's eyes still shone when recalling the incredulous joy with which he received such good news. Thus, while the first paper went to the *Economic Journal*, he proceeded to write a shorter article for the *Manchester Guardian Supplement*.

<sup>7</sup> Sraffa's article was published on 7 December 1922; Mussolini's telegrams were dated 20 and 21 December 1922. The story of Mussolini's telegrams was first presented in Roncaglia (1983a, 1984); Sraffa had related the story to various Italian economists, including Pierangelo Garegnani, Sergio Steve and myself (in 1975 he showed me the text of the telegrams). Their existence was put in doubt by Finoia (1988: 301–2), after some unsuccessful attempt on the part of the highly competent historian Renzo De Felice to locate them in the State Archives; they were subsequently found by Nerio Naldi (1998c) in the archives of the Ministry for Foreign Affairs.

<sup>8</sup> Cf. Naldi (1998a, 1998c).

reevaluation of the lira were published by Angelo Tasca (1892–1960) in *Stato operaio* in 1927.<sup>9</sup> In the letters Sraffa criticised the simplistic idea, held at the time by the leaders of the Italian communist party, that the revaluation of the lira was in the interests of the bourgeoisie, as opposed to the working class; against this idea, Sraffa pointed out the contrasting interests of different sectors of the bourgeoisie and of the fascist political leadership. From 1928 to 1930 he held courses in Cambridge on the Italian and German financial systems, along with his more celebrated courses on the theory of value. The 1932 controversy with Hayek, to which we shall return, also had to do with problems of monetary theory.

All in all, Sraffa's early publications show us a 'complete' economist, whose interest in pure theory is tempered by a solid knowledge of institutional details and exemplary analyses of specific real-world issues.

## 1.2 Friendship with Gramsci<sup>10</sup>

In 1919, at the University of Turin, Sraffa met Antonio Gramsci (1891–1937). They were introduced by Umberto Cosmo (1868–1944), who had been Sraffa's Italian literature teacher at upper secondary school; he also taught courses at the university, with Gramsci as one of his most brilliant students. In 1919 Gramsci founded *L'ordine nuovo* (The new order), and Sraffa contributed some translations from German and three short articles which he sent from London on the occasion of his visit there in 1921. The same year saw the foundation of the Italian Communist Party in Livorno – Gramsci became its secretary in 1924; Sraffa never joined the party, pursuing his independence of views while maintaining a close intellectual relationship with his friend.

An important piece of evidence documenting the two friends' political exchanges is provided by a letter from Sraffa that Gramsci published

<sup>9</sup> These letters were published anonymously by Tasca, then in exile in Paris. Tasca's own copy of *Stato Operaio*, now kept at the Feltrinelli Foundation in Milan, exhibits a pencilled addition, most probably by Tasca, the letters 'P. S.'; this allowed for identification of their author in 1971. Tasca had requested Sraffa's permission to publish these letters, but Sraffa's positive answer was only sent on 21 December 1927 (the letter is now among the Tasca papers preserved at the Fondazione Feltrinelli in Milan: cf. Potier 1987: 114) and, apparently, Sraffa was then never informed of their publication; at least this is what he told me and others in 1971.

<sup>10</sup> The interpretation here presented was proposed in Roncaglia (1983). Cf. now Fausti (1998); Naldi (1998c, 2000); Vacca (2000).

(unsigned, initialled S.) in the April 1924 issue of *L'ordine nuovo* with his reply (Gramsci and Sraffa 1924). In his letter Sraffa stressed the function played by bourgeois forces of opposition in the struggle against fascism and the importance of democratic institutions for the social and political development of the proletariat. In a scenario dominated by the rise of fascist dictatorship, he found the working class absent from the political scene and trade unions and the communist party incapable of organising political action, so workers had to face their problems as individuals, rather than as organised groups. 'The main issue, taking first place over any other, is one of "freedom" and "order": the others will come later, but for the time being they can be of no interest to workers. Now is the time for the democratic forces of opposition, and I think we must let them act and possibly help them'. (Sraffa 1924b: 4)

Antonio Gramsci's response was flatly negative, in line with the position of Amadeo Bordiga, then secretary of the communist party (where the centralist principle prevailed and no dissent to the official line could be shown). Gramsci rejected Sraffa's suggestions as conducive to the liquidation of the communist party, subject as it would be to the strategy of the bourgeois forces of opposition, and went so far as to accuse his friend of 'having failed so far to get rid of the ideological residues of his liberal-democrat intellectual background, namely normative and Kantian, not Marxist and dialectical'. However, Gramsci's thesis – that the communist party should advance 'its own, autonomous solutions to the general, Italian problems' – did not in itself contradict the proposal of an alliance for action with the other anti-fascist parties, while he could not have openly advanced it, since it differed from the party line.

