

Piero Sraffa and ‘the true object of economics’: the role of the unpublished manuscripts

Stephanie Blankenburg, Richard Arena and Frank Wilkinson

1. Introduction

This Special Issue is concerned with the work of Piero Sraffa and with recent developments in its interpretation, occasioned by the opening of the Sraffa Archives in late 1993.¹ It brings together some of the contributions to a workshop on this theme that was sponsored by the *Cambridge Journal of Economics* and held in July 2010 on the occasion of the 50th anniversary of the publication of Piero Sraffa’s major work, *Production of Commodities by Means of Commodities (PCMC)*.

The original workshop on ‘New Perspectives on the work of Piero Sraffa’ was aimed at Sraffa scholars who had taken the opportunity to engage with materials in the Sraffa Archives and who were interested in exploring their potential for revisiting and placing *PCMC* in the wider context of ongoing debates on economic philosophy, economic theory and economic policy. As is usually the case, not all presentations made at the workshop were advanced for consideration in this Special Issue, nor could all invitees attend. Heinz Kurz, as Chief Editor of the Sraffa Archives, agreed to present his view on the relevance of the Sraffa Archives to research on Sraffa and to comment on contributions at the workshop, as well as on their final versions submitted for publication in this Special Issue. Kurz’s contribution to this Special Issue was, thus, written in the short time available between the receipt of final versions and publication deadlines. We are indebted to him for his cooperation in the preparation of this Special Issue. We are especially grateful for his patience in the time taken to bring this project to publication.

The original workshop and this Special Issue were primarily informed and motivated by two sets of objectives. The first of these is not new and focuses on gaining a fuller understanding of the relevance of Sraffa’s work, its location in the economic analysis of his day, as well as the place it should be accorded in contemporary debates on economic theory and analysis. This was already a main concern of those who had the privilege to read and comment on *PCMC* when it was originally published, and who generally received Sraffa’s *chef d’oeuvre* with a mix of surprise and deep fascination, whilst finding it difficult to interpret. Since 1960, however, several interpretations of *PCMC* have emerged. These have generated a good deal of debate without, so

¹ The Sraffa Archive is kept in the Wren Library at Trinity College, Cambridge. References to Sraffa’s unpublished notes follow the catalogue and page numbering prepared by members of staff at the Wren Library.

far, achieving a consensual perspective on Sraffa's work. The opening of the Sraffa Archives to the public in late 1993 marked a major change of the terms on which these scholarly debates were conducted, by making available to scholarly scrutiny both his library and a large volume of unpublished manuscripts, notes, materials and correspondence by Sraffa, rich and fascinating in contents and dispersed over a period of more than four decades in often fragmented notes, comments and observations (see, e.g., Kurz, 2002; Pasinetti, 2007, pp. 174–6). Almost two decades after the opening of the Sraffa Archives and 50 years on from the publication of *PCMC* seemed an appropriate moment to reflect on ongoing debates on Sraffa's overall contribution to economics and, in particular, on the relevance of the opening of the Sraffa Archives in this regard. Does Sraffa's lasting contribution to economic analysis essentially remain limited to *PCMC* or is it taken beyond this by his unpublished writings? In the latter case, is it possible to identify a distinctive research project that Sraffa had in mind?

A second set of questions we had in mind concerns potential insights from Sraffa's work for a range of specific areas of economic research, including monetary and financial theory and policy, industrial organisation and theory, and economic philosophy and methodology. This list of potential topics is, by necessity, incomplete, but it seemed appropriate and timely to us to draw attention to Sraffa's contributions in these (and possibly other) areas of economic thought, with a view to assessing their relevance for major economic policy and theory concerns to date, and to pave the way to new avenues of research and new debates for those with an interest in the future development of a 'post-Sraffian' economics.

With these two sets of research questions in mind, Section 2 of this introduction provides an overview of interpretations of Sraffa's *PCMC*, introduces the general reader to aspects of Sraffa's work that are less well known and highlights selected core questions for further research. Section 3 summarises the contributions to this Special Issue.

2. Sraffa's contribution to economics: *PCMC* and beyond—an overview

2.1 *PCMC*: a theory of prices or a theory of the surplus?

Since the publication of *PCMC* in 1960, three main interpretations of Sraffa's contribution to economic analysis in this work have gradually emerged. The debates about their respective strengths and limitations and, with the opening of the Sraffa Archives, also about their closeness to and compatibility with Sraffa's wider research interests and project—if one can unambiguously be identified—are ongoing.

The first interpretation conceptualised Sraffa's economic project in *PCMC* in terms of the construction of a contemporary *classical* theory of general economic equilibrium (GEE) that provides an alternative theory of relative prices to its neo-Walrasian counterpart. For the best part of three decades after the publication of *PCMC*, this was probably the most widely adhered to interpretation amongst economic scholars with intellectual roots in differing schools of thought.

In this view, *PCMC* suggested the emergence of a new GEE theory that accepted the idea of a general interdependence between the commodities and actors that make up a given economic system. In contrast to Walrasian or neo-Walrasian versions of GEE, 'classical' GEE theory was, however, seen to have abandoned the logic of a one-way avenue running from primary factors of production to the exchange of commodities in

generalised competitive markets, in which production constitutes but a special case of exchange. Instead, production was now to be conceptualised as a circular and general process in which commodities could only be produced by commodities. The analysis of market transactions here ceases to be of importance, even if the general constraint of the reproduction of the economic system will inevitably also extend to transactions taking place ‘after the harvest’. Thus, in this view, Sraffa’s approach essentially initiated a rival project to conventional GEE, replacing the notion of scarcity with that of reproduction.

A prime example of this interpretation is Walsh and Gram’s *Classical and Neoclassical Theories of General Equilibrium* (Walsh and Gram, 1980). At the time, the subsequent intellectual decline of conventional neo-Walrasian GEE theory—in the wake of the discovery of unresolved problems of price stability and the devastating implications of the well-known Sonnenschein–Debreu–Mantel theorems (Debreu 1974; Mantel 1974; Sonnenschein 1972, 1973)—had not yet been widely recognised. Emphasising and exploring a possible ‘neo-Ricardian’ alternative to neo-Walrasian GEE theory, therefore, seemed not only a very relevant scientific endeavour, but Walsh and Gram’s (1980) insistence that there were, in fact, *two* and not only *one* version of GEE theory—one labelled ‘classical’, the other ‘neoclassical’—certainly went against the very grain of orthodox opinion:

A sharp distinction can be drawn in the theory of general equilibrium between the classical theme of the accumulation and allocation of surplus output, and the neoclassical theme of the allocation of given resources among alternative uses. Without this distinction neither the history of economic analysis nor the structure of modern mathematical models of general equilibrium can be clearly understood. (Walsh and Gram, 1980, p. 3)

Based on a detailed exploration of the historical roots of these two themes in GEE theory, Walsh and Gram developed two distinct canonical models to bring out the difference between these. Yet, and to an extent paradoxically so, this interpretation of Sraffa’s contribution to economic analysis in terms of *a* GEE theory resonated with some advocates firmly rooted in the defence of conventional approaches to GEE theory. Thus, as early as 1975, Frank Hahn noted:

I assert the following: there is not a single formal proposition in Sraffa’s book which is not also true in a General Equilibrium model constructed on his assumptions. (Hahn, 1975, p. 362)

Differently from Walsh and Gram (1980), *PCMC* here becomes part of conventional GEE theory, with no hint remaining of its role as an alternative GEE theory to the conventional canonical model that has the potential of replacing the latter. Thus, Hahn (1982) suggested—in the pages of this journal—that it is possible to understand the Sraffa system as a specific case of an intertemporal GEE model in which the uniform rate of profits can be interpreted as a rate of interest. According to Hahn (1982), Sraffa’s quantities cannot be exogenously given, but are logically congruent with a specific configuration of initial endowments and a very specific technology that render the emergence of a unique rate of interest possible. Sraffa’s price system was therefore described as a ‘very special case of economy’ (Hahn, 1982, p. 363) and Hahn concluded that the neoclassical economist who is always happy to consider interesting special cases sets to work to find a proper equilibrium for Mr Sraffa. (Hahn, 1982, p. 365)

A second interpretation of Sraffa’s contribution in *PCMC* also places this primarily within the realm of a price theory, albeit from a very different theoretical perspective. Central to this interpretation is the idea that Sraffa’s price system results from two different processes: that of price gravitation and that determining a dynamic growth

path. In this view, Sraffa's assumption of the uniformity of the rate of profits should be considered in the context of the concept of a 'long-period position'. This interpretation clearly differs from any GEE-based interpretation of Sraffa's *PCMC* and provides, instead, some of the basic foundations for the theory of production prices, even if this 'and standard microeconomic theory have some ground in common' (Kurz and Salvadori, 1995, p. xv). This interpretation, too, locates Sraffa's primary contribution to economic analysis in price theory. Free competition is assumed to prevail and to be the main force that ensures that market prices will 'gravitate' around, or alternatively converge on, production prices and that sectoral or industry profit rates will converge on, or be reduced to, a uniform rate of profits in the long period. In the short period, this tendency of market prices to gravitate around production prices and the progressive reduction of intersectoral or interindustrial differences in rates of profits to a uniform rate may not materialise, but in the long period these results will hold.

