

FROM 'POOL OF PROFITS' TO SURPLUS AND DEFICIT INDUSTRIES: ARCHIVAL EVIDENCE ON THE EVOLUTION OF PIERO SRAFFA'S THOUGHT

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ABSTRACT

This chapter argues that the Marxian theory of exploitation underlies the concepts of surplus and deficit industries that appear in Sraffa's (1960) Production of Commodities by Means of Commodities. This is seen from archival research of the unpublished papers of Piero Sraffa housed at the Wren Library, Trinity College, University of Cambridge. There it is shown that the origin of these concepts lies in the Marxian theory of exploitation that Sraffa developed regarding the notion of the 'pool of profits' the Italian economist utilized over a 14-year period from 1942 to 1956. The chapter engages in an extensive textual study of the archival evidence and then presents a simple analytical model of these relations.

Sraffa and Althusser Reconsidered; Neoliberalism Advancing in South Africa, England, and Greece

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INTRODUCTION

The opening of Sraffa's unpublished archival material beginning in 1993 has led to a wealth of new insights and interpretations regarding the development of the Italian economist's thought. One of the most controversial aspects to emerge out of archival material is the relationship to Marx's theoretical project and how this influenced Sraffa's thinking with respect to his research agenda and eventual publication in 1960 of *Production of Commodities by Means of Commodities* (hereafter referred to simply as Sraffa's 'book'). The received 'Sraffian' interpretation argues that although sympathetic to Marx and socialistically inclined generally, the theoretical lineage in Sraffa runs from Ricardo to the critique of Marshall. What Marx brings to the table, so goes the argument, is actually found in Ricardo, and thus there exists for Sraffa a redundancy theoretically between Marx and Ricardo. This 'redundancy' argument has an interesting parallel to the 'Sraffian' rejection of labour values as also being 'redundant' according to the analysis first put forth by Steedman (1977). However new insights into the Marx–Sraffa connection can now be offered and the present chapter is written along these lines. The basic premise here is that far from being a marginal figure in Sraffa's theoretical development, Marx actually plays a very heavy role in both how Sraffa frames the problems tackled in his book as well the solutions that he advanced for those problems, and further that this is revealed through unpublished archival evidence.¹

Our inquiry here will be very specific and is by no means complete. What we present here is a sketch of the development of particular concepts that play a significant role in Chapter III, §16 through §22, of Sraffa's book – namely those of surplus and deficit industries. We attempt to show using archival evidence² that Sraffa developed these concepts over a gestation period of 14 years, beginning in 1942 with what he terms the 'pool of profits' and ending in 1956 with surplus and deficit industries conceptually developed in the form eventually employed in his book. We further argue that the latter retain the 'fossil' of the earlier 'pool' idea and that the earlier 'pool of profits' concept actually derives from Marx's theory of exploitation, especially after Sraffa re-read Volume I of *Capital* while interned on the Isle of Man in 1940.

The analysis below attempts to demonstrate that for Sraffa the 'pool of profits' represents unpaid labour – and hence exploitation – plain and simple. We argue that for Sraffa, following Marx, this profits pool-as-unpaid labour represented the booty extracted from the working class by the capitalist class which, subsequent to its extraction, is distributed to owners of the means of production according to the general rate of profits on the value of the means of production advanced, and given that industries employ different proportions of labour to means of production, price distortions inevitably arise; this is precisely what surplus and deficit industries are all about.

The structure of the following analysis is broken down into two parts. Part I consists of three sections. In the section 'The Concept of Surplus and Deficit Industries' the notion of surplus and deficit industries (SI and DI) as they appear in Sraffa's book is presented, and explicit emphasis is made on the normalization of the value of living labour set equal to the value of the net product. The section 'The 'Pool of Profits' in Sraffa's Unpublished Notes' introduces the relationship between the 'pool of profits' – a conceptual category that Sraffa utilized for 14 years from 1942 to 1956 – the Marxian theory of exploitation, and SI and DI; presented here are the two sets of notes that 'bookend' this 14-year period. The section 'Textual Evidence' engages in a detailed textual study of much of the archival material within this 14-year span. Part II consists of sections 'Price Movements as the Wage Share Falls' and 'Input Remuneration as the Wage Share Falls'. These represent initial efforts at modelling analytically the content of the archival material and analysis advanced in the previous part. The last section concludes.

PART I

THE CONCEPT OF SURPLUS AND DEFICIT INDUSTRIES

The notion of surplus and deficit industries appears in the third chapter of Sraffa's book entitled 'Proportions of Labour to Means of Production'. Here the surplus- or net output-producing system of basics is subject to variations in distribution wherein relative price changes ensue for all commodities. In order to better understand this third chapter, we put it

in context and consider first the inquiry expounded in the previous two chapters wherein the relative character of the price form is established.

In Chapter I an integrated multi-commodity basic system of production is introduced such that the physical or material gross output (Q) is produced in exactly the amounts required in the productive consumption of the material inputs (A). Sraffa calls this ‘production for subsistence’ and an important quality about this system is the fact that despite output being produced at levels necessary for the system only to maintain itself, a set of ‘unique’ exchange values, or relative prices, no less arises; and that this ‘set of exchange values’ when adopted allows the subsistence system to ‘restore’ itself. This ‘restoration’ takes the form of allowing for the proper allotment of the *ex post* gross output of a previous round of production to that of the *ex ante* input requirements of a subsequent round of production. Sraffa takes as given the ‘methods of production and productive consumption’ which by definition constitutes the particular configuration of *ex ante* input usage to *ex post* output production. In the subsistence model of Chapter I this productively consumptive process is assumed to occur such that no new output results; in terms of the language of Quesnay’s *Tableau Economique*, Sraffa’s subsistence model can be said to consist of a basic system of vertically integrated *net-sterile industries*. And what Sraffa shows is that net-sterility notwithstanding, a ‘unique set of exchange values’ or relative prices no less arises.

In Chapter II the exercise is extended to the case wherein a physical surplus product now arises in the sense that more gross output is produced than required as aggregate means of production; such industries would in our Quesnaysian parlance be *net-fertile*. Sraffa (§4, p. 4), speaks of the system’s ‘self-contradictory’ character in that in the surplus model more physical gross output results *ex post* than required as physical inputs *ex ante*. And here the relative price form is saddled with an added responsibility. As with the subsistence model, in surplus-production prices must serve to ensure that the system restores itself. But unlike the former, in the latter surplus production prices have the added burden of having to equitably distribute at a uniform rate the (aggregate or global) net product to the different (individual or local) industries. And given the heterogeneity associated with the multi-commodity model, the rate at which the surplus is equitably distributed must be simultaneously determined with the relative prices themselves.