Nevertheless the very fact that Sraffa's letter was published, probably after a heart-searching discussion between the two friends, amounted to significant recognition of the problems it raised and the political ideas suggested by the young economist. Indeed, Gramsci drew attention to this strategy again, and far more explicitly, in a private letter to comrades closer to his position, and thus less subservient to the Bordiga orthodoxy (reprinted in Togliatti 1962: 242ff.).<sup>11</sup>

The episode suggests that Sraffa played some role in the development of Gramsci's political thinking and the distance he maintained from Bordiga's line, and in particular from the idea of the total opposition

<sup>11</sup> Failure to take into account this second letter explains why some commentators (such as Sen 2004: 36) attribute to Gramsci only 'contemptuous dismissal [of Sraffa's views] in classical communist rhetoric'.

of the communist party to all other political forces for the sake of the Bolshevik revolution. Years later, the position which Gramsci's political reflections reached towards the end of his life appeared close to the position Sraffa had taken as early as 1924, when Gramsci in turn proposed a pact between the anti-fascist political forces for the reconstruction of a democratic Italy after the anticipated fall of the fascist regime. Indeed, we may see a particular significance in the fact that, apparently in their last meeting in March 1937,<sup>12</sup> it was to Sraffa that Gramsci entrusted a verbal message for the comrades still enjoying freedom, one he attached great importance to – the watchword for the constituent assembly, encapsulating his proposal for collaboration of the Italian communist party with all democratic, anti-fascist, forces.

Along with this fundamental point in the political debate, we must also recall the help Sraffa gave to Gramsci after his arrest in 1926. He took pains to get books and magazines to his friend in prison.<sup>13</sup> He explored the possible paths to freedom (on the one binding condition that Gramsci insisted on, and to which Sraffa agreed, that no concessions be made to fascism, such as a petition for pardon would imply).<sup>14</sup> He liaised with the communist leaders in exile, stopping in Paris for meetings with Giorgio Amendola and others in his travels between Italy and Cambridge.<sup>15</sup> And he provided Gramsci with further food for

<sup>12</sup> Cf. Spriano (1970: 150); Spriano (1977: 108–11); Gerratana (1991: xlvi). On Gramsci's position (at the time painfully isolated within the party) on the constituent alliance in the early 1930s cf. Spriano (1969: 281–6).

<sup>13</sup> Cf. Gramsci (1965: 15, 23, 25, 27, 30, 33, 37, 289, 290, 353–6, 362, 400, 411, 412, 428, 448, 449, 454, 455, 480, 481, 552, 569, 589, 603, 626–8, 745–9); Sraffa (1991: 5–7, 11–12, 14–15 etc.). The latter book is a posthumously edited volume of letters from Sraffa to Tatiana, Gramsci's sister-in-law, who regularly copied and sent Sraffa Gramsci's letters to her from prison – so they were in fact letters directed to Sraffa. In his letters, Sraffa instructed Tatiana on how to answer Gramsci's letters to her.

<sup>14</sup> Cf. Spriano (1977: 66, 71–4, 151).

<sup>15</sup> The Italian authorities had some suspicion of this, and Sraffa was put under surveillance, shadowed by security men. There are, in the Italian State Archives, the police reports to the Casellario Politico Centrale of their shadowing activity, which make for an amusing reading: apparently, Sraffa was capable of 'shaking off his tail' whenever he wanted to. On 30 May 1931 the Ministry of Interior ordered that Sraffa be arrested when entering Italy, but the order was not executed when he entered Italy by car, through the Moncenisio route on 24 September 1931, though his luggage was searched. The ministry sent a reprimand on this account to the Prefect of Turin. The order of arrest was however converted to an order of 'surveillance'. Sraffa's interrogations by the police on his visits to Gramsci were clearly carried on as a bureaucratic duty. Sraffa invariably

thought (through his sister-in-law Tatiana) in the reflections that were to take shape in the *Quaderni del carcere*.<sup>16</sup>

Sraffa's friendship for Gramsci signals an intense passion for politics which must be borne in mind to understand fully the ideological roots of the research project Sraffa was to pursue in the field of economic science. It should, however, be emphasised that Sraffa's economic research and its results must be judged independently of his political background. Moreover, it seems that Gramsci had no influence on the gradual switch in Sraffa's interests from problems of applied economics to theoretical issues in the first half of the 1920s. At any rate, it would be outrageously unscientific to evaluate Sraffa's analytical results on the basis of his political ideas.