This interpretation of Sraffa's *PCMC* was developed by Garegnani (1990A, 1990B), and a careful and detailed presentation of this approach and its limitations can be found in Kurz and Salvadori (1995). Evidently, this does not as yet take account of the authors' later work on Sraffa's unpublished writings (see, e.g., Kurz and Salvadori, 2001, 2005A, 2005B, 2009). To date, this is the most widely accepted view amongst Sraffian scholars. There are, however, two core difficulties with this approach. First, the very concept of a 'long-period position' is not unproblematic, since it depends on the logical validity of the assertion that, in the long period, the rate of profits tends to uniformity due to market competition. The conditions necessary to demonstrate this long-period tendency towards a uniform rate of profits are specific, restrictive and, therefore, improbable (Arena, 1990; Dupertuis and Sinha, 2009), and the list is fairly long. Analyses have tended to focus on the local asymptotic stability of production prices rather than their general stability, simply because the dynamics are more easily tractable and yield clearer results than is the case for general stability analyses on which little work has been done (Caminati, 1990, pp. 17–22; Steedman, 1990, pp. 69–70; Kurz and Salvadori, 1995, pp. 19–20). Furthermore, the probability of convergence on a 'long-period position' decreases with the size of the price system (Steedman, 1984; Arena *et al.*, 1990) and non-constant returns to scale significantly reduce the number of cases for which convergence on a 'long-period position' can be shown (Arena *et al.*, 1990). Cross-dual models that are often employed in this literature again rely on highly specific and debatable assumptions, such as constant returns to scale or the absence of any microfoundations (see, e.g., Caminati, 1990; Boggio, 1990; Arena *et al.*, 1990, p. 288). Expectations and behavioural reaction patterns, too, can complicate the picture under certain circumstances (see, e.g., Caminati, 1990; Arena, 1990; Arena *et al.*, 1990). And contrary to what is often argued by proponents of this interpretation, there are no clear reasons to support the logically necessary assumption of a dichotomy of short- and long-period analyses, i.e. of the independence of economic changes in the short period from those in the long period (see, e.g., Garegnani, 1983, p. 132; Arena *et al.*, 1990, p. 288). Finally, the choice of appropriate market adjustment mechanisms is not obvious, either (Arena *et al.*, 1990, pp. 288–9). Thus, Steedman (1984) and Sinha (2010, p. 13) suggest that, differently from the approach adopted by cross-dual models, the gravitation mechanisms would best be analysed separately from the context of economic growth and technical change.

The second difficulty for this interpretation of Sraffa's main contribution to economic analysis arises from the consideration that his assumption of a uniform rate

of profits need *not necessarily* be interpreted as presupposing a *competitive* process of convergence of disequilibrium towards equilibrium prices in cross-dual models, or of a process of *free competition* in which market prices gravitate around natural prices. As we know, in *PCMC*, Sraffa does not refer to any such processes. All he says is that '[w]e add the rate of profits (which must be uniform for all industries) as an unknown which we call r ' (Sraffa, 1960, p. 6).

In the Sraffa Archives we also find the following remark on Adam Smith's natural prices, 'determined by the equations', namely Sraffian production prices:

When Smith, etc., said 'natural' he did not in the least mean the 'normal' nor the 'average' nor the 'long run' value. He meant that physical, truly natural relation between commodities, that is determined by the equations, and that is not disturbed by the process of securing a greater share in the product. 'Exchange value' was the result of natural value disturbed permanently by the scramble for the surplus: it might itself be distinguished into 'market value' (daily fluctuations) and normal or average. (Sraffa Papers D3/12/11:83, November 1927)

Thus, and with reference to 'Smith, etc.', Sraffa distinguishes *four* different concepts of price or value. The *natural price* corresponds to the production price 'determined by the equations', i.e. the price that corresponds to a *given* distributive rule or rules, chosen by the scientist or theoretician who wishes to describe or analyse a *given society*. It is perhaps worthwhile also to recall, in this context, that on the opening page of *PCMC* (Sraffa, 1960, p. 3), Sraffa twice refers to 'a society', never once to 'an economy' and that subsequently he adopts the term 'system'. Next, the '*exchange value*' is a price determined by 'the scramble for the surplus' located outside 'the equations', or what Garegnani has famously referred to as the 'core' (see, e.g., Garegnani, 1984, 1990A, 1990B). This price is therefore determined by factors that include those that define the natural prices, but that extend to external circumstances different from the 'physical ... relation between commodities', such as tastes, market forms and class relations, to name the most obvious. This *exchange value* results from the two remaining concepts of prices: the various *actual market prices* ('market values') and the *normal or average price* that are arrived at as an average or (statistical) mean of the former. Thus, natural or production prices are purely theoretical prices that encapsulate a (chosen) representation of the real world independently of actual and average or normal market prices. In contrast, 'exchange values' derive both from natural prices as well as from actual and average (or normal) prices. An obvious implication is that Sraffian production prices *do not necessarily* have to be obtained from a gravitation process that determines the level of the uniform rate of profits, in the first place, or from some kind of (empirical (statistical) average or mean) of actual market prices.

John. R. Hicks (1985), for example, in a piece that analyses the relationship between Ricardo's and Sraffa's approaches to economic theory, insists that the uniformity of the rate of profits in Sraffa is meant to be a 'uniformity of convention' (Hicks, 1985, p. 306). Conventions are not primarily, and much less necessarily, *economic* in nature—in this case in the form of a presupposition of free competition—but *social*. This would suggest that Sraffa's assumption of a uniform rate of profits is prompted by his choice of a *given and specific* society he wishes to analyse and its predominant mode of the distribution of its surplus. This society is a modern capitalist society dominated by 'the division of the surplus' primarily between 'capitalists and workers' (Sraffa, 1960, p. 9). The assumption of a uniform rate of profits is essential to focus the analysis on this primary dichotomy of surplus division between two classes. As Steedman (1986)

demonstrated, once we abandon this assumption and allow for differential rates of profits between sectors or industries, ‘trade’ (or industry) interests can prevail over ‘class interests’ (ibid., p. 187). While this is one of many more possible and perhaps equally important fault lines in capitalist society, it also is a distraction from the most basic picture of the social features of modern capitalist society that Sraffa wishes to highlight, namely the profit–wage or capitalist–worker dichotomy.

Moreover, a uniform or general rate of profits also is a *social norm* by which capitalist producers must abide, in their majority, if the system is to be reproduced. Capitalists who fail to realise this uniform or general rate of profits will be unable to repeat their annual cycle of production and will cease to be capitalists, thus upsetting the overall *social reproduction* of the system. Seen thus, what Sraffa retained from Ricardo, and the classical tradition, in *PCMC* was the *social* reason for the existence of a uniform rate of profits, not its justification in terms of an assumed process of competition. This is also what Garegnani emphasises when he writes:

In the classical theories we find no idea of the distribution determined by the ‘substitutability’ between factors of production ... The basic idea implicit in these theories may be described rather as that of an explanation of the real wage, in which institutional and customary elements play a central role, because they determine to a considerable extent the present bargaining position of the groups involved, while at the same time expressing the past bargaining position of those same groups. (Garegnani, 1990B, p. 118)

This leads us to the third and final interpretation of Sraffa’s work. In this view, Sraffa’s essential research concern is ‘the study of the “surplus product” [that] is the true object of economics’ (Sraffa Papers D3/12/7:161, August 1931). Consequently, the system of production prices that receives most attention in *PCMC*—in which capitalist producers *and* workers share a *variable* part of the surplus—is simply *one* example of a specific societal configuration and not in itself the ‘true object of economics’; even less so is price theory *per se* as it pertains to this or another specific society. This perspective on *PCMC* is congruent with the fact that *PCMC* also outlines two other types of society. The first are societies without a surplus, described at the start of the analysis. The distinction between producers and workers is superfluous in these circumstances, and there is only one social class. This society shares an air of resemblance with Adam Smith’s ‘early and primitive’ society in Book II of his *Inquiry into the Nature and Causes of the Wealth of Nations* (see, e.g., Marchionatti, 2012). The second type of society mentioned in *PCMC* produces a positive surplus that is entirely appropriated by capitalist producers. Wage earners are distinct from these producers, but their wages are fixed by social norms and they cannot, therefore, demand any part of the surplus, i.e. wage earners here receive a subsistence wage. We, thus, have three different types of societies in *PCMC* that are differentiated by their respective rules of income distribution.

Other societies with yet different rules of income distribution can and should be considered, if we want to build a more general type of economics. Garegnani, for example, noted in the opening pages of his *Il capitale nelle teorie della distribuzione*—originally published in 1960 and thus written before Garegnani had been able to read *PCMC*—that ‘in the classical theories of distribution, the central problem is the determination of the circumstances which rule the size of the social surplus’ (Garegnani, 1972 [1960], p. 3), *not* price theory. Garegnani never changed his mind on this point (e.g. his characterisation of the ‘core’ of economic analysis and the purpose of the ‘surplus’ approach in Garegnani (1979)). Cartelier (1976) adopts a similar perspective when he defines

‘classical systems’ as a family of theories which ‘on the basis of the existence of a physical surplus product, try to determine the *particular price system corresponding to a given rule of the distribution* of the price of the net product, under the constraint of the reproduction of a specified economy’ (Cartelier, 1976, p. 19, our translation, emphasis added). Cartelier then goes on to provide a detailed analysis of how classical authors, such as Boisguilbert, Quesnay, Turgot, Smith and Ricardo, developed distinct ‘classical systems’ that are differentiated by the rules that govern income distribution in each system or society.

A final point to note here is that this perspective on Sraffa’s approach to economic analysis may also help to facilitate our understanding of the well-known ‘snapshot’ metaphor for Sraffa’s system. Roncaglia first likened classical systems, including Sraffa’s, to ‘a photograph of the system at an instant in time’ (Roncaglia, 1978, p. 21; see also *ibid.*, p. 119) and we now know that, in October 1929, Sraffa himself referred to the notion of ‘instantaneous photographs’ (Sraffa Papers D3/12/13 [1]:3, Summer–October 1929) to describe the concept of time in his approach. We will return to this metaphor in Section 2.3 below. For now, it is sufficient to consider the possibility that the types of societies or systems described are abstract illustrations or typologies of a reproduction ‘moment’ that captures or freezes ‘an annual production cycle with an annual market’ (Sraffa, 1960, p. 10). From an accountant’s perspective, prices pertaining to this ‘annual snapshot’ would have to be uniform. Moreover, this ‘annual snapshot’ would also contain another piece of essential information about the society thus depicted, namely the rules that govern its *social division of labour*. This means *the market takes place only after production in the distinct industries has happened*. Seen thus, the ‘snapshot’ metaphor would lend some support to the core contention of this third interpretation of Sraffa’s work: that Sraffa’s project was not, primarily or solely, to provide an alternative theory of prices, but to develop his ‘Prelude to a Critique of Economic Theory’ (Sraffa, 1960, cover page) into a more general theoretical framework for the ‘study of the “surplus product”’ (Sraffa Papers D3/12/7:161, August 1931) in different societies (see also the example of the ‘slave community’ (Sraffa Papers D3/12/7:62, 1928-)).