The initial sections §4 and §5 of Chapter II introduce these relations within the context of a particular distributive regime, namely that associated with the maximum rate of profit. Now Sraffa does not make this explicit in his book, and retains instead the assumption from the net-sterile

system of the first chapter that subsistence for workers is included in the overall input requirements. But in reality this amounts to the de facto assumption of a net-fertile system at the maximal profit rate regime of distribution, since in this case the labour input is absent and the surplus or net product is wholly distributed to the different industries according to the value of their aggregate means of production requirements.

It is not until §10 that Sraffa makes explicit the labour input which he normalizes to the value of the net output in §12³ and refers to both as 'the national income' (§13, p. 12). Here the system is made more general in the sense that changes in the distribution of the net output are conceived thereby resulting in the inverse relation between profits and post-factum wages, although it will not be until Chapter IV (§30, p. 22) on the Standard commodity that Sraffa will make this inverse relation explicit in terms of the relation $r = (1 - \omega)R$ and the accompanying linear downward-sloping graph.

Arriving to this inverse relation necessitates the traverse of the notions of surplus and deficit industries in Chapter III where beginning in §13 Sraffa generalizes the model by considering the effect on price changes with changes in distribution of the national income. A concept that emerges here for Sraffa as 'key in the movement of relative prices' (§15, p. 12) is the *ratio of labour to means of production* (or *LMP ratio*), defined as the living labour of an industry divided by the value of its means of production. Here we have the particular expression the organic composition of capital takes in Sraffa's book, which in Marxian parlance is simply the inverse of the materialized composition of capital (Carter, 2013, Perri, 2014).

And what Sraffa shows at this stage is relatively straightforward: if the LMP ratio is uniform across all industries, then changes in the distribution of national income between wages and profits would have no effect on the prices of commodities. However if there were inequality in LMP ratios across industries then complications begin to arise. This of course is the well-known problem of the transformation of labour values and/or direct prices into prices of production; but it is instructive to note that Sraffa's approach to this is novel indeed and it is here that the notion of surplus and deficit industries arises. In §14 (and Appendix A on Subsystems) Sraffa commences the analysis from the perspective of prices being at their labour values, and it is from here that systemic distortions ensue from distributional changes associated with decreasing the wage share:

Since in any one industry what was saved by the wage-reduction would depend on the number of men employed, while what was needed for paying profits at the uniform rate would depend on the aggregate value of the means of production used, industries with

a sufficiently low proportion of labour to means of production would have a deficit, while industries with a sufficiently high proportion would have a surplus, on their payments for wages and profits ... There would be a 'critical' proportion of labour to means of production which marked the watershed between 'deficit' and 'surplus' industries. An industry which employed that particular 'proportion' would show an even balance – the proceeds of the wage-reduction would provide exactly what was required for payment of profits at the general rate. Whatever the value of that 'proportion' in any particular system, it can be said *a priori* that, in a system including two or more basic industries, the industries with the lowest proportion of labour to means of production would be a 'deficit' industry and the one with the highest proportion would be a 'surplus' industry. (Sraffa, 1960, §16 and 17, p. 13)

It is from this passage that we are able to read the theory of exploitation in the development of surplus and deficit industries. In Marxian terms we can say the situation begins with a rate of exploitation equal to zero wherein all labour is paid and the national income accrues as pure wage revenue. It then moves to a situation of positive exploitation in the sense that only a portion of labour is paid as accrued proportionate wages out of the total national income, with the remaining unpaid portion of labour accruing as profit revenue. Surplus and deficit industries thus emerge here as the discrepancies associated with the fact that as the rate of exploitation rises, the (initial) amount of unpaid labour extracted from owners of labour ('workers') in an industry is a function of the hours worked; whereas the (subsequent) distribution of this (initially extracted) unpaid labour to owners of means of production ('capitalists') of that industry is a function of the uniform rate of profits on the value of their 'capital'⁴ advanced. The key as Sraffa tells us lies in the notion of an 'average' LMP ratio for the system as a whole; Sraffa calls this the 'critical proportion' which serves as the 'watershed' between surplus and deficit industries.⁵ And here a full-blown Marxian interpretation of the analysis begins: 'surplus industries' are labour intensive and 'deficit industries' are means of production (or 'capital') intensive with respect to the average 'watershed' proportion. Accordingly as the wage share falls from unity, workers in labour-intensive industries will have a magnitude of unpaid labour extracted per hour worked greater than the distribution of unpaid labour owners of such industries receive according to the uniform rate of profit on the value of their (labour-intensive) 'capital' advanced, and Sraffa says that such industries are *surplus industries* in that there is a surplus in the unpaid labour extracted versus that distributed within this industry. Similarly 'capital' intensive industries are deficit industries in that the unpaid labour extracted from workers there is less than that distributed to the owners of the (means of production-intensive) 'capital' advanced.

And in developing this Sraffa utilized over a 14-year period the *pool of profits*. Thus, the pool of profits represents the mass of unpaid labour extracted at the particular rate of exploitation associated with any 'given' regime of distribution. This unpaid labour once extracted is subsequently distributed to the owners of the means of production according to the value of their 'capital' advanced.

In §20 Sraffa remarks that the distortions giving rise to surplus and deficit industries in any actual economic system can yield quite complex and unexpected variations in prices, yet such complexity does not render the basic arguments advanced any less valid, only more complex:

However complex the pattern of the price-variations arising from a change in distribution, their net result, and their complete justification, remains the simple one of redressing the balance in each industry. They fully achieve that objective, but it could not be achieved with anything less. (Sraffa, 1960, §20, p. 15)

From this we can discern that the price form itself serves as the mechanism by which this extractive-distributive process is at once manifested and at the same time concealed.

THE 'POOL OF PROFITS' IN SRAFFA'S UNPUBLISHED NOTES

We first find the concept of the 'pool of profits' in notes written on September 20 and November 12 of 1942. These notes are collected under the heading 'Exploitation' and will be referred to some 14 years later by Sraffa in the 'Majorca draft' of March 1955.⁶ The 'Majorca draft' (D3/12/52) consists of 31 handwritten pages of material written in March 1955 and constitutes the genesis of Part I of *Production of Commodities* (single product industries). After specification of the production equations and a fascinating discussion on the choice of the wage share ('proportional wages') as opposed to the wage bundle ('commodity' wages),⁷ Sraffa in that manuscript begins to discuss the nature of price changes in the face of changes in distribution. We read from the 'Majorca draft' (note that all inserted and cross-out words and paragraphs are Sraffa's⁸):

D3/12/52/13

All we can say at this stage is that the prices will change in all sorts of ways, some rising and some falling. We cannot even be sure that wages + the rate of profits will move in

the opposite direction: for there seems to be nothing to exclude that when, e.g. we transfer a part of the national income from wages to profits, there might be such a fall in the price of the goods composing the national income as compared with those composing the capital, as to cause the rate of profit to actually fall.