### 1.3 Critique of Marshallian theory<sup>17</sup>

In the years following his graduation, Sraffa's interests ranged from politics to questions of applied economics, and in particular – but not only – monetary economics.

After his brief experience as a bank clerk, Sraffa spent a year in London attending courses at the London School of Economics. He was then appointed director of the Labour Office of the Milan Province, at the time under the socialist administration presided over by a lawyer, Nino Levi, a socialist and a good friend, whom Sraffa respected and with whom he remained in touch until Levi's death. Levi was, however, soon to resign when the fascist regime took over and the socialist

answered that his visits to Gramsci were motivated by simple friendship, that he had obtained permission for the visits from the competent authorities, that no political issues had been discussed and that the talks turned around old friends, literary and historical issues. In the police reports, occasionally Sraffa's name is written as Truffa, Sgraffa or Sraffo. Reports from London ensure that in England Sraffa was not involved in political activities (in fact, he was very careful never to discuss politics with his Cambridge colleagues). In a report of 11 May 1937, the Italian General Consulate in London refers that Sraffa is 'fully absorbed in the great work commissioned to him', namely 'a work on the economist Riccardo [sic] – he has already published 14 volumes of it' (my translation; Keynes, who was very worried about Sraffa's delays in completing the edition of Ricardo's *Works and Correspondence*, would have been very amused by this report on Sraffa's publishing accomplishments!).

<sup>16</sup> Cf. Gramsci (1965, 1975); Sraffa (1991).

<sup>17</sup> See Roncaglia (1991), from which some material for this and the following section is drawn, for a more extensive exposition. Cf. Rosselli (2004) for a discussion of Sraffa's papers in the Sraffa Archives concerning the critique of Marshallian analysis.

administration of the province of Milan fell. Thus Sraffa, elected to this office on 26 April 1922, resigned, and his resignation was promptly accepted on 15 December 1922.<sup>18</sup>

Sraffa then turned to an academic career, which he began as lecturer in political economy and public finance at the Faculty of Law of the University of Perugia.<sup>19</sup> Sraffa had probably read at least some of the works of Marx and the major classical and marginalist economists before 1923, but evidence suggests that his interest in theoretical problems developed at this stage, possibly stimulated during his 1921–2 stay in London, to deepen when he took on the task of teaching a general course in political economy.<sup>20</sup> He found himself having to confront the academic framework then dominant in Italy, namely marginalism in the Marshallian version of Maffeo Pantaleoni (1857–1924), whom Sraffa (1924: 648) called ‘the prince of [Italy’s] economists’.

In fact, keeping faith with the principle he often recommended to his students (always confront yourself with the best exponent of the approach to be criticised), Sraffa adopted for his lessons Marshall’s *Principles of Economics* which, although conceived as a reference book for university courses, was by no means the simplest textbook that students of a Faculty of Law could wish for.<sup>21</sup>

The fruits of Sraffa’s reflections – a radical critique of the Marshallian theory of the equilibrium of the firm and of the industry – were set out in a long article published in 1925 in the *Annali di economia*, entitled ‘Sulle relazioni fra costo e quantità prodotta’ (‘On the relations between cost and quantity produced’). Five years had passed since the publication of the eighth edition of Marshall’s *Principles*, and one year since his death.

Sraffa’s article was a contribution to the debate on the ‘laws of returns’ sparked off by a paper, ‘Of empty economic boxes’, that John Harold Clapham (1873–1946) published in the *Economic Journal* in 1922. The point in question was of vital importance for the Marshallian theoretical construction and, more generally speaking, for the marginalist theory of value.

According to the marginalist approach, prices are to be seen as indexes of relative scarcity; the equilibrium values for prices and quantities

<sup>18</sup> Cf. Potier (2000: 26–7).

<sup>19</sup> On Sraffa’s academic vicissitudes in Italy, cf. Bellofiore and Potier (1998: 58–60); Pasinetti (2007: 139–40, 149–50).

<sup>20</sup> Naldi (1998a: 502) refers to a notebook containing notes on Marshallian theory dated April 1923 and conserved among the Sraffa Papers in Cambridge.

