The role of technical and social factors in the distinction between necessities and surplus: Classical economics after Sraffa *¤

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¤ very provisional version, not to quote
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Piero Sraffa only published during his life *one single analytical and constructive* contribution , namely his 1960 book entitled *Production of Commodities by means of commodities* (*PCMC* from now on) *(* (Sraffa, 1960), however adopting a sub-title called “Prelude to a critique of economic theory”. During more than thirty years, this book provided the sole text to try to understand what Sraffa “had really meant”. Since the late 1993s, the opening of the *Sraffa Archives* in the Wren Library, Cambridge changed this situation and permitted scholars to investigate the incredibly numerous writings elaborated by Sraffa but, for most of them, never published. It became therefore less difficult to try to find which was Sraffa’s original message in this or that particular field. The preceding remarks do especially apply concerning the role played by technical and/or social factors in the distinction made by Sraffa between “necessities” and surplus, especially in the context of his attempt to reconstruct Classical Economics. In a theoretical framework trying to restore and renew the economic message of the Classical School, the notion of surplus indeed plays a central role. It is therefore natural to come back to its definition and characterization and to check its real meaning and operationality. The investigation of this central role will be the major purpose of the present contribution.

This focus on the role of technical and social factors in the distinction between necessities and surplus allows to support the interpretation of “snapshots” as “surveyable representations” (in Wittgenstein’s sense, see Arena, 2013) of various surplus-based societies. These societies can indeed be associated with different rules of distribution of the price of the surplus and therefore made distinct and compared, opening the way to a conception of Sraffa’s contribution devoted to a typological analysis of different economic systems.

Technical and/or social factors in PCMC

To-day, there are in the literature two different ways of re-writing the system of “production with surplus” of Chapter II of *PCMC.*

As Kurz and Salvadori noted twenty years ago in their *Theory of Production* (see Kurz and Salvadori, 1995: 33, 43 and 95), the first consists to transform the initial diagonal matrix of outputs (deriving from Sraffa's own notation and including on the diagonal Sraffa's data A, B, ...K; see Sraffa: 1960, 6) in a unit diagonal matrix I assuming that A = B = ...= K =1. Then, each quantity of output A, B...K is assumed to be equal to 1 and each quantity of input i used in industry j is conventionally represented by the *proportion* of the total quantity i used in this industry In this case, the quantity part of Sraffa's system only implies the description of a "recipe", that is, the mere description of the various quantities of commodities which are necessary to produce a "*given* quantity"; it therefore excludes the use of "a model of fixed coefficients *à la* Walras-Cassel-Leontief".

The second possibility consists in assuming constant returns to scale - an assumption which Sraffa however did *not* retain. This alternative is also connected to another important assumption which Kurz and Salvadori noted and consists to assume the existence of a steady state growth path –a concept which is *not* present too in *PCMC* :

> Whenever the economic system under consideration is assumed to be growing, it will be taken to grow along a *steady state* growth path with all endogeneous variables expanding to a given and constant growth rate; this state of affairs is also known as a "quasi-stationary economic system" (...). Steady state growth requires *constant returns to scale* throughout the economy.
>
> (Kurz and Salvadori, 1995: 33)

This second alternative implies therefore the rejection of what Roncaglia called a long time ago the "given quantities assumption" (Roncaglia, 1978: chapter 1, section 8 and chapter 2 section 4; and 2001). It also requires to accept a conception of economic dynamics which is all but neutral: it strongly reminds the Solowian way of considering economic growth and excludes Pasinetti's conception of structural change as Goodwin 's cyclical growth model for instance. Yet, some theorists to-day still incorporate fixed coefficients, adopt price/quantity dual systems and argue that the constant returns to scale assumption is natural or even necessary in a Sraffian framework (Bidard, 2004 or Benetti, Bidard and Klimovsky, 2007, for instance).