2.2 *The role of institutions and conventions in Sraffa’s approach to economic analysis*

Whatever the respective merits and limitations of these three main interpretations of Sraffa’s contribution to economic analysis, there is no doubt that the study of the surplus product and its distribution was a major concern for Sraffa throughout his working life. An important indicator of this is his ongoing commentary—both published and unpublished—on important changes in the workings, institutions and conventions of capitalism during his lifetime. This aspect of Sraffa’s contribution is documented in his published work of the early 1920s and, from amongst his unpublished papers, most prominently in his ‘Lectures on Industry’ (delivered to advanced Cambridge undergraduate students of economics between 1941 and 1943) and his ‘Lectures on Continental Banking’ (delivered, also to third year economic undergraduates, in the spring of 1929 and 1930). In these writings, Sraffa carefully and systematically discusses core institutional features of financial markets, systems of corporate governance, banking systems and of forms of competition. With regard to the last, one main concern of Sraffa’s was the conceptualisation of actual forms of competition, situated between the largely theoretical extremes of free competition and pure monopoly. In this he obviously shared a core interest with Alfred Marshall on semi-monopolies (see

Sraffa D1/32), but his approach to the analytical tools and economic concepts required to build a more relevant theory of competition clearly departs from Marshall's. For brevity and in reflection of the fact that Sraffa's work on the first two areas of enquiry is both more developed and has already been commented upon by Sraffa scholars, the remainder of this section focuses on his views on financial markets and banking systems.

Sraffa's observations on the changing workings of financial markets, including forms of financial speculation, regulatory features and mergers techniques, occupy an important place in his 'Lectures on Industry'. A core theme is the role of financial markets in the emergence of corporate capitalism.² Sraffa thus starts with a critique of D.H. Robertson's *Control of Industry*, published in 1923. Robertson (1923) advocates the 'golden rule'—or what today we might refer to as a residual claimant approach—that holds that all net profits (after all other incomes have been paid) must be appropriated by entrepreneurs and industry controlled by profit receivers, since they take the risks. In Sraffa's view, this approach was plainly useless if the purpose of economic analysis was to understand '*in whose interests is industry operated*' (Sraffa Papers D2/8:1, 1941–43, emphasis added). It was also based on an out-dated view of capitalism that

was generally accepted by economists till ten or twenty years ago. It had to a large extent ceased to be true long before that, but there is a considerable time lag before economists, and even more lawyers, adapt their ideas to the circumstances. What has affected this change of view is the *separation of ownership from control*, in industry, which has become so obvious and universal in recent years that it is no longer possible to ignore it. (Sraffa Papers D2/8:2-3, 1941–43, original emphasis)

The hallmark of the new and emerging capitalist system was the rise of joint stock companies—what today we usually refer to as shareholding companies or simply as corporations—and the concomitant decline of individually or family-owned businesses:

What has brought about the separation of ownership and control has been the passing of manufacturing industry from the hands of individuals into those of Joint Stock Companies. This has been the most striking change that has taken place since the Industrial Revolution. Only 50 or 60 years ago the *Representative Firm* in industry would have been an individual or a family business. Today, in the U.S. 94% of output of industry is due to Companies. (Sraffa Papers D2/8:5, 1941–43, original emphasis)

Sraffa then explores a range of interrelated technological, legal and economic causes of this 'most striking change', including the capitalist tendency to increased plant size, the role of stock markets and the generalisation of corporate limited liability (see Arena, 2010, pp. 870–80). But he is particularly interested in the impact these factors have on the control or 'governance' of large corporations. In this regard, he stressed three main developments (amongst others), as he saw them. First, to run a large corporation the mere supply of 'business ability', required in the partner-director or manager of an individually or family-owned firm, no longer suffices. Instead, modern manager-directors now also need to be equipped with *financial* or even *speculative* (in Keynes's sense; see Keynes, 1973 [1936], p. 158) knowledge, skills and connections. Sraffa's following observation surely has an almost eerily modern ring to it:

To-day control of the great industrial organisations has drifted from the hands of those who know the technique of industry into the hands of those who know the technique of company

² For a more detailed exposition see Arena (2010) on which this discussion largely draws.

finance and who have the connections that qualify for membership of the controlling groups. Skill in stock manipulation has become more important than efficiency in production. (Sraffa Papers D2/8:12, 1941–43)

Second, and similarly pertinent to contemporary debates on corporate governance, Sraffa held clear views on the separation of ownership from control, and the role of the average shareholder *vis-à-vis* director-managers in company management and control:

the relation of the individual shareholder to the Company remains of the slightest kind. He can divest himself of even this relation, at any moment and without anybody's consent, by simply selling his shares.

In fact, the connection of the shareholder with the business is no more intimate or permanent than that which the holder of a ticket in the Derby Sweeps has with the horses; and he certainly takes less interest in its activities. (Sraffa Papers D2/8:8, 1941–43)

Thus, shareholders not only play no active role in the management of large corporations, but they are largely powerless to do so, even if they wished. Invoking the spectacle of a general assembly of shareholders, Sraffa describes what he clearly regards as the excessive powers of control by company manager-directors as follows:

if he [the shareholder, Blankenburg *et al.*] attends, he is somewhat in the position of elector in a fascist country, where there is only one party; even if he is quite free to vote, and even to nominate a candidate, it is clear that if he has no party organisation, his vote will count not for little but for nothing at all.

Now there are as a rule no alternative 'party' organisations among shareholders, apart from the official one provided by the Directors. (Sraffa Papers D2/8:21, 1941–43)

As Sraffa notes, it is therefore entirely possible that the interests of shareholders and those of company manager-directors can diverge and even be diametrically opposed (Sraffa Papers, 1940–43: 26). The third development Sraffa highlights relates to how such conflicts of interests are resolved—or rather sidelined—in practice:

It appears that in practice some sort of compromise is achieved ... between the conflicting interests of control and shareholders ...

This [is done] has been done through the gradual, but now widespread, acceptance of the belief that there is an *interest of the company*, as distinct from both the interest of the individual shareholders and of the control. This is purely *mythical entity*, much like the Hegelian State, but business men, however hard boiled, have a firm belief in it. (Sraffa Papers D2/8:29, 1941–43, original emphasis)

In actual fact, this 'mystical entity' is a legal construct—that of 'separate corporate legal personality'—which was gradually adopted throughout advanced capitalist societies (see, e.g., Blankenburg, 2012). For Sraffa it was, in any case, a convention that had become established and that allowed company manager-directors to exert strong control over the distribution of company profits. Sraffa suggests that while, in the long term, the interest of 'the company' tends to coincide with that of its manager-directors, there is no such tendency in the short term (Sraffa Papers D2/8:30–3, 1941–43).

Finally, Sraffa is unambiguous about the ideological import of the construct or convention of a separate 'interest of the company' (or its recognition as a separate 'legal person'):

The ideology of *laissez faire*, of the beneficent results of leaving individuals to their own devices in economic matters without interference from the State, was based on a conception of a society composed of competing individuals, each of whom was independent of the others and free in his actions. There is nothing in that conception that could apply to vast organisations, employing hundreds of thousands of men, governed dictatorially and more powerful than the Government of a fair-sized country. These great companies had come into being as the result of

the development of mechanical techniques, which have specialised the work of production and made it necessary to conduct it on such a large scale, that individuals could no longer operate it by themselves.

Nothing could stop the progress of such organisations and therefore, in order to fit them into the accepted ideology, make them tolerable, [it became necessary] to reconcile the contradiction, and people had to pretend that companies were individuals. (Sraffa Papers D2/8:30-3, 1941–43)

If the ideal of an individualistic economic society, close to the Smithian analysis of market economies, had nothing in common with the institutions, conventions and regulations of the centralised and highly organised capitalism Sraffa describes, he also was very much aware that, at the time of his writing, no coherent alternative theory of the workings of a capitalism dominated by large corporations had established itself. If companies are not ‘individuals’ or ‘persons’ in any meaning relevant to our understanding of their role in society, standard microeconomic analysis ceases to be of interest and needs to be replaced by an alternative economic explanation of market and industry organisation. In the meanwhile, ideology and practice will continue to collide, in the process giving rise to conventions, rules and regulations that govern the distribution of the surplus in the interest of the director-managers of large corporations.

Sraffa’s writings on monetary policy and on banking systems similarly show a concern with policy issues and institutional developments that influence and govern social conflict, and thus income and surplus distribution. These have been analysed in detail, in particular by De Cecco (1993, 1994, 2005) and Panico (1988, 2001, 2012). They comprise his PhD thesis on monetary inflation in Italy during World War I (Sraffa, 1920 [1993]), a series of articles published in the early 1920s (Sraffa, 1921A, 1921B, 1922A, 1922B), his critique of ‘Dr Hayek on money and capital’ (Sraffa, 1932) and his unpublished ‘Lectures on Continental Banking’. As De Cecco has pointed out, in his PhD thesis Sraffa still ‘placed himself squarely in the camp of orthodoxy. This was the Ricardian view of inflation, and in Turin and elsewhere in Italy it was accepted by the great majority of economists’ (DeCecco, 1993, p. 2). Sraffa (1920) also uncritically adopted the then dominant version of the quantity theory of money, according to which the general price level depends directly on money supply (see, e.g., Panico, 2001, p. 286). But even as early as this, Sraffa’s analysis extended to an institutionalist perspective on the role of money in the economy that raised questions (i) about the policy tools through which social interest groups and the state could potentially influence inflationary processes, and (ii) about the impact of inflation on the relative incomes of different types of economic actors. Specifically, we find here already three main themes that will reoccur in later writings: (i) the role of monetary phenomena for income distribution, (ii) the importance of analysing and understanding specific institutional and policy channels through which the state and differing social groups interact to shape and influence economic outcomes, and (iii) a clear interest in socio-psychological explanations to define ‘abnormal’ economic situations (or a tendency to ‘equilibrium’). Panico thus refers to a ‘conventionalist’ perspective, adopted by Sraffa, ‘according to which the *level* of the economic variables under examination is not determined by natural or material forces, such as the availability of the factors of production in the neoclassical theory of distribution, but can establish itself at any level considered *normal* by the common opinion and can be affected by the decisions taken by the monetary and other authorities’ (Panico, 2001, p. 287, original emphasis).