<sup>21</sup> Cf. Naldi (1998b).

produced are determined through a confrontation between the preferences of economic agents and the scarcity of available resources, or in other words by the balancing of demand and supply. Marshall's own version of the marginalist approach is based on the method of partial equilibrium by which the market for each commodity is analysed in isolation, and the balancing of supply and demand is analysed by comparing the demand curve for the product under consideration with the corresponding supply curve. The latter curve represents, for each quantity produced by the individual firm or by the industry, the minimum price at which producers are willing to supply the market with that quantity; hence the curve expresses the marginal cost (i.e. the cost of obtaining an additional unit of product) as a function of the quantity produced, both for the individual firm and for the industry as a whole.

Marshallian theory singles out three cases accounting for all eventualities: constant, increasing and decreasing returns, according to whether the average unit cost remains constant, decreases or increases when the quantity produced increases. Clapham, a professor of economic history, set out to tackle the problem of the concrete application of these theoretical categories and came to a startling conclusion when he found the theoretical apparatus in question to be sterile: the three categories of constant, increasing and decreasing costs were 'empty economic boxes' (this was also the title of his paper), impossible to fill with concrete examples of real industries.

Clapham's article provoked immediate response, with an article in the subsequent issue of the *Economic Journal* by Arthur Cecil Pigou (1877–1959), who was Marshall's successor to the chair of economics at the University of Cambridge and the champion of a line in Marshallian orthodoxy that led to the 'geometrical method' of demand and supply curves for the firm and the industry, for the short and the long term. This construct, it should be noted, does not fully correspond to Marshall's view of the matter. Indeed, wavering between ambiguities, constantly veering back en route, in subsequent editions of the *Principles* Marshall attempted to reconcile an evolutionist – and thus intrinsically dynamic – conception of the industry and the firm with an analytic apparatus based on the conditions of equilibrium between demand and supply, thus intrinsically static.<sup>22</sup> Greater fidelity to Marshall's ideas was in fact shown by Dennis Robertson (1890–1963), who raised further doubts on Pigou's analytic apparatus in an article published in the March 1924 issue of the *Economic Journal*.

<sup>22</sup> Cf. Bharadwaj (1989, Chapter 7) and Ridolfi (1972).

The debate continued in the pages of the *Economic Journal*, unflagging after the publication of Sraffa's articles (the Italian article of 1925 and another, published in the December 1926 issue of the *Economic Journal*, which we shall deal with subsequently). There were contributions by Allyn Young, Pigou, Lionel Robbins, Joseph Schumpeter, Roy Harrod and, in 1930, a symposium on 'Increasing Returns and the Representative Firm' with Robertson, Shove and Sraffa as protagonists.

Clearly, it was a 'battle of giants', largely fought in an outstanding arena, the economists' major academic periodical of the time. It is all the odder, therefore, that its conclusions have been systematically ignored in economics textbooks ever since, the trend being set by Paul Samuelson's highly successful textbook *Economics* (over three million copies sold in various languages from 1948 to the present day), as if the theoretical debate held no implications for the parables used in the education of students, even when their erroneousess was evident to all.

Sraffa joined the debate Clapham had begun by arguing that the problem of 'empty boxes' was not a matter of applying the theoretical categories of constant, increasing and decreasing returns to real situations, but lay rather in the insurmountable difficulties already encountered at the theoretical level. Underlying the Marshallian theory of firm and industry equilibrium based on increasing and decreasing returns, Sraffa pointed out, was a conceptual confusion: in classical political economy the 'law' of decreasing returns was associated with the problem of rent (theory of distribution), while the 'law' of increasing returns was associated with the division of labour, or in other words general economic progress (dynamic theory of production, technological progress). Marshall and other neoclassical economists had tried to put these two 'laws' on the same plane, co-ordinating them in a single 'law of non-proportional returns' (where decreasing returns must prevail after some level of production) with the aim of expressing costs as a function of the quantity produced, for the firm and the industry alike. These functions were then applied in the theory of prices, transformed into supply curves for the various products, to be set against the corresponding demand curves, obtained by applying the 'law' of decreasing marginal utility. Thus, as Marshall suggested, the demand and supply curves may be compared with the two blades of a pair of scissors. However, this meant transposing increasing and decreasing returns into a single framework, different from either of the original ones; it is therefore difficult to apply in the new context the explanations

originally advanced to account for cost trends. Sraffa illustrates these difficulties analysing the literature on the subject while focusing on the long period.

In particular, Sraffa emphasises that decreasing returns have to do with changes in the proportions of factors of production, while increasing returns are associated with expanding production and increasing division of labour.