The first alternative was characterized a long time ago (1976) and again very recently too by Cartelier (2010). Cartelier indeed defines what he calls a "classical system of prices", namely a system of prices which excludes constant returns to scale as well as quantity changes. These systems are supposed to be made up of two components. The first is *a technique of production* and the set of these techniques in the economy is supposed to generate a non negative surplus product. The second is *a rule of imputation of the price of the surplus*, attributing to each industry a given fraction of the value of the surplus product. This second component allows to define different rules of income distribution and therefore different 'societies' to use Sraffa's own word (Sraffa, 1960: 3). For instance, thanks to this diversity of rule of imputation, Cartelier characterizes various classical price theories (Petty, Cantillon, Quesnay, Smith, Ricardo, Torrens but also Steuart) which differ according to their income distribution rules but accept a common background based on an analogous set of techniques of production and therefore a "classical system of prices" based on reproduction. Now, according to Cartelier's terminology, Sraffa's system of 'production with a surplus' is nothing more than a specific classical system of prices.

The notion of technique of production is related to two different concepts. The first concept corresponds to the necessity of the *repetition* (Sraffa, 1960: 3) of industrial methods of production (Sraffa, 1960: 3) (Sraffa's 'method of production' is equivalent to Cartelier's 'technique of production'). It is also associated to the notions of 'self-replacement' or 'viability' of the economic system. However, the fulfillment of the viability or the self-replacement constraints is also the condition of the *self-maintainment* of the *'society'* which is mentioned in the first line of Chapter I of *PCMC*. The notion of reproduction therefore includes a distinction between the *technological* self-replacement or viability of the economic system, on one side, and the *social* self-maintainment of the society, on the other side.

Technological self-replacement implies a process of destruction and re-creation of commodities, namely the 'production of commodities by means of commodities'. At this point, a new issue emerges: how many commodities is it necessary to destroy productively to obtain more than a simple re-creation of the initial commodities ? The answer is also on the first page of Chapter I of *PCMC*. Commodities are indeed assumed to be "used, in part as sustenance for those who work, and for the rest as means of production" (Sraffa, 1960: 3).

A global surplus may appear "if the economy produces more than the minimum necessary for replacement" (Sraffa, 1960: 6). In this context, Sraffa also refers later to "the necessaries of consumption" (Sraffa, 1960: 10) or the "necessaries for subsistence" (ibid. 12).

In *PCMC* therefore, we first understand that economic systems are not 'societies' but only a part of them. However, the book does not tell much on the nature of the distinction between technological and social factors. We only learn that, as far as technological conditions of production are concerned, *only* means of production and "necessaries for subsistence" have to be taken into account *and nothing else.* The *real* composition of the surplus only depends on these technological factors and not on social ones. To tell it in a different way, the net product of an economy only depends on technology. However, it is uneasy to consider these "necessaries for subsistence" as purely technical factors. Sraffa however notes:

> We have up to this point regarded wages as consisting of the necessary subsistence of the workers and thus entering the system on the same footing as the fuel for the engines or the feed for the cattle. We must now take into account the other aspect of wages since, besides the ever-present element of subsistence, they may include a share of the surplus product. In view of this double character of the wage it would be appropriate, when we come to consider the division of the surplus between capitalists and workers, to separate the two component parts of the wage and regard only the 'surplus' part as variable; whereas the goods necessary for the subsistence of the workers would continue to appear, with the fuel, etc., among the means of production.
>
> (Sraffa, 1960: 8)

At this stage therefore, we learn something new. There are two parts in wages: a 'technical' part which is the only one which can help to understand the *real* composition and size of the surplus or net product and a 'social' part which does not contribute to this investigation but allows to enter into the issue of the distribution of net national income. This is why it is now time to consider more thoroughly this distinction.