This problem of the price relation between commodities composing the national income + those composing the capital is the first that must occupy us.

~~The notion of national income at bottom is basically independent of prices. In effect the systems we have been considering are capable of reproducing themselves after each annual cycle, since we find among their aggregate product all the commodities, + in at least the same quantities, as have been used up in production. These can therefore item by item be segregated from the product, + what is ^{item by item} left over is the net national income: this is a collection of commodities which can be determined without need to know their values.~~

Insert pages of 1942 on prices, wages, and pool of profits headed 'Exploitation'⁹

and then

Insert pages of 1945-6 on Social Revenue or National Income (repetitive or not).¹⁰

The circle around these two concepts appears in Sraffa's hand. Clearly he was inserting here important ideas that he had developed in the 1940s.

The interesting part of this for our immediate purpose is the inclusion of the 1942 'Exploitation' insert. The pages that Sraffa is referring to are found in D3/12/17 (Notes: Prove and Finding Lists; 1942–1955). In fact this entire folder contains a wealth of information related to the 'pool of profits' and the nascent development of the surplus and deficit industries concept as well as the above referenced 1945–6 pages on Social Revenue. The file begins with the aforementioned notes headed 'Exploitation' and ends with notes of September 1955 on the 'pool of profits' and the implications this concept has for the problem of pricing in socialism. The fact that the end of the file contains notes from September 1955 indicates that Sraffa compiled its contents after his writing of the 'Majorca draft'.¹¹ It is here that the ideas from the 1940s and the mid to late 1950s begin to meld.¹²

The question Sraffa raises in the context of the 'pool of profits' refers to the complex distortions of prices from values when distribution of the net product changed. In the early 1940s Sraffa began to study and conceptualize this problem from a Marxian perspective as evidenced by the above referenced notes 'Exploitation' and also by an instructive note that Sraffa

had made on a piece of ruled paper that appears folded inside the front cover of the English edition of *Capital*, Volume I that Sraffa had (re-)read while interned on the Isle of Man in 1940:¹³

The greater the degree of exploitation in a society as a whole, the greater is the distortion (i.e. ~~the greater~~ the divergence between values and prices). As, the greater the amount of snow fallen, the greater is the distortion of the surface of a piece of broken ground (i.e. divergence between the surface of the snow and that of the ground underneath; ~~supposing that~~ since the snow collects in the cavities). (Sraffa, p. 3731)

Notice here how Sraffa begins to frame the problem – and it will be shown that the way he framed it led him to the specific solution he advanced. Here Sraffa compares unpaid labour extracted as ‘snow’, and that the more unpaid labour extracted (‘snow fallen’), the greater the distortion between value and price (‘surface {and}... broken ground’). Sraffa’s ‘snow’ here is essentially the same concept as the ‘pool of profits’ he would pen two years later.

Sraffa was deeply influenced by his re-reading of *Capital* in 1940. Indeed his understanding of the historical nature of exploitation we can in large part trace to Marx. He was especially taken by Marx’s exposition of the expression of paid and unpaid labour across historical epochs. In Part Six: Wages, Chapter 19 ‘The Transformation of the Value (and Respectively the Price) of Labour-Power into Wages’, Marx discusses how in slavery all labour appears to be unpaid when in fact a portion is paid for; how in feudalism the demarcation between paid and unpaid labour is transparent in both time and space; and how in capitalism all labour appears paid when in fact a portion is unpaid. From Marx we read:

The wage form thus extinguishes every trace of the division of the working day into necessary and surplus labour, into paid and unpaid labour. All labour appears as paid labour. Under the *corvée* system it is different. There the labour of the serf for himself and his compulsory labour for the lord of the land, are demarcated very clearly both in space and time. In slave labour, even the part of the working day in which the slave is only replacing the value of his own means of subsistence, in which he therefore actually works for himself alone, appears as labour for his master. All his labour appears as unpaid labour.† In wage-labour, on the contrary, even surplus labour, or unpaid labour, appears as paid. In the one case, the property-relation conceals the slave’s labour for himself; in the other case the money-relation conceals the uncompensated labour of the wage-labourer.

†The *Morning Star*, a London free-trade organ which is so naïve as to be positively foolish, protested again and again during the American Civil War, with all the moral indignation of which man is capable, that the Negroes in the ‘Confederate States’ worked absolutely for nothing. It should have compared the daily cost of a Negro in the southern states with that of a free worker in the East End of London. (Marx, 1976, p. 680)

In Sraffa's copy of *Capital* we find the following notes on this passage by Marx written on a piece of ruled paper also inserted in the front cover the text:

Serfdom: labour for lord, and labour for himself, are clearly separated

Slave-labour: all labour appears as done for the master

Wage-labour: all labour appears to be paid for

- N.B. 1. Those who (like Croce) say that the labour theory of value applies to an 'ideal' community, in which commodities actually are exchange at their value, might as well say that the theory of surplus value only applies to serfdom, in which labour is clearly ^{actually} divided into two parts, paid + unpaid. However, the only difference (between these cases and capitalism) is the fact that there obvious + here concealed.
- N.B. 2. It is as absurd to say that the theory of surplus value implies an attack on capitalism, as it would be to say that it implies a defence of slavery: it simply removes a veil, which whitewashes the former + blackens the latter (See M's footnote ... ridiculing the Morning Star for being taken in by the appearances + saying that the negro slaves 'worked for absolutely nothing'). (Sraffa p. 3731)

This idea had a lasting impact on Sraffa. It is our contention that Sraffa's task was to render clear the concealed exploitive nature of capitalism through the demonstration that the mechanism through which it is hidden is the price system (money form) itself. We further contend that this idea remained for Sraffa the *modus operandi* of his book.

In 1942 we find Sraffa again grappling with the question of exploitation. In the above referenced notes headed 'Exploitation', we find four pages written on notebook paper (D3/12/17/2-5). The first page is dated September 20, 1942 and is a self-contained document. The latter three pages are a continuous document dated November 12, 1942 which continues discussion from September. The first page contains a very interesting diagram of price movements in the face of changes in distribution. In constructing this diagram Sraffa distinguishes commodities according to the respective value of the organic composition of capital. We read from that first page:

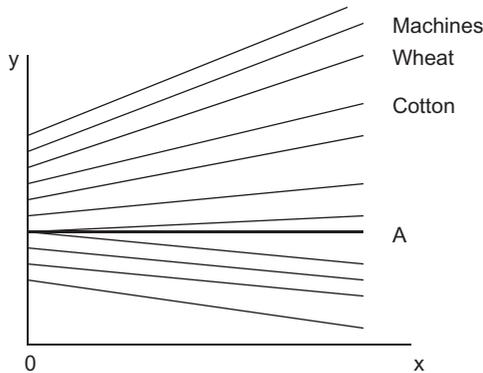
D3/12/17/2

20.9.42

'Exploitation'