The former case – decreasing returns – comes about when a factor of production proves scarce. Now, unless we identify the industry with all the firms using a certain scarce factor, the variations in the average cost associated with an increased production in the industry using this factor will be accompanied by variations in costs similar (i.e. having the same order of magnitude) to those experienced by other industries using the same production factor. Thus, the demand curve for the product of the industry under consideration turns out not to be independent from the corresponding supply curve.<sup>23</sup> Here we have a clear violation of the *ceteris paribus* condition necessary to the Marshallian analysis of partial equilibria.

As for increasing returns, they cannot accrue to firms within a certain industry, for otherwise the firms would go on expanding, transcending the limits of competition. They cannot accrue to various industries at the same time either, or the *ceteris paribus* clause would be breached again. It is only the case of production economies external to each firm but internal to one industry that guarantees consistency between increasing returns, the assumption of competition and the partial equilibrium method. However, Sraffa rightly considers such a case as unrealistic.<sup>24</sup> In conclusion, it is clear that the analytic construct of the Marshallian tradition can only be reconciled with the canons of logical coherence by means of unrealistic *ad hoc* hypotheses – hardly a sound basis for a framework designed for general interpretative application.

<sup>23</sup> The requirement that the demand curve be independent from the supply curve also means that marketing expenses should not be included among costs of production. Sraffa notes this point in a handwritten note commenting on Shove's contribution (Sraffa Papers D 3.7.23, quoted by Marcuzzo 2001: 90).

<sup>24</sup> There is actually a case in which the economies external to the firm but internal to the industry prove important, namely industrial districts, cf. Becattini (1989). However, obviously this case cannot be extended to the *entire* economy, as would in fact be necessary if we were to accept Marshallian theory as a general theory of value for competitive markets.

## 1.4 Imperfect competition

Sraffa's 1925 paper attracted the interest of Francis Ysidro Edgeworth (1854–1926), who was co-editor of the *Economic Journal* with Keynes. Prompted by Edgeworth, Keynes asked Sraffa for an article to be published in the British periodical, and the young Italian economist responded with alacrity.<sup>25</sup>

The English paper (Sraffa 1926) is much shorter than the Italian version, and correspondingly far less rich in collateral elements of noticeable importance: half of the article consists of a summary of the main points in the Italian article, while the other half elaborates an original line of research based on negatively sloped demand curves hypothesised also in the case of individual firms and thus compatible with constant or moderately increasing returns. Here we have a theory of imperfect competition which, in fact, takes up certain cues for 'realism' scattered through Marshall's work. However, Sraffa is quick to point out the limits to this line of research, remarking in the conclusion 'that in the foregoing the disturbing influence exercised by the competition of new firms attracted to an industry the conditions of which permit high monopolist profits has been neglected'. Basically, this meant neglecting competition in the classical sense of the term, consisting in the shifting of capital from one sector to another in pursuit of maximum returns.

In the following years the theory of imperfect competition was to prove a rich minefield. In particular, Richard Kahn dwelt on it in his 1929 King's Fellowship dissertation (published only much later, in 1983 in Italian and in 1989 in English: Kahn 1989), developing a short-period framework which had an important influence on Keynes's *General Theory*;<sup>26</sup> Joan Robinson (1933) elaborated a systematic treatment of the

<sup>25</sup> The letter to Keynes in which Sraffa accepts the offer is published in Roncaglia (1975: 11–13). Together with the *Lecture Notes* and other material conserved in the Sraffa Papers at Trinity College (Cambridge), publication of which has now been impending for several years, it is an essential document for our understanding of the development of Sraffa's thinking from 1925 to 1930. Cf. the interpretation presented in Roncaglia (1975), Chapter 1, and in Roncaglia (1991). Naldi (1998a: 503–4) refers to a note on imperfect competition that Sraffa apparently showed to Maurice Dobb in the spring of 1925 and which, not having used it for the 1925 article, he subsequently returned to, on his friend's suggestion, when preparing the 1926 article.

<sup>26</sup> Among other things, Kahn (1989: 93–5) criticises Sraffa's (1926: 549) thesis that 'for an industry consisting of firms which are all similar and similarly situated the final position of equilibrium is the same as would be arrived at if the whole industry were controlled by a single monopolist'; as Kahn (1989: 95n)

subject, while at the same time, with his theory of monopolistic competition, Edward Chamberlin (1933) offered an approach exhibiting various points in common with it. However, while Robinson worked in the conceptual terms of Marshall's 'partial equilibrium', developing a theory of imperfect competition regarding firms operating within a given industry, the confines between industries become somewhat blurred in Chamberlin's theory: each firm operates in its own market under the constraint of competition from outside, without any need to specify whether the competition comes from firms producing more or less the same commodity as the firm in question, or quite different products that might nevertheless serve sufficiently well in their place.<sup>27</sup>

Although Sraffa's was the crucial first step behind this line of research, he was soon to abandon it; yet, it still exerts a certain influence today and, above all, still finds its way into the textbooks: curiously enough,<sup>28</sup> it is perhaps to this contribution that our Torinese economist owes most of his fame today, especially in the US. It was based on a notion of competition – the notion upon which the marginalist approach focused, implying a large number of firms supplying an identical product – that differed from the classical economists' idea of free flows of capital between the various sectors of the economy.