The technical and social necessity of wages

A confirmation of the existence of this distinction is given by the fact that, for Sraffa, in a capitalist society, the part of wages corresponding to subsistence is not different from the real costs related to the working of of a machine or of an animal. The idea is that in our society, wage-earners are often considered by producers as a pure cost of production when the first are not sufficiently powerful to share a part of the surplus:

> 'Labour'
>
> There appears to be no objective difference between the labour of a wage earner and that of a slave; of a slave and of a horse; of a horse and of a machine; of a machine and of an element of nature (? this does not eat)
> It is a purely mystical conception that attributes to human labour a special gift of determining value. Does the capitalist entrepreneur, who is the real "subject" of valuation and exchange, make a great difference whether he employs men or animals? Does the slave-owner?"
>
> (Sraffa D 3/ 12/ 9 89)

The same conclusion can be drawn when Sraffa considers what he calls the "slave community" (Sraffa D 3/12 7: 62). He also highlights the fact that the productive use of slaves allows to consider that the necessities of their subsistence are only determined by the necessities of technology and productive logic. The determination of the volume of food of slaves and the satisfaction of their basic needs has nothing to do with any utilitarian or subjective assessment of their necessary inducement to work. Its purpose is to determine the necessities which are just sufficient to allow slaves to continue to provide the volume of labour which is required to them. Moreover, in the case of the slave community, if technological requirements are the only ones to take into account, the determination of their incomes does not depend at all on *social* considerations as it would be the case with wage-earners sharing a part of the surplus. This is why their incomes "are not determined outside economics" (Sraffa, ibid), namely, by social institutions, forms of organization or social conventions. However as we saw earlier, two different problems co-exist. The first is related to the issue of the inclusion of necessities related to subsistence in the technical cost of production. The second is related to the issue of income distribution. Now on this issue, Sraffa notes:

> The problem therefore arises in a slave community: how is the surplus distributed? and how if at all, does the way of distributing it, affect the values of the surplus?
> This is a convenient way of positing the question of value and distribution it its simplest form: it eliminates the (supposed) puzzles connected with the freedom of workers in working more or less or not at all. It shows clearly that the "wages" (i.e. maintenance) of the slave-worker are not to be regarded as a share in the product but as a part of the initial stock, i.e. that they are paid in connection with a work that has not yet yielded a product, before and not after production; that their significance is not "to induce" the worker (which is superfluous, since he is not free) but to "enable" him to work. It also shows that the sort of "cost" which determines values is the collection of material things used up in production and not a "sum of efforts and sacrifices.
>
> (Sraffa D 3/12/7 106)

The existence of a distinction between technical and social determinants of wages is certainly an essential point. However, it keeps open another issue: where is the border between the tecnically necessary determinants of wages and the determinants which only help to obtain a larger part of the surplus? To answer, it will be important now to enlarge our field of investigation and consider what can be considered as really necessary and what cannot when we try to distinguish necessary costs from the net product.

Defining "necessity"

Sraffa fully realized the issue of defining 'necessity' when he had to cope with a system of "production with a surplus" (Sraffa, 1960: chapter II) after having considered a system of "production for subsistence" (ibid. Chapter I). The notes of the *Sraffa Archives* express the analytical difficulties he met. One of the ways he tried to pave was to favour "an entirely objective point of view" or, to use an equivalent expression, a "natural science point of view" (Sraffa D 3/12/7 161 3). However, this choice raised two problems. It first required the introduction of a reflection on the use of mechanistic causality in social sciences, which in that period Sraffa was also investigating. Now, Sraffa was not satisfied by the application of "the principle of sufficient reason" (Sraffa, D 3/12/7 161 5) in the case of the investigation of "necessity". The risk for him was to reach a tautological conclusion: "This is the great difficulty: the surplus is the object of the inquiry, but as soon as it is explained, a cause is found for it, and it ceases to be a surplus. This sounds as of the object of the inquiry had been defined as "the unknown", but if the inquiry is successful it becomes known, & the object of the inquiry ceases to exist!" (Sraffa D 3/12/7 161 3 and 4). Secondly, such "a natural science point of view" would neglect the object of the investigation itself, namely, the distinction between technical and social factors. This is why Sraffa followed a different path:

> Thus there must be a leak at one end or the other: The "closed system" is in communication with the world. When we have defined our "economic field", there are still outside causes which operate in it; & its effects go beyond the boundary. This must happen in any concrete case.
> Consider, e.g. the so-called "natural causes" of rent.
> The surplus may be the effect of the outside causes; & the effects of the distribution of the surplus may lie outside"
>
> (Sraffa D 3/12/7 161 5)

In other words, Sraffa began to admit that *prices* included in a system of equations are partially determined in the 'closed system', namely, by technical necessary costs, but also by 'outside causes' which are related to social or institutional factors. This obviously is not contradictory with the fact that the *real* composition and size of the surplus only depends on the technical necessary factors. We understand now the importance of the dichotomy between techniques of production and the rule of imputation of *the price* of the surplus.