It is therefore not surprising that Sraffa’s 1921 and 1922 articles, his critique of Hayek in 1932 and his ‘Lectures on Continental Banking’ should remain preoccupied,

at least in part, with institutionalist or ‘conventionalist’ aspects of the analysis of money and banking. For example—to highlight only one better known example by way of illustration—Sraffa notes in his controversy with Hayek in 1932 that ‘money is not only the medium of exchange, but also a store of value, and the standard in terms of which debts, and other legal obligations, habits, opinions, conventions, in short all kinds of relations between men, are more or less rigidly fixed’ (Sraffa, 1932, p. 43), and he adds that the ‘money which he [Hayek, Blankenburg *et al.*] contemplates is in effect used purely and simply as a medium of exchange. There are no debts, no money-contracts, no wage agreements, no sticky prices in his suppositions’ (*ibid.*), all of which also mean, of course, that free competition through instantaneous market adjustments cannot work and is not a valid theoretical point of reference. Sraffa’s articles of the early 1920s and, more extensively and systematically, his ‘Lectures on Continental Banking’ are more directly concerned with the relationships between industry, finance, the political classes and administrative bodies, their impact on policy decision making and on distributional conflicts, and with the comparative analysis of national banking systems, sometimes with a view to quite practical and specific policy advice (see, e.g., De Cecco, 2005; Panico, 2001, 2012). Neither did Sraffa’s interest in the relationship between monetary phenomena and surplus distribution fade in the context of his work on *PCMC*. As Sraffa remarks in a letter to Pierangelo Garegnani after the publication of *PCMC*:

I am convinced that the maintenance of the interest rate by the bank and (or) the stock exchange has had its part in the determination of income distribution among social classes ... I did not want to commit myself much, and in general I only wanted to signal something in order to avoid the belief that the system is presented as ‘foundation’ for a theory of relative supplies of capital and labour! It is *what is denied* that seems important to me: as to what is *affirmatively claimed*, I have no intention to put forward another mechanical theory which, in one form or another, states again that income distribution is determined by natural, or technical or even accidental, circumstances, which in any case are such that they make any action taken by either part, in order to modify it, futile ... I do not see any difficulty in the determination of the rate of profit through a controlled or conventional interest rate, provided that the rate of profit will not be assumed to be determined by external unchangeable circumstances. (Sraffa Papers, D3/12/111, 1960–, quoted in and translated by Panico, 2001, pp. 301–2)

The above is, of course, only an illustrative account of the importance Sraffa attributed to the analysis of institutional arrangements, conventions, social norms and relations of power for ‘the study of the surplus’ and its distribution in specific ‘societies’. There are many more examples to draw on. But our purpose here is not to provide a comprehensive account of Sraffa’s contribution in this respect. It is rather, and more simply, to highlight an aspect of Sraffa’s work that has largely been overshadowed by the impact and relevance of *PCMC*—certainly for a wider readership with a general but not necessarily specialised interest in Sraffa’s work—and that, in our view, is worthy of further attention and debate, not least in regard to its place in, and significance for, Sraffa’s overall research project.

2.3 Sraffa on causality, identity and time

We now—very briefly—turn to two areas of enquiry in Sraffa’s work that emerge quite clearly as important preoccupations from his unpublished papers. Both are, primarily, of a philosophical and, to an extent, also of a methodological nature. The first concerns Sraffa’s reflections on causality and time. A second and related theme, addressed in

Section 2.4, is that of the role of—and frontier between—technical and social necessities in Sraffian reproduction systems. As before, our intent here is limited to drawing attention to less well-known aspects of Sraffa's work and to raise questions for further debate.

Sraffa's reflections on causality and causal explanation occupy an important space in his early notes and documents (up until 1930), but reoccur sporadically at later stages. Gaining a fuller understanding of Sraffa's thinking on this question clearly is central to any interpretation of his work and research project (see, e.g., [Sinha, 2012](#); [Kurz, 2012](#); [Davis, 2012](#) (to an extent)). A starting point (not chronologically, but conceptually) is the dominant notion of causality in the natural sciences, as he perceives it:

the 'so-called problem of causality' in physics comes to this: given any physical system, it is possible, at any rate in theory, to make an exact prediction of its future behaviour, provided that its nature and condition at *one* given point of time are *exactly known*? (Sraffa Papers, D 1/91: 66, 1943–63, original emphasis)

That such *exact* knowledge of the nature of a system and its condition necessarily excludes the consideration of any space–time dimension from the analysis was something Sraffa had grappled with already in his early notes. In order to study the core causal relationships of a system, these had to be isolated from 'outside' interferences to ensure 'that there is no room either for dispersion of or entering of foreign influences' (Sraffa Papers, D3/12/13:1, Summer–October 1928). Thus,

[t]he test of any theory of causality is that it should be independent of the *distinction between space and time*. (Sraffa Papers, D1/3:25, pre-1928, emphasis added)

An obvious danger arising for economic theorising from not abiding by this test of causality is, in Sraffa's view, the descent into subjectivism.³ Sraffa's critique of subjectivism in economic analysis is well known and well documented (see, e.g., [Davis, 1998](#); [Kurz and Salvadori, 2005A](#); [Marcuzzo, 2001](#); [Roncaglia, 1978](#), pp. 97–116; [Roncaglia, 1991](#)), and need not be reiterated here. Much (though not all) of this is targeted at marginalist approaches to economic theorising.⁴ It is in this context that Sraffa goes beyond a more general critique of the use of subjective magnitudes in economics and concerns himself specifically with the method, employed by marginalism—or 'marginism' in Sraffa's terminology—to render change over time compatible with the 'so-called problem of causality' in physics, namely infinitesimal calculus. As [Marcuzzo and](#)

³ 'Economists who do not take this objective test as the standard of what is the cause of an event, are always driven back to trace the "ultimate causes, causae causantes, etc." to the wants, desires, aversions, decisions, volitions and intentions (or inducements and rewards) of individuals. In fact, if we do not use an objective standard and rely simply upon an unconscious "feeling that this must be the real cause" ... we are bound to base the conclusions on our own individual experience, from which it appears that we do what we want, or what we like, etc., and this seems the only convincing final conclusion' (Sraffa Papers D1/9:6, pre-1928).

⁴ For example: 'demand and supply curves, marginal productivities, which form the basis of Marshall's theory, (or, rather, Pareto's) ... do not exist at any one moment, nor during any period of the recurrent steady process of production and consumption. They are alternatives, only *one* of which can exist in anyone position of equilibrium, all the others being thereby excluded ... Therefore they cannot be found by merely observing the process of the state of things, and measuring the quantities seen' (Sraffa Papers D3/12/3 [3], Summer–October 1929, original emphasis). For a more extensive discussion of the use of subjective magnitudes in economic theorising, including, for example, Austrian economics, see Sraffa's 'Lectures on Advanced Theory of Value', delivered to students of the Cambridge Economics Tripos between 1928 and 1931 (Sraffa Papers, D 2/4).

Rosselli (2011) have shown in some detail, ‘Sraffa held that change in economic realities hardly ever manifested itself in the form of infinitesimal variations in magnitudes that leave the overall structure unchanged’ (Marcuzzo and Rosselli, 2011, p. 225).

Sraffa’s search for an alternative to the flawed technique of differentiation—a form of *hypothetical* reasoning applied to subjective magnitudes and generated by the a priori requirements of the theory itself rather than by the observation of ‘economic realities’—led him to consider the concept of ‘identity’, as a limiting case of causal relations:

the causal relation between A and B includes, as a limiting case, identity. If they are different in time, it says nothing as to one being the cause of the other, or viceversa, in any particular case to which it is applicable. And, of course, between concepts, or abstract categories these are logical, but not causal, relations. (Sraffa Papers D1/9:10, pre-1928)

This notion of ‘identity’ leaves very little space for causal explanation or ‘causality’ in their usual meanings. It would explain, however, why causal relationships or causal argument is absent from *PCMC* and has been replaced with strictly logical reasoning. This logical reasoning is characterised by the absence of *all* change, but not by the absence of *all* ‘ordinary time’:

This notion of time is important: it really substitutes ‘instantaneous photographs’ as opposed to ordinary time. It is only a *part* of ordinary time, it has only some of its connotations: it includes event, also different events, but no change of events. It enables us to compare two simultaneous, but not instantaneous, events—just as if they were ‘things’. (Sraffa Papers D3/12/13 [1]:3, Summer-October 1929, emphasis added)

As we know, Sraffa went to the length of including a warning about this essential feature of his approach in his introductory remarks to *PCMC* when he asks the reader ‘to avoid mistaking spurious “margins” for the genuine article. Instances will be met in these pages which at first sight may seem indistinguishable from examples of marginal production; but the sure sign of their spuriousness is the absence of the requisite kind of change’ (Sraffa, 1960, p. v).