Having built up the system, make it move. Begin by moving w , by steps, to its maximum position. All the prices of individual commodities will move, some rising, some falling. Represent all this by a single diagram. On the ordinate represent prices so that there is a curve for each commodity: arrange the commodities, from top to bottom, in order of

decreasing organic composition, so that, with a fall of \underline{w} , the top commodities will fall, the middle one unchanged, + the bottom one rise. The point 0y represents 'values'.



none } On the abscissa represent $1-w$, or $\frac{s}{v}$,¹⁴ or some other function of the proportions in which the product is distributed (!); choosing the function that gives the simplest curves, preferably the one (if available) that gives straight lines.¹⁵

\underline{w} increases equally in all industries. We notice that in low composition industries, \underline{w} , as it increases, absorbs more than the total profits previously made in that industry; when \underline{w} reaches its maximum (at the point 0) in each of the industries below the middle, \underline{w} has increased more than the profits have decreased in the same industry. (On the other hand in industries above the middle, \underline{w} rises by less than profits fall).

It is clear that 'exploit.' was equal in all industries, in spite of appearances. It is also clear that this is a social phenomenon; even if the capitalist in the low comp. industries gave all their profits to \underline{w} , they would still be exploited by cap. society as a whole.

The logic of the graph is brilliant in its simplicity. What it shows are prices of a variety of products produced by a variety of industries. At the origin the wage share is unity such that the vertical intercepts represent labour values. As we move away from the origin the wage share declines and distortions begin to set in with respect to values. The price of some commodities increases while that of others decreases. The rise or fall of the respective prices will be functions of the value of the organic composition in the producing industry. An average composition is clearly demarcated as a horizontal line (it also appears darker in the notes). As wages fall those commodities produced with lower organic composition of capital (labour intensive) will exhibit a fall in price relative to the average and those commodities produced with higher organic composition of capital (capital intensive) will exhibit a rise in price relative to the average.

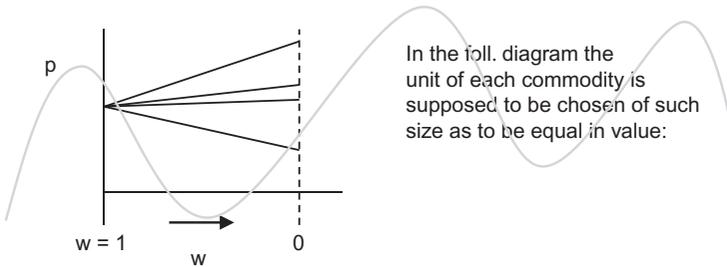
Sraffa will come back to this very idea in notes written on February 12, 1956. We find in the file D3/12/59: Balancing of Wages and Profits¹⁶ the following interesting restatement 14 years later:

D3/12/59/31-2

12.2.56

Under these circumstances as we reduce the wage the prices of commodities would depend exclusively + in a simple manner from the proportions by which they were produced. The price of each commodity would uniformly rise, or uniformly fall, throughout the interval, the degree of the rise and fall depending exclusively on the proportion of labour to means by which it was produced.

We could arrange the various products in the order of the degree of price variation beginning with at one extreme with the one whose rise was steepest + ending with the one which fell most sharply.



In the middle there is ^{just} room for one product which has no tendencies either to rise or to fall: since the standard of prices is the aggregate means of production this implies that it is produced by such proportions of labour + means of production that there is within the industry producing it an exact balance at all steps in the variation between deduction from wages + addition to profits.

It is of interest to note that Sraffa crossed the diagram out in his notes and it is curious why he would do so given the simplicity of exposition of the argument such a graph can (and does) provide. This could perhaps be related to the ultimate non-inclusion of the 'profit pool' in the published work.

These two diagrams represent an interesting restatement and reappraisal of the concepts behind the pool of profits some 14 years removed. But more than that, these diagrams also bookend both the beginning and ending points, the alpha and the omega, for the 'profit pool' concept. In other words, although in its nascent form in the notes on *Capital* of 1940, we *first* find the usage of the term 'pool of profits' in notes dated three months after the initial 1942 diagram (first graph dated September 20, 1942; 'pool of profits' first appears in notes dated December 11, 1942); alternatively five days before the second diagram we find the *last* usage of the 'pool' concept

('pool' last appears February 7, 1956; second graph dated February 12, 1956). This is in fact a very interesting discovery because we argue it indicates how Sraffa came full-circle in developing and then discarding an important idea that would help him evolve the concepts of surplus and deficit industries which do in fact prominently appear in his book.

TEXTUAL EVIDENCE

The period of gestation for the 'pool' concept lasts for 14 years, from September 1942 to February–March of 1956. Our initial research has uncovered 46 specific document pages from 10 different file folders in Sraffa's Archives over these 14 years. Table 1 lists the 10 different file folders and the corresponding titles which contain the 46 relevant documents for this study. Note that the file folders are sorted according to archival number and not chronologically.

Of these 10 file folders, in addition to the Majorca Draft (the importance of which we discussed above), the most important are D3/12/17 which contains seven documents, D3/12/45 and D3/12/53, each of which contains six documents and D3/12/59 which contains 18 documents. D3/12/17 spans 13 of the 14 years of gestation of the profits pool concept and accordingly this

Table 1. Archival File Folders Used in Present Study Sorted by Archival File Folder Number.

File Folder Number	Number of Documents	Title of Folder (Quotation Marks Indicates File Name Given by Sraffa)
D3/12/2	1 document	'Notes including some working by Frank Ramsey and Abram Besicovitch (1926–1955)'
D3/12/17	7 documents	Notes: 'Prove and Finding List (1942–1955)'
D3/12/44	1 document	'Notes (August 1946–1948)'
D3/12/45	6 documents	'Points possibly still useful on the balance of wages and profits (November 1955)'
D3/12/50	2 document	'Rubbish (transferred to clean copy) – 1955'
D3/12/52	1 document	'Majorca Draft' (March 1955)
D3/12/53	6 documents	Notes: 'Discard (almost certainly), mostly on the Standard commodity (January–March 1955)'
D3/12/54	2 documents	Notes: 'Left at Cambridge September 1955 on Standard Commodity (August 1955)'
D3/12/59	18 documents	'Balance of Wages and Profits (probably finished) 24.11.55 up to March 1956 (1955–1956)'
D3/12/61	2 documents	'Discarded used drafts (1955–1956)'

file folder gives a nice birds' eye view of the development of Sraffa's thinking. In D3/12/45, written in November 1955, we find only one direct reference to the profits pool concept but several references to the idea of a 'dividing line' between industries and first and second order price complications-Sraffa calls them 'factors'-that arise with changes in distribution. In D3/12/53, written from January through March 1955 (immediately prior to the Majorca Draft), we find the two conditions for the 'stability' in a standard as well as discussion of changes in the physical net product with changes in income distribution, the latter being something that Sraffa will return to in the eventual demise of the profits pool concept. In each of these three major file folders the profits pool concept is presented in a very positive light and we infer that at this point Sraffa intended to include it in his book. However when we get to D3/12/59, written in the three month span from September through November 1955, things begin to change. Here we begin to find skepticism on Sraffa's part regarding the profits pool concept. It must be noted that this skepticism seems to have troubled Sraffa. It seems, at least from our reading of the documents, that Sraffa became uneasy with what he saw as a 'collapsing' of the pool concept. We further argue that out of the ruins of the profits pool concept rose those of surplus and deficit industries and that the latter contain the fossil of the former, and hence also that of the theory of exploitation Sraffa discerned from Marx.