It is however indispensable to go further and to investigate more precisely the nature of the border between tecnnical and social factors. A significant point of departure is given by an important passage included the *Sraffa Archives*:

> 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.
>
> (Sraffa D3/12 18/11)

This quotation reiterates the importance of the distinction between ‘social’ and ‘material necessity’. With this purpose, even if a technical or material necessity is similar to a social necessity, it cannot be mingled with it. Even if a “ticket collector is as productive as a fireman”, we cannot consider them as equivalent. The ticket collector is first supposed to defend at least indirectly the interests of the shareholders, while the fireman first protects the technical viability of the bus or the railway; without the existence of the latter, the risk of the destruction of capital indeed really exists. This means that among social necessities, differences have also to be introduced. Some are very close to technical necessities, while others refer to the social environment of the economic system. In the sentences which follow this quotation, Sraffa notes that social necessities only appear when the producer is not in complete control of them:

> 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 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 D3/12 18/11 and 11a)

However, if modern wage-earners are not slaves and if “shareholders, bankers and creditors” are distinct from the company, this means that the producer does no longer control them. This also means that they have acquired some autonomy which can imply a contradiction between their own self interest and the self-interest of the producer, and therefore social conflicts among them. This is why Sraffa noted that “the abstract "firm" or "company" (and its managers as its spokesmen) regards the shareholders, bankers and creditors as vampires: just as the workers” (Sraffa, D3/12 18/11). The interest of the company is indeed to attribute to these agents respective incomes which it tries to reduce as much as possible. Again, these Sraffa’s remarks confirm the fundamental importance of the distinction in his reflection between the notion of technological necessities and the issue of the division of the surplus price. Thus, in the last two quotations, it is clear that minimum wages refer to the first element of this distinction, while interests, dividends and surplus wages refer to the second. Therefore, interest, surplus wages and dividends are not a part of necessary costs but surplus incomes.related to a given social and institutional system located “outside economics”. Obviously the representation of necessary costs and the share of surplus in a classical system of prices cannot be neutral and is related to the representation of ‘society’ which is privileged by the theoretical point of view adopted

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> 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: Marx is the only economist who takes explicitly & consistently this point of view, - & also Ricardo (spec. in Notes to Malthus) but not consistently.
> Marshall, who tries to take a classless human standpoint, regards all men as responsible subjects, & therefore all human consumption (he includes savings: this question of the inclusion of savings in income is also a question of who is the “subject”), i.e. wages, interest & rent as parts of the surplus (which he calls the national dividend).
> [...]. Keynes, who takes the standpoint of the company director, regards only the “entrepreneur’s” (who is responsible for production) (specially defined) profits as surplus, all the factors having to be induced or paid according to contract (he goes so far as to regard past contracts of the company as part of the given circumstances).
>
> (Sraffa D 3/12/7 161 2)

Sraffa's quotation is in line with Cartelier's reconstruction of various classical systems of price, each of them associated with a specific *rule of imputation of the price of the surplus*. Therefore, Sraffa in his 1960 book considered "the standpoint of the capitalist society itself".
He also noted that means of production and labour had to be paid before production, "enabling" the various technical processes to work; while other incomes have to be paid after production had been made, allowing to distribute the whole or a part of this net product, using this distribution to share the produced net output and answering to the necessity of "inducement" mentioned by Sraffa (see Sraffa, . Sraffa D 3/12 10:97).