This leads us back to the three interpretations of Sraffa’s *PCMC* and Sraffian reproduction systems discussed in Section 2.1 above. The metaphor of the ‘snapshot’ or ‘instantaneous photographs’ can now, more specifically, be understood as encapsulating an approach to the role of the ‘so-called problem of causality’ in economics that is compatible with the third of these interpretations. In this view, Sraffa’s reproduction system(s) in *PCMC* are representations of a ‘reproduction event’ or ‘moment’ that covers a unitary period, namely an annual cycle from capital advances through to market transactions. The production ‘year’ can, thus, be interpreted as a part of historical time as well as an abstract representation of reproduction in a given societal configuration or ‘system’. This is not, however, an approach to causality, or conceptualisation of time and change in this context, that is consistent with either of the first two interpretations. GEE interpretations of a Sraffian system of production prices employ the notion of logical time (and instantaneous change), just as is the case for Walrasian and neo-Walrasian GEE theory. Similarly, it is difficult to see how the second interpretation of the Sraffian system in terms of a long-period position that results from changes in prices and quantities—i.e. from the process of price gravitation and from those determining a dynamic growth path—could be reconciled with the concept of ‘identity’ and of time as an ‘instantaneous photograph’, described above. Of course, both interpretations

might develop different views on Sraffa's approach to the 'problem of causality' in his unpublished papers. In any case, this seems to us another, as yet relatively unexplored area of further research on Sraffa's work that is relevant for our understanding of Sraffian reproduction system(s).

2.4 The role of technical and social factors in the distinction between necessities and surplus in Sraffian systems of reproduction

A final question of, in our view, considerable interest for our understanding of Sraffian systems of reproduction, and of Sraffa's *PCMC* specifically, concerns the role of, and frontier between, technical and social necessities in such systems, and therefore also of their surplus.

In a series of articles, Kurz and Salvadori provide a meticulous account of Sraffa's long route to *PCMC* as it emerges from his unpublished writings (see, e.g., Gehrke and Kurz, 2006; Kurz and Salvadori, 2004, 2005A, 2005B; Kurz, 2006). This includes a very detailed, carefully documented analysis of the evolution of Sraffa's thinking on the differentiation between necessities and surplus, conducted through the lens of their exploration of Sraffa's objectivism (Kurz and Salvadori, 2004, 2005A, 2005B). Central to the picture that emerges is the identification of a 'breakthrough' (Kurz, 2012, p. 1552; see also Kurz and Salvadori, 2005B, pp. 431–3) in Sraffa's conceptualisation of an objectivist basis for the study of systems of production, prices and distribution, which they date with a, by now, famous document on 'The Surplus Product' written in August 1931 (Sraffa Papers D3/12/7: 161). Prior to this breakthrough, Sraffa had been concerned, in his own words, with 'establishing "an entirely objective point of view", a "natural science point of view" or, *tout court*, "an atomic analysis"' (Kurz and Salvadori, 2005B, p. 425). This period is characterised by Sraffa's attempt to build a theory of production prices on the concept of physical real costs, derived from the beginnings of political economy, particularly Petty and the physiocrats, and by his exploration of major findings and debates in the natural sciences. This 'natural science point of view' was, however, abandoned in 1931 in favour of an approach in which the existence of the surplus is 'explicitly taken to reflect some "outside causes" in operation. What are henceforth studied by Sraffa in terms of the equations of production are some of the effects of these causes, but not the causes themselves' (Kurz and Salvadori, 2005B, p. 432). The main reason is Sraffa's realisation that

[i]f one attempts to take an entirely objective point of view, the very conception of a surplus melts away. For if we take this natural science point of view, we must start by assuming that for every effect there must be a sufficient cause, that the causes are identical with their effects, and that there can be nothing in the effect which was not in the causes: in our case, there can be no product for which there has not been an equivalent cost, and all costs (=expenses) must be necessary to produce it.

The conception of 'necessity' has to be extended to everything that happens, and thus vanishes. Every share distributed must be so for a reason, therefore it is necessary: how can there be a surplus left, unless we assume some sort of indeterminacy? This can be assumed from some subjective standpoint, where something is taken as known and given to him, but something is left unknown and dependent upon his will or his actions. But from a purely objective point of view, all must be [an] object of knowledge, and nothing can be indeterminate. (Sraffa Papers, D3/12/7:161)

Sraffa's many objections to a subjective concept of costs (or necessities), in terms of a sum of efforts, sacrifices or an inducement to abstinence (see, e.g., Sraffa Papers

D3/12/7:105-6, 1928-, and D1/15/2, pre-1928), and to subjectivism in economics more generally (see above Section 2.3), led him to adopt the only other solution to this dilemma, namely to question the applicability of the ‘principle of sufficient reason’ to the explanation of the surplus, and to assume, instead, that the existence of the surplus reflects ‘outside causes’: ‘The “closed system” is in communication with the world’ (Sraffa Papers, D3/12/7: 161).

Leaving to one side the question of whether Sraffa’s early (pre-1931) writings can be entirely subsumed under his ‘natural science point of view’, and therefore also the question of how radical the ‘turning point’ (or ‘breakthrough’) of August 1931 is, a core issue that arises from the detailed account Kurz and Salvadori (2005B) provide of Sraffa’s evolving thoughts on an objectivist foundation for the construction of an asymmetrical theory of reproduction systems, is this: when ‘writing’ a Sraffian production system, what is the role played by techniques, or technical factors, on the one hand, and social factors, on the other, in the definition of the surplus? Is it the case that ‘necessities’ are determined by technique (or ‘entirely objective’) factors only so that the distribution of the surplus can then be explained by a wide range of social, institutional and even political factors, such as those exemplified in Section 2.2? Or do *both* technical and social factors enter into the definition of the distinction between necessities and surplus?

In the same document, Sraffa argues that this depends on the type of society the economist wishes to analyse:

The study of the ‘surplus product’ is the true object of economics: the great difficulty of the matter is that this object either vanishes or remains unexplained. It is a typical problem to be handled dialectically.

This notion is connected with that of ‘necessity’; + ‘necessity’ has only a definite meaning from a given point of view, which must be explicitly stated, + then adhered to consistently.

The surplus product goes all to expenses which are not ‘necessary’ for producing a given commodity.

What is necessary are the given circumstances, i.e. the known ones (whether natural or social), of a given subject: the surplus is what belongs (remains) to the subject himself. It must be mentioned at once that the boundary between the subject + his surroundings is by no means clearly defined; the subject himself may be doubtful as to where he himself ends + his circumstances begin. E.g. when one takes the classless human standpoint, he should regard all wages, rents + profits as surplus; but then always (e.g. Ricardo + Marshall) it is recognised that a part of wages are necessary for production, i.e. a worker is in part looked upon as a natural circumstance, an animal to be fed, + in part as a subject who participates in the distribution of the surplus (see especially Marshall’s confusion as to the surplus which he says would not have to be distributed in a slave economy).

Therefore, according to what an economist selects as the ‘subject’ of his economy (usually identifying himself with it), the ‘surplus’ will be different.

The standpoint of capitalist society itself, is that of the ruling class, + therefore the surplus is composed of rent, interest + profit. (Sraffa Papers, D 3/12/7: 161)

Thus, for example, the case of the ‘slave community’ (Sraffa Papers D 3/12/7:62, 1928-)—or for this matter that of the second type of society invoked in *PCMC* in which the surplus is appropriated entirely by a single class—is analytically relevant precisely because a distinction of social from technical necessities is not necessary:

The advantage of this assumption is that it rids us of the question: how are wages determined? Because of course our equations assume that they are constants. The food and other necessities for efficiency of slaves are determined in the same way as the amount of fodder given to horses, the amount of fuel given to a machine, the amount of manure given to land: they are *not*

determined outside economics, but for the present purpose they are regarded as given constants. (Sraffa Papers, D 3/12/7: 62, 1928-, original emphasis)⁵

But once at least two classes can fight over the distribution of the surplus, this analytically convenient simplification cannot be maintained. The boundaries between what is technical and what is social in the definition of necessities, and therefore of the surplus, become fluid. That is, they depend on the institutions, rules and conventions that govern social compromise and conflict between competing claims on the surplus, within and between social classes:

Interest appears thus as the necessary means of overcoming an obstacle to production. It is a social necessity as distinguished from the material necessity of, say, putting coal into a locomotive that it may do its work.

There are many other such socially necessary costs which appear as technical necessities. Thus, the work of a ticket collector on a bus or a railway: obviously, the railway would run equally well if no tickets were collected; but, if everybody travelled without paying, the shareholders would stop it; the work of the ticket collector prevents the shareholders from stopping the railway; the shareholders would be as effective in stopping trains as lack of coal in the engine. The ticket collector is therefore as productive as the fireman.

For wages to appear as a necessity ownership of labour force must be separated from ownership of means of production. For interest to appear as a necessity ownership of means of production must be separated from control (as in modern companies). If the capitalist is in control, his (11a) own income appears only as utilities; since he takes the decisions, how can there be any question of his 'inducing' himself to do unpleasant things? If he does them, since he is perfectly free of doing them or not, this means that they are pleasant, by definition. (id. for the independent artisan with his wages: his own consumption, far from being a cost which must be undergone in order to produce, is the very end of production). But the abstract 'firm' or 'company' (and its managers as its spokesmen) regards the shareholders, bankers and creditors as vampires: just as the workers: it is an unpleasant necessity to pay them a 'fair' dividend or 'fair' wage to keep them quiet; but the less is given to them, the better, since it appears as pure waste. (Sraffa Papers, D3/12/18: 11, 1942-50)

Seen thus, Sraffa's concern with concrete institutions and conventions that govern a specific (changing) society—the capitalism of his day—illustrated in Section 2.2 might occupy a more systematic place in his overall research project than simply an additional, lesser known but fascinating, interest. From this perspective, it would seem expedient to further reflect on how an (as) objective (as possible) analysis can be achieved of the distinction between what is (and what is not) truly necessary, in terms of both technical and *social* factors, to ensure the realisation of productive activities, in any given society.