Table 2 contains in chronological (not archival) order these 46 documents and Fig. 1 reproduces many of the important documents in terms of a timeline.

In retracing Sraffa's chronological development of the profits pool concept during the 14 years between 1942 and 1956, our research has uncovered the following tripartite periodization:

First period: September 1942 'Exploitation' notes (D3/12/17/2) through March 1955 Majorca Draft (D3/12/52). Here the pool concept is derived from Sraffa's interpretation of Marx's theory of exploitation (as evidenced from Sraffa's Notes on *Capital*). In this period the concept is laid as a conceptual building block for Sraffa's system.

Second period: September 1955 (D3/12/17 and D3/12/53) through November 1955 (D3/12/59), as well as spattered comments in July and August 1955. Here we have a full-blown study of the 'pool' concept complete with its rise (September) and its ultimate fall (November).

Third period: Post-November 1955 through Post-March 1956 (D3/12/67). Here we have the development of the surplus/deficit industry concept and spattering references to the 'pool', each marked with increasing uncertainty. After March 1956 'pool' disappears from notes and exclusive focus is on the surplus/deficit industry concept.

Table 2. 'Pool' Concept Chronologically Sorted (with Brief Comment).

Date	Trinity Catalogue	Comment
1942–1948		Years subsequent to Sraffa's 1940–1941 re-reading of Marx's <i>Capital</i>, Volume I
20/9/1942	D3/12/17/2	'Exploitation' with diagram. Sraffa begins this with statement 'Having built the system, make it move ...' The 'move' Sraffa refers to is that of distributional changes.
12/11/1942	D3/12/17/3	Earliest usage found so far of term 'social pool'; Sraffa here develops the distinction between social or aggregate profits versus individual industry profits.
Early 1945 (?)	D3/12/2/20	No date and in a folder labelled 'Useful' which contains documents from 1926 to 1955; probably 1945 because of the use of 'organic composition' term.
27/8/1946	D3/12/44/10	'Pooling of profits' is seen as an automatic process achieved through 'price-reckoning'.
27/8/1948	D3/12/17/11	Document entitled 'The Profits Pool'; Note that Sraffa revisits this document in January 1955. This is an early extended statement of the 'pool' concept (very important).
1955		September through November 1955 are the most prolific months
March 1955	D3/12/52	Majorca Draft. This is an important pivotal document in Sraffa's intellectual development. Among other developments this document contains explicit references to notes written in 1942 and 1945–1946.
17/7/1955	D3/12/54/12	Part of two page document that speaks of commodities adding and taking from pool.
8/1955	D3/12/54/3	In a table included in an early outline of his work, the 'pool' concept appears as one of the 'passi essenziali' or 'essential steps'.
9/1955	D3/12/17/20	This document is an outline of Sraffa's 'schema' or plan. Here he speaks of the 'two causes of change in price relatively to other commodities': (1) different quantities of labour to means of production for the 'immediate' commodity; and (2) change in the value of aggregate means of production of one commodity relative to another. Sraffa will speak of these two 'factors' or 'causes of change' in repeated documents.
7/9/1955	D3/12/50/8-9	'Rubbish' folder; contains a small blurb that speaks of complexities with respect to changes in prices. This speaks especially to the second 'cause' or 'factor' as per D3/12/17/20.
7/9/1955	D3/12/53/1	This document speaks to the idea of 'stability' in the means of production with respect to price changes and also discusses the use-value aspect of the distribution problem; namely that the size of the net product in an industry can change with changes in distribution. This will be related to Sraffa's example of the 'shoe industry'.

Table 2. (Continued)

Date	Trinity Catalogue	Comment
7/9/1955	D3/12/53/2	Document entitled 'Approach'. Here Sraffa speaks of the conditions of invariability as being such that no price change is required when distribution changes for the invariable commodity.
10/9/1955	D3/12/17/16	This document discusses the conditions for the equalization of profits among industries with a change in distribution. Here Sraffa notes that the wages changes per industry do not go into the 'pockets' of owners of these industries. Also noted here is the idea that prices distribute physical net product in each industry.
10/9/1955	D3/12/17/17	This document follows immediately from the previous and is a concise statement of how the profits pool concept and the resulting price movements shows that the criticism of pricing in socialism is 'not well-founded'. Sraffa here accuses both von Hayek and Joan Robinson of this error.
24/9/1955	D3/12/53/22	Brief outline of Sraffa's plan with 'pool (anti-socialist)' as one of the entries.
9/1955	D3/12/53/24	Another outline – looks like a subsequent development of D3/12/53/22.
9/1955	D3/12/53/25	Sraffa speaks of the 'criss-crossing of prices' as shifting the use-value quantity and distribution of the physical net product.
29/9/1955	D3/12/17/18	This is a more developed version of D3/12/53/25. In this version Sraffa more clearly locates how the distribution of the profits pool is 'effected through the price system'.
9/1955	D3/12/53/31	Another version of the criticism of the critique of socialist pricing using the profit pool concept.
14/10/1955	D3/12/59/73	This document is a non-numeric exposition of Sraffa's 'shoe industry'. The example of the 'shoe industry' is one that illustrates the fact that the physical size of the net product of an industry changes simple with respect to the change in distribution. Sraffa's shoe industry is an example of a surplus industry and he shows there that as the wage share falls, the size of the net product will also fall. Thus, whenever Sraffa puts 'shoes' in an outline or a marginal note he is referencing the idea of quantity size changes with changes in distribution.
10/1955	D3/12/59/74	This document is a numeric illustration of Sraffa's 'shoe industry'.
14/10/1955	D3/12/59/63	This document speaks of the 'second factor' complications such that what are at first sight either surplus or deficit industries may experience, due to the second factor, price movements that are not to be expected if only the first factor is taken into account.
10/1955	D3/12/59/65	No mention of 'pool' explicitly but does address the need for price movements to redress the balance in wages and profits at the industry level.