The latter notion and its importance were however recalled in the conclusion to Sraffa's 1926 paper. It was Sraffa's prompting, then, that opened the way to the modern theory of non-competitive market forms, and in particular Paolo Sylos Labini's theory of oligopoly (1956), based on the presence of obstacles to the entry of new firms into the market. It was the classical notion of competition, furthermore, that constituted the basis for a line of research that Sraffa was already developing in a first draft,

notes, Sraffa accepted his criticism, cf. Marcuzzo (2001) and Dardi (2001). Dardi hypothesises that this discussion, with the unavoidable conclusion 'that dealing with imperfect markets renders the mental determinants of equilibrium unavoidable, was one of the reasons for Sraffa's estrangement from the entire problem' (Dardi 2001: 131). The point is certainly important, but should not be taken too far: in 1929 Sraffa had already moved on from imperfect competition to the classical line of research on prices and distribution which was to lead to his 1960 book.

<sup>27</sup> Chamberlin's approach thus leads to Triffin's (1940) contribution, which points in the direction of general equilibrium theory.

<sup>28</sup> Not so very curiously, however: little as it may appeal to supporters of the optimality of market economies, the theory of imperfect competition developed following Sraffa's contribution remains part of the marginalist approach, based as it is on the notion of simultaneous equilibrium of quantity and price determined by the contrasting forces of demand and supply.

which was discussed with Keynes in 1928, and which was eventually to find expression in *Production of Commodities by Means of Commodities*.

### 1.5 Criticism of the representative firm and the evolutionary side of Marshall's analysis

Sraffa's radical departure from the traditional framework of the theory of the firm and the industry is evident in the last writings he dedicated to the subject, namely his contributions to the symposium on 'Increasing returns and the representative firm', published in the *Economic Journal* of March 1930. In fact, the conclusion of Sraffa's brief contributions is clear-cut, marking a frontal opposition to the received view: 'Marshall's theory [...] cannot be interpreted in a way which makes it logically self-consistent and, at the same time, reconciles it with the facts it sets out to explain'; thus 'I think [...] that [it] should be discarded' (Sraffa 1930: 93).

Sraffa's criticism is here levelled at a version of Marshallian theory more faithful to Marshall's own original framework than Pigou's static cost curves, namely the evolutionary version Robertson presented in his contribution to the symposium (Robertson 1930). The latter is based on the concept of the firm's 'life cycle' which Marshall had employed in an attempt to make increasing returns compatible with the firm's competitive equilibrium. Like a biological organism, the firm goes through successive stages of development, maturity and decline, the 'representative' firm being halfway through the process of development and thus at a stage of increasing returns to scale. As Marshall himself pointed out, a concept of this type, that sees the expansion of firms depending on the 'life cycle' of entrepreneurial capacities, can be contemplated in the case of directly family-run concerns, but could not apply to modern joint stock companies.<sup>29</sup> This destructive self-criticism, however, was not considered in the 1930 symposium.

In fact, Sraffa's criticism focuses on logical consistency: a theory based on the representative firm must retain an internal logic concerning the behaviour of individual firms. If, as Robertson suggests, the representative firm may be a different individual firm for any level of output in

<sup>29</sup> 'And as with the growth of the trees, so was it with the growth of businesses as a general rule before the great recent development of vast joint-stock companies, which often stagnate, but do not really die' (Marshall 1890: I, 316; the reference to the joint-stock companies was introduced in the sixth edition, 1910: cf. Marshall 1890: II, 341).

the industry, this in itself is insufficient to reconcile competitive market equilibrium with increasing returns to individual firms.

When individual firms retained their identity throughout the discussion, the question which Mr. Robertson had to answer was: 'If firms could increase their output and thereby reduce their costs – why didn't they increase it before the expansion of the industry?' Now that firms lose their identity, the question to be answered is: 'If the new firms can turn out a larger output at a lower cost than the old firms, why didn't they come into existence before? Why in the new, and not in the old position of equilibrium?' (Sraffa 1930: 91–2).