3. The contributions to this Special Issue

This Special Issue begins with a contribution on the use made of the Sraffa Archives by Sraffa scholars so far and on their potential for Sraffa research from the point of view of the archivist. Sraffa scholars of all persuasions will agree on one point at least, namely that they all owe an enormous debt of gratitude to Jonathan Smith, Archivist at the Wren Library, Trinity College (Cambridge), for his enlightened and invaluable work

⁵ In a related document in the same folder (Sraffa Papers, D3/12/7:105-6, 1928-), Sraffa also takes Marshall to task in this regard, for arguing that the existence of a surplus presupposes the existence of free workers.

on cataloguing Sraffa's unpublished papers. Smith notes that 'the work of the archivist in cataloguing the papers is not as "neutral, inconspicuous and simply factual" as was once assumed' (Smith, 2012, p. 1296). He argues that the positivist idea that there is an 'original order' of the materials assembled in an archive that archivists only help to reveal, while guided by the objective of making the work of the archivist transparent to the user, is neither convincing nor sustainable. Instead, in this paper Smith explains the particular complexity of the Sraffa Archives and provides a lucid and fascinating account of the manifold ways in which the work of the archivist interacts with that of the user of the archive for the case of the Sraffa Archives.

Luigi Pasinetti's 'Piero Sraffa and the Future of Economics' is a foremost example of the indispensable value of the work of the archivist in allowing the scholar to gain an overview over the significance of unpublished manuscripts to (re)assess an author's overall contribution. Following on from his earlier work (Pasinetti, 2000, 2007), Pasinetti here provides what he hopes will be his final and clearest version of his evaluation of the significance of Sraffa's work for the future of economics (Pasinetti, 2012A, fn p. 1303). From 'a bird's eye view on a high flight', Pasinetti distinguishes three streams of thought in Sraffa's writings: one primarily concerned with the history of economic thought, a second that focuses on his critique of marginal economic theory, and a third set of arguments that 'unfolds as a logical consequence of the previous two' (Pasinetti, 2012A, p. 1306) and focuses on his reconstructive effort in regard to 'sensible economic theory' (ibid.), i.e. classical political economy. Pasinetti then contrasts Sraffa's 'impossibly grand research programme' (ibid., p. 1306) with what he could ultimately bring to fruition and reflects on the reasons that led Sraffa to adopt a 'drastically restrict[ed]' (ibid., p. 1307) version of his original research programme.

Scazzieri, in a comment on Pasinetti (2012A) originally presented at the 2010 workshop, suggests that, in line with Pasinetti's reflections on the Sraffa Archives, *PCMC* can be considered 'to be a product of the political economy programme associated with [Adam] Smith' (Scazzieri, 2012, p. 1316), based on a reading of *PCMC* as a work of 'pure' economic theory that remains largely independent of any institutional premises (ibid.) and that therefore requires a constructive effort in providing institutional context. For Scazzieri, Sraffa's *PCMC* 'is both a product of Smith's research programme and a prelude to its critique' (ibid.) in that it entails a distinction between 'pure' or 'deeper' (institution-free) economic theory and economic theory that makes specific institutional assumptions, and in that this 'dual nature of Sraffa's political economy may be seen by comparing the horizontal and vertical price equations' (ibid., p. 1319). Scazzieri, thus, remains firmly rooted in interpretations of Sraffa's *PCMC* as a theory of prices in the context of his own work on the theory of production.

The next four papers are all concerned with a reconstructive interpretation of Sraffa's work, or of specific aspects of this, using textual evidence from the Archives. Sinha takes issue with the second of the interpretations of Sraffa's *PCMC* summarised in Section 2.1 above and presents 'a new interpretation of Sraffa's *Production of Commodities*'. He argues that an interpretation of Sraffa's prices in *PCMC* as ideal classical centres of gravitation of market prices, and therefore as long-period equilibrium prices, relies on Sraffa's assumption of a uniform rate of profits as its only indirect support in Sraffa's own writings. Sinha briefly discusses a number of (published and unpublished) propositions and arguments by Sraffa to provide a 'prima-facie case' (Sinha, 2012, p. 1326) for showing that Sraffa 'did not think in terms of equilibrium of demand and supply' (ibid., p. 1327; see also Sinha, 2010). However, the core of

his critique is ‘a logical argument behind the condition of the uniformity of the rate of profits independently of the notion of equilibrium of demand and supply’ (ibid.). This builds the case for a new interpretation of Sraffa’s system in which prices can be determined independently of demand conditions for the case of basic goods, if the distribution of income is given from outside the system. In this view, the uniformity of rates of profit, rather than reflecting implicit assumptions about market structure and forms of competition, is simply the logical corollary of given distributive features of the system. Sinha proceeds to provide evidence from Sraffa’s (published and unpublished) writings in support and against his interpretation, as well as a wider discussion of objections to this interpretation.

Davis’s contribution is focused on Sraffa’s philosophical thinking rather than specific interpretations of *PCMC*. Building on Kurz and Salvadori (2004, 2005B), Davis agrees that Sraffa’s philosophical ‘thinking underwent one significant shift around 1931’, but maintains that this thinking can be explained ‘as a process of development largely within a single framework’ (Davis 2012, p. 1342) organised around Sraffa’s evolving views on the impact of modern sciences on economic theorising. Davis notes that ‘Sraffa was a much more complete philosophical thinker than it has been possible to claim heretofore and prior to the availability of his unpublished writings’ (Davis, 2012, p. 1354) and suggests that the change in his philosophical thinking around 1931 can usefully be understood as a progression from reductionist physicalism to supervenience physicalism, where the latter allows ‘that mental or psychological states have a distinct character but depend in some important way on physical brain states’ (Davis, 2012, p. 1346). Applied to Sraffa’s ‘problem’ of the definition of the surplus, outlined in Section 2.4 above, Davis argues that supervenience physicalism, in the form possibly adopted by Sraffa, would leave ‘the specific nature of the “outside causes which operate” on and in the “economic field” that Sraffa associates with the distribution of the surplus’ unexplained (Davis, 2012, p. 1349), thus rendering possible a subjectivist explanation of these ‘outside causes’. Davis, however, suggests that this possibility needs to be critically examined, in view of Sraffa’s objections to subjectivism and his philosophical exchanges with Wittgenstein. Interestingly, much as Sinha, Davis argues that ‘listening to Sraffa’s silences’ (Sinha, 2012), i.e. to ‘what he does not say’ (Davis, 2012, p. 1353), can be useful in developing a more complete understanding of Sraffa’s approach to economic theorising.

Porta embarks on a discussion of the building blocks ‘for a reconstruction of Piero Sraffa’s early views on classical political economy’ (Porta, 2012, p. 1358). Porta’s methodological point of departure in regard to the reconstruction of Sraffa’s contribution to, mainly, economic theory is clear. He eschews ‘a painstaking[ly] oversubtle, decontextualised, philological analysis of Sraffa’s own words’ in favour of a broader reconstruction of ‘the personality of Sraffa as a scientist by means of *all available information* and documents’ (Porta, 2012, p. 1360, original emphasis). On this premise, Porta proceeds to argue that Sraffa’s research programme was inspired by Marxian economics from early on and that his interpretation of Ricardo also is a Marxian interpretation, largely in opposition to Garegnani’s most recent analysis of Sraffa’s early writings (Garegnani, 2005) and Kurz and Salvadori’s analysis of Sraffa’s objectivism (see, e.g., Kurz and Salvadori, 2005A, 2005B).

Bellofiore, too, is interested in the Sraffa–Marx relationship, albeit from a more specific angle. Based on a reconstruction of Sraffa’s route to *PCMC* and a discussion of different views of Sraffa’s relationship to Marx amongst Sraffa scholars, Bellofiore

argues that the stark division between new and old interpretations of the role of the labour theory of value in Marxian analyses is overstated. The so-called new interpretation holds that, after Sraffa's *PCMC*, the labour theory of value had to be abandoned, at least in terms of an analytical concept, whereas the old interpretation continues to regard this as an integral part of Marxian theory. Bellofiore's view that 'a bridge' can be built between these two interpretations centres on a reassessment of the role of money in the connection between value and labour, in both Marx's as well as Sraffa's approaches to the theory of price and value. According to Bellofiore this is justified by the '(partial) recovery of the monetary dimension of [Marx's] argument' (Bellofiore, 2012, p. 1398), as well as a specific interpretation of Sraffa's normalisations in *PCMC* that, he argues, is supported by evidence from the Sraffa Archives.

Naldi turns to the relationship between Sraffa and Gramsci. His focus is not, however, on their exchanges about economic theory and political economy, but on two specific aspects of Sraffa's activity to support Gramsci during his imprisonment in fascist Italy. Through a meticulous exploration of available documentation, Naldi investigates Sraffa's relationship with the Italian Communist Party (PCI) in the late 1920s, as well as 'a particular episode' that may help to gain an insight into Sraffa's intellectual and political autonomy from the PCI. Naldi concludes that, on the basis of available evidence, 'Sraffa certainly placed himself on the communist side of the international political scene', but that the 'the Communist International's change in policy, which took place at the end of the 1920s, and the constraints this applied on debates on the parties themselves, did not receive Sraffa's support, just as they were not supported by Gramsci' (Naldi, 2012, p. 1414). This did not, however, weaken Sraffa's sympathies for the communist movement.

The next two papers, by two towering protagonists of Sraffian economics and his two best-known students, are concerned with the importance of Sraffa's contribution for core theoretical debates in economics, between the 'two Cambridges' in the second half of the twentieth century. Pierangelo Garegnani⁶ comments on the 'present state of the capital controversy'. Garegnani (2012) refutes the dominant view, according to which more recent versions of neoclassical economic theory—such as, in particular, general intertemporal equilibrium theory—do not rely on the concept of capital as a single magnitude, thus rendering Sraffa's critique of this notion obsolete. Garegnani argues that this mistaken view—shared even by an economist with strong sympathies for Sraffa's work, Amartya Sen—could prevail in part due to a number of misunderstandings in the original capital theory controversies, arising from a failure to fully appreciate fundamental differences between conventional demand-and-supply approaches and those based on the concept of 'normal' prices, encapsulated in particular in Hicks's *Value and Capital* (1939). Garegnani proceeds to clarify these misunderstandings, one by one, and to resurrect the relevance of Sraffa's original critique of the notion of capital as a single magnitude for intertemporal equilibrium theory.