15/10/1955	D3/12/59/68	Earlier draft of D3/12/59/65.
16/10/1955	D3/12/59/67	Later draft of D3/12/59/68.
10/1955	D3/12/59/69	This document is a small blurb on the complications from 'secondary influences'.
11/1955	D3/12/59/70	Outline of plan that begins with 'organize'; discusses aspects mentioned in documents above.
11/1955	D3/12/59/71	More detailed outline of plan in D3/12/59/70; does include 'image of the pool (limitations)' which indicates somewhat of a retreat of the 'pool' concept. Could be the earliest evidence of the 'retreat'; see D3/12/59/53 which has an exact date in late October.
11/1955	D3/12/59/72	Sraffa refers to 'a sort of pool' and that this 'pool operated through the price system'; includes term 'deficiencies' and 'surpluses'. The idea of a 'sort of pool' again indicates a retreat from the concept.
28/10/1955	D3/12/59/53	In this document we have a specific date RE: Sraffa's uneasiness with the 'profits pool' concept based, on the physical use-value changes in net product with changes in distribution. We read here that '... is then not the pool a myth?'
11/1955	D3/12/45/3	No specific mention of the 'pool' but a brief blurb on the conditions for surplus and deficit industries.
11/1955	D3/12/45/4	Again no specific mention of the 'pool' but advanced development of the idea of a 'dividing line' industry from which no change in price is necessary with distributional changes. Also Sraffa speaks of the 'element of instability' that arises from the 'second factor'.
11/1955	D3/12/45/5	In this document Sraffa speaks of the 'general conditions of stability' of a standard which is related to the 'two causes' spoken about in D3/12/17/20.
11/1955	D3/12/45/12	In this document Sraffa asks the question of whether or not the search for an invariable standard (or 'stability' generally) 'is ... a chimerical question?'
11/1955	D3/12/45/13	Subsequent page of a document (the first page was not found in our initial research) in which Sraffa speaks of price changes in the face of distributional changes '... the same as if a social pool of profits were operated ...' Also Sraffa in various marginal notes speaks of how the price system accomplishes 'redress' or 'balance' as well as the notion that complications from the 'second factor' can be abstracted from, but not so of the 'first factor'.
11/1955	D3/12/45/17	This is an important document that speaks of the 'redistribution of national income between industries ... as a complement of its redistribution between capital and labour'. Sraffa returns to this idea in D3/12/59/50–51.
11/1955	D3/12/59/50	This is a more advanced version of the idea that the 'redistribution of national income between industries ... as a complement of its redistribution between capital and labour'. Also here the 'pool' concept is not definite: 'The result is the same as if there were a social pool of profits ...'. The 'as if' once again indicates Sraffa's retreat.

Table 2. (Continued)

Date	Trinity Catalogue	Comment
11/1955	D3/12/59/51	This document speaks of the diagram idea in content and also the idea that the 'redistribution of national income between industries ... as a complement of its redistribution between capital and labour'.
4/11/1955	D3/12/59/55	This document is probably before this date since date is written on back. On the front we find more of Sraffa's skepticism. It is entitled 'After pool' and there we find '[t]he image of the pool is suggestive but not accomplished too far ... after pool (not to take too literally)'. But the 4/11/1955 note on the back notes that maybe the pool concept is not as unaccomplished as the front page indicates. We take this as Sraffa's indecision at this point on the pool concept.
5/11/1955	D3/12/59/57	Here Sraffa gets very negative on the pool concept. We read that the 'collapse of pool seems more disastrous than ever ...'
6/11/1955	D3/12/59/78	Develops the pool concept in a positive light which we take as an effort to rehabilitate it; this document also includes the example of the shoe industry which we argue is related to the reason why the pool concept was ultimately abandoned.
15/11/1955	D3/13/59/62	This document is an outline of Sraffa's plan. Although the term 'pool' is not mentioned, the term 'pockets' is and this latter term is a reference to the pool.
17/11/1955	D3/12/59/60	Document entitled 'On the retrieve of the pool'; here Sraffa attempts to rehabilitate the pool concept but in the end indicates that it may be somewhat tautological; although he does not clearly spell this out.
1956		By 1956 'profits pool' concept all but abandoned
1/1/1956	D3/12/61/48	This document is a rough outline of how Sraffa intended to proceed. In developing the idea of unbalance we find explicitly the statement that 'N.B. This is also the opportunity to revive the transfer of profits between industries (profit pool)'. Thus, we conclude that by this time Sraffa had abandoned the pool concept such that if it were to be included it would have to be 'revived'.
7/2/1956	D3/12/61/42	In relatively advanced notes on how prices move when distribution changes we find on the back of the document an outline of the argument that has the term 'pool?' (with the question mark) circled. This is the last instance of the term 'pool' that our research has uncovered. From this point forward Sraffa does mention the 'profits pool' concept again.