Inducement, profit, interest and speculative gains

This conclusion is often confirmed by Sraffa in the *Archives,* for instance in the manuscript classified "Sraffa D 3/12/7 34", in which he compares "two sorts of carrot". The first sort corresponds to "inducement". The capitalist does not require that his income – profit (when the capitalist is also the manager) or interest (when managers and capitalists differ) as a part of profit – has to be paid to him before production as the minimum wages which are included within the advances. He will be paid after production and he will get a part of the price of the surplus. Therefore, when he decides to begin a productive cycle, the capitalist forms expectations on a future income and the perpective of obtaining this income in the future *induces* him to act. By contrast, wages *enable* and do not induce wage-earners to work. This distinction is related to the opposition between cost and inducement.

> Cost is <u>means</u> not <u>inducement.</u>
> The <u>possibility</u> to produce.depends upon the absolute real size of the remuneration: there is no trick possible, it is a physical material necessity.
> The <u>willingness</u> to produce depends upon the way in which payment is made: time wages or piece wages, premiums etc (which can be deducted from initial wage, so as to make the total wage equal to physical necessaries), payment conditional upon delivery of the goods (Robertson in Economica) etc. It is a psychological necessity only and can be overcome by tricks, cheating, etc.
> Cost in the sense of <u>means</u> belong to <u>natural economics</u>, i.e.they are equal in all forms of society and are independent of institutions.
> Cost in the sense of <u>inducements</u> belong to <u>institutional economics,</u> they vary according to "social standards", examples, envy, desire for equality, for rising in social standing, etc. (slavery, wage earners, managers, politicians, artists, all have the same physical needs but require varying inducements)

> [Means are habitual necessaries, as Ricardo says, i.e. physical since that habit is physical; not conventional necessaries, as Marshall says – these are psychological and therefore are part of inducement, not of possibility]
>
> (Sraffa D 3/12 11:98)

However, this representation of capitalists and wage-earners is dependent on another one which charaterizes production and exchange as a circular flow, namely the famous 'year' that Sraffa inherited from James Mill. Yet, in this context, even if wages are part of the necessary costs and interests and profits of the surplus, "in a recurring process of production "before" and "after" are interchangeable terms (or rather, the objects can occupy either place, as the egg and the chicken)".

When individual capitalists are replaced by joint companies as it is the case in the *Lectures on Industry*, things become more complex. As we know, management and ownership are separated and therefore profits, interests, dividends and speculative gains have to be made distinct. In the old type of capitalism, capitalists – who took the risk – obtained residual profits which remained after the payment of contract-fixed advanced wages and of the contact-fixed interest on debt on the surplus (Sraffa, *Lectures on Industry*, 7 (3)). In the trustified type, these contract-fixed incomes are only wages. The price fluctuations on the Stock Exchange affect the incomes of capitalists through the daily variations of the value of the firm and the speculative activities. The firm profits are also affected and therefore financial uncertainty becomes a new factor to consider when we enter into the period of trustification. However, profits, interest and dividends still remain a part of the surplus. Production is the only source of wealth and of the division of wealth among social groups.

Sraffa also coped with the difference between industrial profits and speculative gains (Sraffa D1/18 17). He obviously highlighted the differences between these two types of surplus incomes but he also noted that these differences must nor hide the fact that both have in common the fact to correspond to remuneration of risk. The two forms of risk implied are the reward of a type of risk which is related to gambling for speculative gains and the reward of a type of risk related to firm activity (market supply and industrial investment) for industrial profits.

Abstinence, waiting, saving and interest

Sraffa also dedicated some developments of the *Archives* to the issue of the justification of interest. If indeed interest appears to be paid as a part of the surplus of the net product, then

comes the probleme of its economic justification: Why is interest necessary? Is it useful to production or is it only related to the social and institutional features of the society?
Sraffa's is especially clear and sharp when he refers to the existing economic justifications:

The reward of abstinence
It is a Pity that modern economist should have changed that charming "reward of abstinence" into the more businesslike and far less picturesque "payment for waiting". It is hard to see what is the point in changing it, unless it is a device for making obscure a clear question.