Pasinetti, in his second contribution to this Special Issue, reflects on the crippled and very partial 'revival' of Keynesian economics following the outbreak of the global financial crisis, and the theoretical as well as wider intellectual reasons for this stunted 'return of the master'. Pasinetti focuses not on the capital theory controversies, but on the contribution made by 'Cambridge Keynesians' (as well as, or in this context,

⁶ As readers will be aware, Pierangelo Garegnani sadly died on 15 October 2011. The *CJE* is indebted to the Centro Sraffa, Rome, for its help with final editorial revisions of his paper in this Special Issue.

including Sraffa) to a theory of income distribution in modern capitalism (and capitalist growth dynamics). The upshot of the ‘Cambridge equation’ and the Pasinetti theorem is that ‘the part of national income which ... emerges as the “surplus”—the result of growth in productivity in the economic system—is meant to be devolved to the whole working population’ (Pasinetti, 2012B, p. 1440). For Pasinetti, an important avenue for the further development of the “critique” part of the Sraffian scientific project’ (Pasinetti, 2012B, p. 1440) would be to draw out the implications of the principle of income distribution encapsulated in the ‘Cambridge equation’ for specific institutional frameworks. He argues that the Modigliani–Miller theorem was, however, instrumental in diverting attention from these advances on the theory of income distribution and in providing a (flawed) theoretical basis for the rise of a new form of financialised corporate capitalism since the 1980s, culminating in the global financial crisis. Pasinetti proceeds to explore specific ‘classical/Keynesian’ contributions to a better understanding of this crisis.

Pasinetti’s discussion of the role of theoretical debates in shaping the evolution of actual capitalism leads over to three core contributions to this Special Issue that focus on the relevance of Sraffa’s work—and in particular his lesser known writings on the role of institutions and conventions in the evolution of specific configurations of capitalist society highlighted in Section 2.2 above—for our understanding of specific features in the actual evolution of capitalism. Panico *et al.* (2012) explore empirical links between trends in income distribution and the size of the financial sector to argue that recent increases in income inequality in advanced capitalist economies can largely be attributed to financial deregulation and the consequent increase in the size of the financial sector. Sraffa’s writings on money and banking, in particular his ‘conventionalist’ approach to monetary policy making and his analysis of the role of lobbying activities to influence financial regulation, provide an embryonic conceptual framework for this discussion, highlighting both the relevance of Sraffa’s work in this regard as well as the need to develop this further.

Barba and De Vivo are also concerned with the role of the financial sector in a capitalist economy and with ‘the huge increase in its weight (economic and otherwise) in the last decades’ (Barba and De Vivo, 2012, p. 1479). Their contribution focuses on the distinction between productive and unproductive labour. Based on a discussion of differing conceptions of ‘unproductive’ labour in classical political economy, they argue that contemporary financial services are mostly luxury goods oriented towards the provision of gambling facilities rather than services to production. Furthermore, earnings from financial services largely are pure circulation (as opposed to production) costs and could be reduced or eliminated, if the realisation problem—or the problem of aggregate demand—was addressed other than by recourse to fast-expanding financial services. Barba and De Vivo’s analysis is inspired by Sraffa’s conceptualisation of the reproduction process and by his distinction between basic and luxury goods, and points the way to a more explicit exploration of relevant implications of Sraffa’s *PCMC* for our understanding of contemporary financial capitalism.

Wilkinson turns to a different aspect of the relevance of Sraffa’s *PCMC* for our understanding of the evolving configurations of capitalism, namely the role and conceptualisation of labour input and wages in a Sraffian reproduction system. Wilkinson argues that ‘the *necessaries of life*, those underpinning real wages’ (Wilkinson, 2012, p. 1498) change over time and that, therefore, an essentially static depiction of capitalist society

characterised by a purely technological determination of the wage–profit dichotomy is unsatisfactory. Through a detailed empirical account of how ‘the customary standard of life’ changed in Britain from the mid-nineteenth century to today, Wilkinson demonstrates the central role played by wider social, institutional and political factors in determining ‘a customary standard of life’ that, in turn, drives real wages. He suggests that the input of labour *power* into commodity production ‘can be represented by the commodity composition of the customary standard of life in Sraffian analysis’ (Wilkinson, 2012, p. 1531). Wilkinson’s contribution thus highlights the issues raised in Section 2.4 above in regard to the role of technical and social determinants in defining the necessities (and therefore also the surplus) in a Sraffian reproduction system. His analysis of the changing ‘customary standards of life’ in Britain over the past 150 or so years, and its major determinants, seems to fit well with Sraffa’s own contention that the definition of necessities and surplus is dependent not on the importance attributed to techniques as different from social factors, but on the specific society or socio-political configuration of a society we wish to investigate.

Kurz’s closing comments on and ‘epilogue’ to the contributions in this Special Issue focus on two main axes of the debate about Sraffa’s contribution to economic analysis. The first of these is beginning to emerge and concerns diverging views on what constitutes ‘best practice’ in the use of the Sraffa Archives. Kurz, as Chief Editor of the Sraffa Archives, is acutely aware of the dangers of misinterpretations of Sraffa’s overall research programme and contribution to economic theory, based on a selective, and therefore potentially biased, use of his unpublished papers. Kurz proposes a ‘modus operandi’ to establish ‘methodical discipline’. This involves systematic scrutiny of potential bias in any reconstruction effort against specific pieces of evidence quoted in support, as well as against complementary sets of materials that provide a wider context test to the viability (or otherwise) of the reconstruction effort (Kurz, 2012, pp. 1537–40). This contrasts sharply with Porta’s contention that reconstructive exercises should best rely on broader efforts to establish context without recourse to ‘methodical discipline’ that, in his view, amounts to little more than ‘splitting hairs in textual analysis’ (Porta, 2012, p. 1360). It may well be that, in practice, the actual ‘modus operandi’ will converge on an intermediate position. Kurz’s concerns in this respect are in line with Sraffa’s own and well-known insistence on precision and rigour in scientific analysis. This said, establishing ‘best practice’ in the use of unpublished materials is never a ‘value (or bias)-free’ activity, in the same sense Smith aptly problematises the role of the librarian in cataloguing archival materials.

Second, through the prism of addressing potential misinterpretations of different themes in Sraffa’s work, Kurz provides a brief account of his own reconstruction of Sraffa’s long route to *PCMC* (developed partly in collaboration with Neri Salvadori and Christian Gehrke, in particular). Notwithstanding the necessary limitations of a summary exposition produced under considerable time constraints (see above), Kurz’s reconstruction, not so much of Sraffa’s overall scientific project, but of his route toward this, undoubtedly constitutes a main point of departure and reference for future research on Sraffa’s work. From the vantage point of this reconstructive effort (detailed in a series of contributions since 1998; see, e.g., Kurz, 2002, 2006; Kurz and Salvadori, 2001, 2005A, 2005B, 2009), Kurz subsequently (and intermittently) provides an, at times, severe but instructive critique of this Special Issue as a whole and in regard to specific contributions.

It is our sincere hope that this Special Issue, however diverse, disparate and contentious individual contributions, will pave the way to further constructive, systematic and pluralistic debate about Sraffa's contribution to economics, in the light, not least, of insights from his (as yet) unpublished papers.

Bibliography

- Arena, R. 2010. Corporate limited liability and Cambridge economics in the inter-war period: Robertson, Keynes and Sraffa, *Cambridge Journal of Economics*, vol. 34, no. 5, 869–84
- Arena, R. 1990. La dynamique économique classique: une revue de littérature. *Revue D'Economie Politique*, vol. 100, no. 4, 463–94
- Arena, R., Froeschlé, C. and Torre, D. 1990. Gravitation theory: two illustrative models, *Political Economy: Studies in the Surplus Approach*, vol. 6, nos 1–2, 287–308
- Barba, A. and De Vivo, G. 2012. An 'unproductive labour' view of finance, *Cambridge Journal of Economics*, vol. 36, no. 6, 1479–96
- Bellofiore, R. 2012. The 'tiresome objector' and Old Moor: a renewal of the debate on Marx after Sraffa based on the unpublished material at the Wren Library, *Cambridge Journal of Economics*, vol. 36, no. 6, 1385–99
- Blankenburg, S. 2012. Limited liability, pp. 193–200 in Toporowski, J. and Michell, J. (eds), *Handbook of Critical Issues in Finance*, Cheltenham, Edward Elgar
- Boggio, L. 1990. The dynamic stability of production prices: a synthetic discussion of models and results, *Political Economy: Studies in the Surplus Approach*, vol. 6, nos 1–2, 47–58
- Caminati, M. 1990. Gravitation: an introduction, *Political Economy: Studies in the Surplus Approach*, vol. 6, nos 1–2, 11–44
- Cartelier, J. 1976. *Surproduit et reproduction. La formation de l'économie politique classique*, Grenoble, Presse Universitaires de Grenoble
- Davis, J. B. 1998. Sraffa's early philosophical thinking, *Review of Political Economy*, vol. 10, no. 4, 477–91
- Davis, J. B. 2012. The change in Sraffa's philosophical thinking, *Cambridge Journal of Economics*, vol. 36, no. 6, 1341–56
- De Cecco, M. 1993. Piero Sraffa's 'Monetary Inflation in Italy during and after the War': an introduction, *Cambridge Journal of Economics*, vol. 17, no. 1, 1–5
- De Cecco, M. 1994. Introduzione a Piero Sraffa 'L'inflazione monetaria in Italia durante e dopo la guerra', *Economia Politica*, vol. 11, no. 2, 155–62
- De Cecco, M. 2005. Sraffa's lectures on continental banking: a preliminary appraisal, *Review of Political Economy*, vol. 17, no. 3, 349–58
- Debreu, G. 1974. Excess demand functions, *Journal of Mathematical Economics*, vol. 1, 15–21
- Dupertuis, M. and Sinha, A. 2009. A Sraffian critique of the classical notion of centre of gravity, *Cambridge Journal of Economics*, vol. 33, no. 6, 1065–87
- Garegnani, P. 1972[1960]. *Il capitale nelle teorie della distribuzione*. Reprint of the original 1960 edition. Milan, Dott. A. Guiffre Editore
- Garegnani, P. 1979. *Valore e domanda effettiva*, Turin, Einaudi
- Garegnani, P. 1983. On a change in the notion of equilibrium in recent work on value and distribution, pp. 129–45 in Eatwell, J. and Milgate, M. (eds), *Keynes's Economics and the Theory of Value and Distribution*, London, Duckworth; originally published pp. 25–45 in Brown, M., Sato, K. and Zarembka, P. (eds) 1976. *Essays in Modern Capital Theory*, Amsterdam, North-Holland
- Garegnani, P. 1984. Value and distribution in the classical economists and Marx, *Oxford Economic Papers*, vol. 36, 291–325
- Garegnani, P. 1990A. On a supposed obstacle to the tendency of market prices towards natural prices, *Political Economy: Studies in the Surplus Approach*, vol. 6, nos 1–2, 329–59
- Garegnani, P. 1990B. Sraffa's *Production of Commodities*: classical versus marginalist analysis, pp. 112–41 in Bharadwaj, K. and Schefold, B. (eds), *Essays on Piero Sraffa*, London, Unwin Hyman
- Garegnani, P. 2005. On a turning point in Sraffa's theoretical position and interpretative position in the late 1920s, *European Journal of the History of Economic Thought*, vol. 12, no. 3, 453–92