Thus the biological analogy proved a false exit to the blind alley Marshallian analysis had got into, hemmed in by the contradiction between increasing returns and competitive equilibrium. In this way Sraffa points out the *deus ex machina* nature of the biological metaphors utilised by Robertson in Marshall's wake: such metaphors could not fill in the gaps in logical consistency of the Marshallian theoretical building, which remain intact in its evolutionary version as well. 'At the critical points of his argument the firms and the industry drop out of the scene, and their place is taken by the trees and the forest, the bones and the skeleton, the water-drops and the wave – indeed all the kingdoms of nature are drawn upon to contribute to the wealth of his metaphors' (Sraffa 1930: 90–1).

To sum up, Sraffa's critiques of the Marshallian theory of the firm focus on three aspects. First, to explain increasing and decreasing costs Marshall resorts to analytical constructs based on different foundations, hence involving different sets of assumptions and having different fields of application: the Smithian theory of the division of labour and the 'Ricardian' theory of the differential rent. Second, we have his criticisms of the partial equilibrium method: the elements brought into play in Marshallian analysis may have effects of the same order of magnitude on industries beyond the industry under consideration. Third, the condition of equilibrium is shown to be compatible with the notion of perfect competition only under very specific, unrealistic, circumstances, such as the absence of increasing returns to scale.

Decades have now rolled by since Sraffa illustrated his 'destructive criticisms'<sup>30</sup> of the Marshallian theory of the firm and the industry.

<sup>30</sup> The expression is Keynes's, in the introduction to the 1930 Symposium: cf. Keynes (1930b: 79).

In many fields of economic analysis such critiques have simply been ignored: one has simply to look, for instance, at the introductory textbooks in microeconomics, in environmental economics, or in the field of tax incidence theory.<sup>31</sup> There have also been attempts to limit the scope of Sraffa's critiques; let us briefly recall two major cases.

First, there is Samuelson's (1987) presentation of Sraffa's 1926 critiques<sup>32</sup> as referring to partial equilibrium method, but no longer holding for general equilibrium analysis.<sup>33</sup> This remark is only partially true. In fact, Sraffa considered general equilibrium theory as too abstract to be of any use; hence his criticisms concerned those streams of the marginalist approach which could be considered relevant as interpretations of real world issues: the Marshallian partial equilibrium approach, which in fact exerted, and still exerts, a great influence in many fields of analysis; and the traditional marginalist theories of value and distribution, which were to be the object of criticism in his 1960 book. However, the criticisms concerning the fragile conceptual foundations of U-shaped supply curves and the inconsistency of competitive equilibrium with increasing returns to individual firms remain applicable to the pure theory of general equilibrium, where, for instance, the assumption of convex production sets plays a basic role.<sup>34</sup>

More subtle, and fairly widespread among non-neoclassical economists, is the thesis that Sraffa's critiques only concern the textbook (*vulgata*) version of Marshallian analysis, or the Pigou-Viner graphical interpretation of it, but not Marshall's original evolutionary ideas, as embodied in his notion of the representative firm and in a representation of competition which is different from (more complex and realistic than) the textbook notion of perfect competition.

<sup>31</sup> Cf. for instance Varian's microeconomics textbook, subtitled *A Modern Approach* (Varian 1987). A curious instance concerns one of the most influential and better-documented original contributions to oil economics, Adelman (1972), who was led by his Marshallian apparatus to interpret the oil market as a competitive one, thus forecasting (in 1972!) a downward tendency in oil prices. Cf. the criticisms in Roncaglia (1983b, Chapter 3).

<sup>32</sup> The 1925 article is simply ignored, possibly because the English translation, prepared in 1973–4 by John Eatwell and myself under Sraffa's supervision, was only published in 1998, although it was deposited in the Marshall Library in Cambridge and circulated widely before then.

<sup>33</sup> On similar lines, cf. Steedman (1988b).

<sup>34</sup> For a more extended criticism of Samuelson's views, cf. Panico (1991). Samuelson (1991) retorts by attacking the idea that under constant returns prices are independent of demand; but, clearly, this is not the issue at stake in Sraffa's critique of Marshall's economics.

Now, it is true that Marshall's own analysis embraces the elements thus brought to the fore, intermingled with the foundations of a static analysis where Pigou and Viner found all the elements required for their *vulgata*. Economic evolution, as is well known, is central to Marshall's thinking; his insistence on 'the element of time' (Marshall 1890: vii) is to be understood in this context, rather than as a Böhm-Bawerkian stress on a second element determining value jointly with (direct and indirect) labour requirements. However, for Marshall this does not mean throwing out static analysis: '*statical treatment alone* can give us definiteness and precision of thoughts'; it is thus considered as '*a necessary* introduction to a more philosophical treatment of society as an organism' (Marshall 1890: 461; italics added).