(Sraffa D 3/12/7 33)

For Sraffa, it is first obvious that consumption abstinence, namely saving, cannot be considered to be a serious justification for the renumeration of interest (Sraffa D 1/15 2). Thus, for him, the decision of 'abstaining' to burn a house of which one is the owner may be compared to the decision of 'abstaining' to burn the house of one's neighbour. In both cases what is at stake is not intertemporal choice based on economic rationality but the legal consequences of the action of burning. In both cases house-owners have a fear of the legal consequences, the risk being in the first case to lose the interest and in the second case to be condemned to prison. Therefore the justification of interest is not connected with an individual behavior revealing some economic and moral motivation. It is a social behavior based on the respect of social norms or even Civil Law. We are not far of John Searle conception of "rationality in action" (Searle, 2001).
For Sraffa, the concept of waiting is not more convincing than the concept of abstinence and the same arguments are used to explain that the justification of interest cannot be individual, except for the agent's subjectivist decision, namely, a factor which for him does not provide any explanation:

> "Interest is the reward of waiting" may be true from the point of view of the individual capitalist, who, the more he saves the more he gets interest: but from the point of view of the capitalists as a whole, interest is paid , not because they wait, but because they don't wait: the more they wait, the less interest will they get. The less they wait, the more interest (...)
> But it may be asked, can it not be said also of wages. No, so long as we use wages in the current sense (i.e.inclusive of costs of producing labour) we cannot. This depends upon the fact that both rent and interest are reckoned <u>net</u> of all the expenses that are necessary for restoring land or capital to their former condition, before production was done, wages are reckoned gross of these expenses. Therefore, while rent and interest can be reduced to zero without affecting in the least the productive capacity in the future of the agents of production to which they are paid, wages, not only cannot fall to zero without

> entirely destroying the productive ability of the labourer, but cannot even be reduced below the efficiency level without decreasing such productiveness.(...)
>
> (Sraffa D1/15 6 and 7)

We find again here the fundamental difference between wages and other types of income in the capitalist society. To a large extent, wages are indispensable to the self-maintainment of this society, while other incomes do not and depend on Civil law or institutions.

Rents

Again the issue is to understand if rent enters into real costs or not. Sraffa considered that the answer was depending on the type of rent considered. Absolute rent is related to the existence of diminishing returns on a given piece of land and therefore can be considered as part of the cost. If producers use one given piece of land, they have to pay it since it can be compared to an input as a quarter of wheat, a ton of iron or the daily work of a wage-earner. The situation is different when we consider differential rents related to different fertilities of several pieces of land. In this case, several pieces of land of different qualities are used to produce a given commodity. Because of the assumption of the uniformity of the rate of profit, the less fertile land is the one which will determine the production price asociated to a zero rent. Other lands will benefit from a kind of over-profit corresponding to the value of the differential rent correponding to each degree of land fertility The well-known result which derives from this approach is that, contrary to the case of absolute rent, differential rent ceases to be a component of the real costs of the production price and becomes the result of a price effect which concerns the value of the surplus. Therefore, differential rent becommes another surplus income related to the social relations between capitalists and land-owners.

Concluding remarks

The distinction we investigated in this contribution between natural and social factors in order to better understand the difference between necessities and the surplus is only meaningful if two analytical conditions are realized.

First, the economic system must be considered through a circular flow which assumes “an annual cycle of production and and an annual market” (Sraffa, 1960: 3 and 10). This interpretation of Sraffa's system of production prices is perfectly compatible with the notion of "classical sytem of prices".

Second, this system belongs to a "society" defined by its rule of imputation of the price of the surplus. Now, the existence of this rule implies, in its turn, to consider what is 'inside economics' and essentially concerns techniques of production, quantities and prices. However, economists must also have in mind what there is "outside economics" in relation with the bridge which connects the inside and outside aspects of economics, namely the rules of income distribution which result from the institutional set-up, forms of organization and social conventions. The analytical architecture which we just described is according to us very close to what Garegnani called the 'core'. It is conform to Sraffa's conception of economics which characterized the economy as an open system and not as a closed and self-contained system as the neo-classical tradition defended it during more than a century. It is also in line with a morphological interpretation of Sraffa's contribution based on Wittgenstein's concept of surveyable representation (Arena, 2013).

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