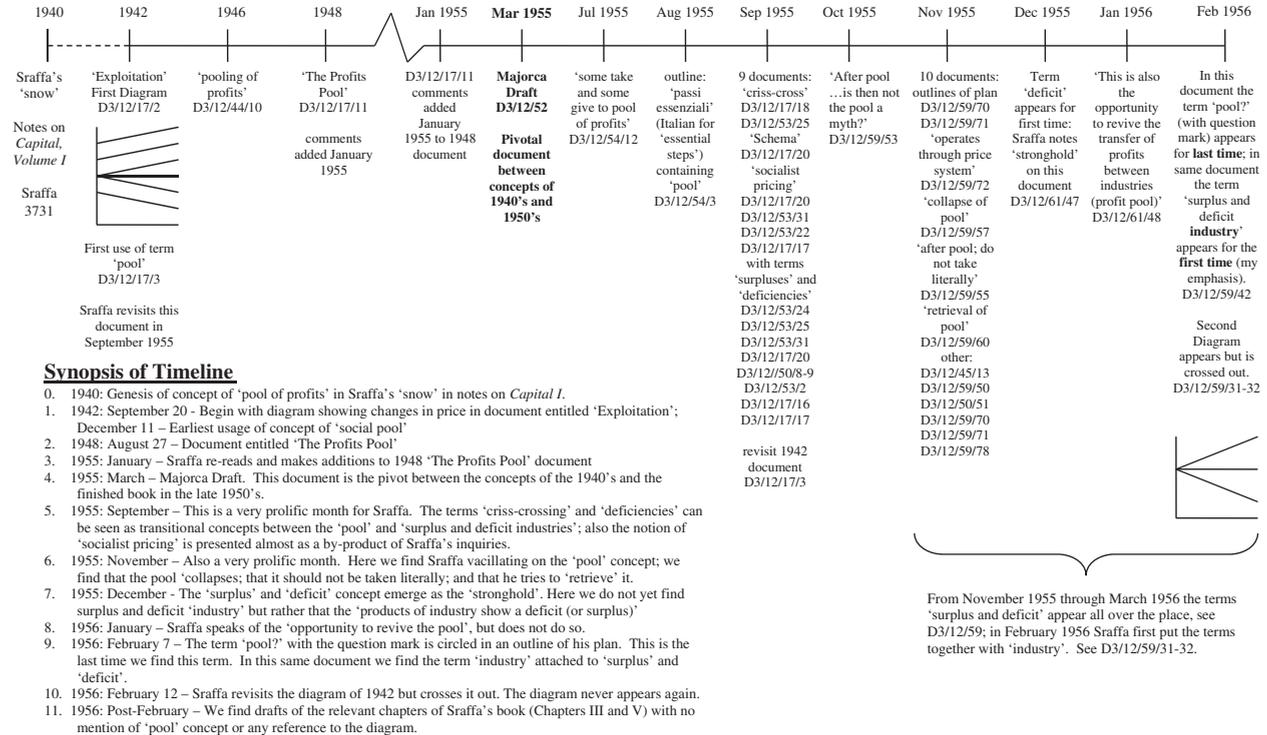


Fig. 1. From 'Pool of Profits' to 'Surplus and Deficit Industries': Timeline.

First Period: September 1942 through March 1956

We have seen earlier that upon re-reading Marx in 1940 Sraffa argues that price distortions will be magnified as exploitation increases. We have also seen from this re-reading that Sraffa was keenly aware of the idea that the exploitive nature of capitalistic systems is concealed such that wage labour has the appearance of being completely paid. It was Sraffa's contention, developed below, that the price system itself is that which is responsible for concealing this exploitation.

Consider again the document 'Exploitation' (D3/12/17/2) quoted earlier. Recall this was written on September 20, 1942 and there we find the interesting first diagram of value-price distortions across industries and commodities in the face of changes in distribution. Since in general different industries have different compositions of capital (or proportions of labour to means of production), Sraffa notes that relatively labour intensive industries fall in price as wages fall whereas capital-intensive industries rise in price with this same wage reduction. It is the general rate of profits coupled with the uniform rate of exploitation that cause these distortions in values from prices. Thus, here we infer that for Sraffa the key notion is the relationship between the unpaid labour *extracted* by workers at the level of the industry versus the unpaid labour *distributed* to owners at the level of the industry, the two in general not being equal in value due to different conditions of production across industries. The mediating relation between the extraction and distribution is that of total social profits. In terms of logical rather than historical time, workers in each industry create an amount of unpaid labour which is subsequently aggregated for society as a whole (the 'pool'), and it is from this aggregated extracted unpaid labour that the owners of capital are equally remunerated according to the general rate of profits. Sraffa here clearly echoes Marx. Indeed Marx too refers to such a process occurring in capitalist society, a process which he calls 'capitalistic communism'. In a letter to Engels dated April 30, 1868, Marx writes:

It then follows that, the rate of surplus value, i.e. the exploitation of labour, being assumed as equal, the production of value and therefore the production of surplus value and therefore the rate of profit, are *different* in different branches of production. But out of these different rates of profit a mean or general rate of profit is formed by competition. This rate of profit, expressed in absolute terms, can be nothing else than the surplus value produced (annually) ... in relation to the total capital advanced by society as a whole ... What competition between the various amounts of capital – which are invested in different spheres of production and have different composition – is striving

to produce is *capitalistic communism*, namely that the mass of capital belonging to each sphere of production receives an aliquot part of the total surplus value proportionate to the part of the total social capital which it constitutes. (Marx & Engels, 1975, p. 193; emphasis in text)

And from *Theories of Surplus Value* we read:

It is a matter of indifference to the capitalist whether his commodity contains more or less unpaid labour than other commodities, if into its price enters as much of the general stock of unpaid labour, or the surplus product in which it is fixed, as every other equal quantity of capital will draw from the common stock. In this respect *the capitalists are 'communists'*. (Marx, 1971, p. 83; emphasis in text)

It is in this respect that we argue Sraffa's inquiries were at least in part an attempt to formalize and explain the 'communism of the capitalists' that capitalistic price formation brings about. Also note from the *TSV* quote that Marx considers the reallocation of surplus *product* as well as surplus (unpaid) labour. This idea of surplus product redistribution will become an important element in Sraffa's inquiries.

Sraffa returns to many of these ideas in the next set of notes already introduced above entitled 'Exploitation, cont.' written three weeks later on November 12, 1942 (D3/12/17/3-5)¹⁷:

D3/12/17/3

'Exploitation' cont.

As wages decrease by a given proportion the total of profits, for society as a whole, increases by the same amount. But this is by no means true for any individual industry taken as separately: the increase in the total of profits, in any one industry, may be e.g. smaller than the decrease in the total wages paid in that industry. Where does the difference go? It goes, of course, to industries where the profits increase more than by the fall in their wages. And the adjustment is brought about by a fall in the price of the commodities produced by the former industry and a rise of those produced by the latter.

8.9.55 N.B. in terms of their means of prod.'

Thus, the proceeds of a reduction of wages, don't simply pass from the pockets of the workers to those of their employer. They go, as it were, into a social pool ^{of profits} to which each industry contributed in proportion to the importance of its particular variable capital[†]; and which is then shared out, among the various industries, each receiving in proportion to their particular total capital (variable and constant).

Expand this and say 'and its contribution has no relation whatever with the amount of [rather 'unknown'] constant capital which it employs. (Cp. Böhm-B., Cap. and Int. (Smart), p. 390)

This is the first explicit usage our research has uncovered of the term ‘pool’. The parallel to Marx is quite striking. Profits generated at the industry level do not, argues Sraffa, ‘pass from the pockets’ of workers in that industry to capitalists of that industry. Rather, there is a larger ‘social’ mediating process at work – one that equalizes the return to each aliquot part of capital according to its value. The language of ‘passing from the pockets’ is here used for the first time and will reappear often in subsequent notes. Indeed, in some instances, for example, in out-lines, etc., Sraffa will simply put ‘pockets’ which we now know refers to the processes behind the redistribution of the profits pool. It is of interest to note that the ‘of profits’ part in the document was inserted by Sraffa some 13 years later. This is conclusive evidence of Sraffa’s revisiting the profits pool concept at this later date, and the fact that the insert dates from September 1955 is consistent with our claim above that at this time the concept itself had not yet ‘collapsed’. We next consider evidence from what we conjecture is early 1945.¹⁸ In D3/12/2/20 we find the following short statement:

D3/12/2/20

Point out how by knowing the organic composition ~~and the value of each capital for $r=0$~~ we know what the proportionate contribution of each will be to the pool of profits with the fall of w .¹⁹ But that knowledge is not sufficient to determine how much each capital will receive in the distribution of profits: for that depends on the price of known capital, which (although known for society as a whole) varies in price in each particular industry with the variations in wages. For that it is necessary to know also the periods of rotation of the components of known capital

Once again the extractive-distributive process is presented. Here however the ‘feedback’ effects in terms of the changing price of means of production with changes in distribution are explicitly problematized, here expressed in terms of the turnover (‘rotation’) of the different capitals. But generally speaking cracking this nut of the feedback effect (the so-called ‘transformation of the inputs’) would occupy Sraffa’s thinking for many years, and it was precisely on this path that he was led to the concept of ‘stability’ in the means of production, a notion which eventually blossomed into the Standard commodity and the Standard system. What is significant is that here, in 1945, the price system itself begins to emerge as the ‘mechanism’ (a term he would use a year later) from which the distribution of the unpaid labour of capitalist society manifests. Sraffa has now explicitly embarked on his effort to ‘lift the veil’ of capitalist exploitation.