The logic of the analytical framework requires that static supply curves should be counterposed to static demand curves; this is also required by the use of the comparative statics method based on comparisons of partial equilibria ('with which [Marshall's] name will always be associated', Whitaker 1987: 357). In fact, this is the direction in which the standard presentation of partial equilibrium analysis was to proceed, with Pigou (1928) and Viner (1931).

The evolutionary elements superimposed by Marshall on the static analytical framework were lifted from it as forming a self-consistent whole by the new stream of 'evolutionary Marshallians'. However, this both contradicts Marshall's own idea of the necessary connection between static and evolutionary analysis just recalled above, and implies a number of internal unresolved contradictions.

Firstly, a problem of co-ordination of supply and demand curves emerges. Their joint use in an analysis aimed at determining quantity-price equilibria requires that the two variables – demand and supply – which are supposed to come into equilibrium with each other be on a similar level of abstraction. In pure subjective theories, like Jevons's, utility for consumption and disutility for work satisfy this requirement (as, in Menger's Austrian approach, the utility of the chosen path and the 'opportunity cost', i.e. the utility of alternative paths). In Walras's general equilibrium approach, in a pure exchange model the given resources represent a constraint against which agents maximise their utility, comparing similarly defined utilities obtainable from alternative consumption choices. In Marshall, particularly when the representative firm is introduced, the supply curve no longer appears as a purely static set of alternative choices available at a moment in time. The conceptual contradiction with the demand side which thus arises is reinforced, in the successive editions of the *Principles of Economics*, by Marshall's

attempts to elude the analytical contradiction between increasing returns to scale and the assumption of competition.<sup>35</sup>

Thus we are confronted with a dilemma. Either we follow the path of equilibrium analysis to its logical conclusions, and in this case the supply curves need be purged of all elements of time and evolution, or we choose the escape path of evolutionary notions; in this case we are confronted with a conceptual contradiction between the two terms to be equalised, supply and demand.

Indeed, when both supply and demand are considered as path-dependent (which is the main characteristic of evolutionary notions, and which is something more than considering these variables as functions of price and time simultaneously), supply and demand curves can no longer be considered independent of each other, as required by partial equilibrium analysis. Thus Marshall's suggestions in this direction (in Appendix H, Marshall 1890: I, 807–9) cannot provide a solution, at least within his partial equilibrium approach.

The second aspect concerns the assumption of competition, and the recourse to the representative firm. For instance, Loasby (1989: 58–68) and Whitaker (1989: 184–6) appear to reduce Sraffa's criticisms to the contradiction between increasing returns and competition. Thus Loasby (1989: 62) rescues Marshall by maintaining that his theory of value is not based on perfect competition; but in fact Sraffa's other criticisms (on partial equilibrium analysis, on the co-ordination of increasing and decreasing returns into a supply curve, on the joint use of supply and demand curves considered independent from one another) do not depend on the assumption of competition.

Whitaker (1989: 184) recalls that Marshall's notions of the representative firm and the life cycle of firms avoid 'the need for every firm to be in equilibrium if the industry is to be in equilibrium'. However, this point was already criticised by Kaldor (1934: 61): in the context of a finite life cycle of firms, it is not necessary for the product of the individual firm to be constant (i.e. in equilibrium) in order to have constant output for the industry as a whole (which is needed for the analysis of supply-and-demand equilibrium); but the increase in production of younger firms must exactly offset the decrease in production of decaying firms. With a stationary age distribution of firms, this requires that each individual firm produces its equilibrium quantity, that is, the quantity appropriate to the ruling price and cost conditions,

<sup>35</sup> More detailed discussion of the issue of the different time dimensions of supply and demand curves has been presented by Currie and Steedman (1990).

and to its age: otherwise, a constant industry output can only be obtained by mere chance. But Marshall fails to provide any mechanism ensuring that each individual firm produces the appropriate quantity: the derivation of the representative firm from the conditions of the industry is swept under the carpet but does not eliminate the need of microfoundations, at the level of individual firms, for the equilibrium of the industry as a whole.

Thus, Sraffa's critiques of Marshall's analysis remain a contribution of the greatest importance, often only imperfectly understood, the impact of which is still far from being fully appreciated in present-day economic analysis.

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