- Garegnani, P. 2012. On the present state of the capital controversies, *Cambridge Journal of Economics*, vol. 36, no. 6, 1417–32
- Gehrke, C. and Kurz, H. D. 2006. Sraffa on von Bortkiewicz: reconstructing the classical theory of value and distribution, *History of Political Economy*, vol. 38, no. 1, 91–149
- Hahn, F. 1975. Revival of political economy: the wrong issues and the wrong arguments, *Economic Record*, vol. 51, 360–4
- Hahn, F. 1982. The neo-Ricardians, *Cambridge Journal of Economics*, vol. 6, no. 4, 353–74
- Hicks, J. 1985. Sraffa and Ricardo: a critical view, pp. 305–19 in Caravale, C. (ed.), *The Legacy of Ricardo*, Oxford, Basil Blackwell
- Keynes, J. M. 1973 [1936]. *The General Theory of Employment, Interest and Money: The Collected Writings of John Maynard Keynes*, vol. VII, London, Macmillan
- Kurz, H. D. 2002. Sraffa's contributions to economics: some notes on his unpublished papers, pp. 177–96 in Nisticò, S. and Tosato, D. (eds), *Competing Economic Theories: Essays in Memory of Giovanni Caravale*, London, Routledge
- Kurz, H. D. 2006. The agents of production are the commodities themselves. On the classical theory of production, distribution and value, *Structural Change and Economic Dynamics*, vol. 17, no. 1, 1–26
- Kurz, H. D. 2012. Don't treat too ill my Piero! *Cambridge Journal of Economics*, vol. 36, no. 6, 1535–69
- Kurz, H. D. and Salvadori, N. 1995. *Theory of Production: A Long-period Analysis*, Cambridge, UK, Cambridge University Press
- Kurz, H. D. and Salvadori, N. 2001. Sraffa and the mathematicians: Frank Ramsey and Alister Watson, pp. 187–216 in Cozzi, T. and Marchionatti, R. (eds), *Piero Sraffa's Political Economy: A Centenary Estimate*, London, Routledge
- Kurz, H. D. and Salvadori, N. 2004. 'Man from the moon': on Sraffa's objectivism, *Economies et Sociétés*, vol. 35, 1545–57
- Kurz, H. D. and Salvadori, N. 2005A. Removing an 'insuperable obstacle' in the way of an objectivist analysis: Sraffa's attempts at fixed capital, *European Journal of the History of Economic Thought*, vol. 12, no. 3, 493–523
- Kurz, H. D. and Salvadori, N. 2005B. Representing the production and circulation of commodities in material terms: on Sraffa's objectivism, *Review of Political Economy*, vol. 17, no. 3, 413–42
- Kurz, H. D. and Salvadori, N. 2009. Sraffa and the labour theory of value: a few observations, pp. 187–213 in Vint, J., Metcalfe, J. S., Kurz, H. D., Salvadori, N. and Samuelson, P. A. (eds), *Economic Theory and Economic Thought: Festschrift in Honour of Ian Steedman*, London, Routledge
- Mantel, R. R. 1974. On the characterization of aggregate excess demand, *Journal of Economic Theory*, vol. 7, no. 3, 348–53
- Marchionatti, R. 2012. The economists and the primitive societies: a critique of economic imperialism, *Journal of Socio-Economics*, vol. 41, no. 1, 529–40
- Marcuzzo, C. 2001. Sraffa and Cambridge economics, pp. 81–99 in Cozzi, T. and Marchionatti, R. (eds), *Piero Sraffa's Political Economy: A Centenary Estimate*, London, Routledge
- Marcuzzo, C. and Rosselli, A. 2011. Sraffa and his arguments against 'marginism', *Cambridge Journal of Economics*, vol. 35, no. 1, 219–31
- Naldi, N. 2012. Two notes on Piero Sraffa and Antonio Gramsci, *Cambridge Journal of Economics*, vol. 36, no. 6, 1401–15
- Panico, C. 1988. Sraffa on money and banking, *Cambridge Journal of Economics*, vol. 12, no. 1, 7–28
- Panico, C. 2001. Monetary analysis in Sraffa's writings, pp. 285–310 in Cozzi, T. and Marchionatti, R. (eds), *Piero Sraffa's Political Economy: A Centenary Estimate*, London, Routledge
- Panico, C., Pinto, A. and Puchet Anyul, M. 2012. Income distribution and the size of the financial sector: a Sraffian analysis, *Cambridge Journal of Economics*, vol. 36, no. 6, 1455–77
- Pasinetti, L. L. 2000. Continuity and change in Sraffa's thought: an archival excursus, pp. 139–56 in Cozzi, T. and Marchionatti, R. (eds), *Piero Sraffa's Political Economy: A Centenary Estimate*, London, Routledge
- Pasinetti, L. L. 2007. *Keynes and the Cambridge Keynesians: A 'Revolution in Economics' to be Accomplished*, Cambridge, UK, Cambridge University Press

- Pasinetti, L. L. 2012A. Piero Sraffa and the future of economics, *Cambridge Journal of Economics*, vol. 36, no. 6, 1303–14
- Pasinetti, L. L. 2012B. A few counterfactual hypotheses on the current economic crisis, *Cambridge Journal of Economics*, vol. 36, no. 6, 1433–53
- Porta, P. L. 2012. Piero Sraffa's early views on classical political economy, *Cambridge Journal of Economics*, vol. 36, no. 6, 1357–83
- Robertson, D. H. 1923. *Control of Industry*, London, Nisbet
- Roncaglia, A. 1978. *Sraffa and the Theory of Prices*, Chichester, Wiley
- Roncaglia, A. 1991. Sraffa's 1925 article and Marshall's theory, *Quaderni di Storia dell' Economia Politica*, vol. IX, nos 2–3, 373–97
- Scazzieri, R. 2012. The political economy of *Production of Commodities by Means of Commodities*: a note on Pasinetti and Sraffa, *Cambridge Journal of Economics*, vol. 36, no. 6, 1315–22
- Sinha, A. 2010. *Theories of value from Adam Smith to Piero Sraffa*, London, Routledge
- Sinha, A. 2012. Listen to Sraffa's silences: a new interpretation of Sraffa's *Production of Commodities*, *Cambridge Journal of Economics*, vol. 36, no. 6, 1323–39
- Smith, J. 2012. Circuitous processes, jigsaw puzzles and indisputable results: making best use of the manuscripts of Sraffa's *Production of Commodities by Means of Commodities*, *Cambridge Journal of Economics*, vol. 36, no. 6, 1291–1301
- Sonnenschein, H. 1972. Market excess demand functions, *Econometrica*, vol. 40, no. 3, 549–63
- Sonnenschein, H. 1973. Do Walras' identity and continuity characterize the class of community excess demand functions? *Journal of Economic Theory*, vol. 6, no. 4, 345–54
- Sraffa, P. 1920 [1993]. Monetary inflation in Italy during the war, thesis obtained in November 1920, translated from the Italian by Wendy J. Harcourt and Claudio Sardoni, *Cambridge Journal of Economics*, 1993, vol. 17, 7–26
- Sraffa, P. 1921A. Industriali e governo inglese contro i lavoratori, *L'Ordine Nuovo*, 24 July
- Sraffa, P. 1921B. I labour leaders. *L'Ordine Nuovo*, 4 August
- Sraffa, P. 1922A. The bank crisis in Italy, *Economic Journal*, vol. 32, 178–97
- Sraffa, P. 1922B. Italian banking today, *Manchester Guardian Commercial Supplement*, 7 December, 675–6
- Sraffa, P. 1932. Dr Hayek on money and capital, *Economic Journal*, vol. 42, 42–53
- Sraffa, P. 1960. *Production of Commodities by Means of Commodities*, Cambridge, UK, Cambridge University Press
- Steedman, I. 1984. Natural prices, differential profit rates and the classical competitive process, *Manchester School*, vol. 52, no. 2, 123–40
- Steedman, I. 1986. Trade interest versus class interest, *Economia Politica*, vol. 2, 187–206
- Steedman, I. 1990. Questions and suggestions re gravitation, *Political Economy: Studies in the Surplus Approach*, vol. 6, nos 1–2, 69–72
- Walsh, V. and Gram, H. 1980. *Classical and Neoclassical Theories of General Equilibrium: Historical Origins and Mathematical Structure*, Oxford, Oxford University Press
- Wilkinson, F. 2012. Wages, economic development and the customary standard of life, *Cambridge Journal of Economics*, vol. 36, no. 6, 1497–1534