This role of the *price system* in effectuating this redistribution process is explicitly recognized in a document dated August 27, 1946. In D3/12/44/10 we read the following:

D3/12/44/10

27.8.46

Price-reckoning may be defined as a method which automatically (i.e. through the mechanism of prices) distribute profits in proportion to capital. But such a distribution can be secured also by value reckoning – only then it requires an additional mechanism, e.g. taxation or pooling of profits.

This is a very interesting statement. In it Sraffa makes the explicit distinction between ‘price-reckoning’ and ‘value-reckoning’. The idea of ‘reckoning’ in general refers to the process that occurs when both the rate of exploitation and the rate of profits are assumed to be uniform in a system of production with different compositions of capital. In later developments (including that of his book), Sraffa refers to this process as the ‘redressing of unbalance’ between wages and profits within and across industries when distribution changes. In either the price or the value case, this ‘reckoning’ results in the unpaid labour extracted being distributed equitably to the owners of capital. In the case of price-reckoning, this redistribution is ‘automatic’ that is, by the mere formation of the competitively determined (natural) prices. If however we stay in the value system, then some ‘additional mechanism’ will be required, and it is here the profits pool come into play. *This is the closest Sraffa comes in explicitly identifying the profits pool-as-unpaid labour.* This would also be the last time that Sraffa tied the profits pool concept explicitly to reckoning in the value system.

In 1948 Sraffa conceptualizes the pool concept not only in terms of price reckoning, but also considers the reckoning in terms of the use-value products of each industry. Gone is the reference to the reckoning in the value system and from this point further value is referenced only in terms of prices when the wage share is unity. The reckoning in terms of product will later in 1955 become a crucial point, and it was precisely this notion of reckoning in use-values, and the subsequent changes in the size of the physical net product of an industry resultant from changes in distribution alone (technology constant), that in the end forced Sraffa to abandon the pool concept altogether and replace it with that of surplus and deficit industries. The following document from 1948 thus represents the most developed statement and assessment to date of the concept of the pool. It is dated August 27, 1948 and is simply entitled ‘The Profits Pool’ (note that

Sraffa revisits this document in January 1955 in the marginal notes and insertions in pencil):

D3/12/17/11

27.8.48

The Profits Pool

When general wages fall, what the workers in any one industry lose does not go directly to the owners of the capital that employs them; it goes ^{as it were} into a pool, from which it is redistributed to the capitalists, not in proportion to their wage bill, but in proportion to their capital; thus the capitalists in one industry may get more, or less, than the workers they employ have lost in wages.

Thus the aggregate of profits + wages in any one industry varies with its distribution (is not independent of the way in which it is distributed). It may be thought that this arises from our reckoning wages + profits in money or in ~~an aggregate com~~ the commodities they are spent upon; ~~but~~ ^{and} that if we reckoned in ^{terms of} the product of the industry ^{in question}, and considered its own products as being distributed between ^{its} capitalists and its labourers, the aggregate of product ^{distributed} would be constant.

That is not so: the aggregate number of pairs of shoes that goes to all the participants in distribution taken together varies with that distribution (although production of course is unchanged). Where is the leak? With changes in wages, the price of shoes varies, but it varies differently from the price of the ~~constant capital~~ raw materials, machinery, etc., employed in ~~its~~ ^{their} production; consequently, out of the (unchanged) gross product of shoes a greater, or smaller, quantity must be diverted to buy the replacements of constant capital – thus changing the numbers in the ‘net product’ of the industry.

Quid of society as a whole? It would seem that if its ^{system} is repetitive there is perfect compensation, + the net product is unchanged, for the ‘replacements’ are made ‘in kind’; but if not-repetitive, it is not so.

There will be some compensation between various industries, but it will not be complete. (Cp. the depreciation quotas in ‘complete group of looms’, or single loom – the former fixed ‘in kind’, the latter variable). Thus the picture of the ‘pool’ seems justified.

This document contains much insight and we deal with it paragraph by paragraph. The first paragraph is a concise restatement of the propositions Sraffa had been developing since September 1942. Here we find the ‘pool’ concept together with the individual industry – aggregate system nexus and the resultant redistribution of profits among capitals. The second and third paragraphs however represent a development beyond that which was written previously. Here Sraffa inquires whether price distortions arise due simply to the fact that ‘reckoning’ occurs according to wages and profits being expressed in terms of money and/or the heterogeneous basket of wage and profits goods; and that if ‘reckoning’ were to be done in terms of

the product of the (single product) industry no such distortions would take place. In terms of the heterogeneous bundles of commodities, in a two-commodity single product industry non-growing system the following breakdown of the net product would hold:

$$\begin{aligned} [\text{CONW}]_1 &= \begin{bmatrix} Y_{N11} \\ Y_{N21} \end{bmatrix} & [\text{CONK}]_1 &= \begin{bmatrix} Y_{S11} \\ Y_{S21} \end{bmatrix} \\ [\text{CONW}]_2 &= \begin{bmatrix} Y_{N12} \\ Y_{N22} \end{bmatrix} & [\text{CONK}]_2 &= \begin{bmatrix} Y_{S12} \\ Y_{S22} \end{bmatrix} \\ Y_{N_1} &= Y_{N11} + Y_{N12} & Y_{S_1} &= Y_{S11} + Y_{S12} \\ Y_{N_2} &= Y_{N21} + Y_{N22} & Y_{S_2} &= Y_{S21} + Y_{S22} \\ Y_1 &= Y_{N_1} + Y_{S_1} & Y_2 &= Y_{N_2} + Y_{S_2} \end{aligned}$$

where $i = \text{industry } 1, 2$

$Y_i = \text{physical net product of industry } i$

$Y_{N_i} = \text{necessary product from industry } i$

$Y_{S_i} = \text{surplus product from industry } i$

$Y_{N_{ki}} = \text{necessary product of good } k \text{ for industry } i$

$Y_{S_{ki}} = \text{surplus product of good } k \text{ for industry } i$

$[\text{CONW}]_i = \text{column vector of worker consumption basket for industry } i$

$[\text{CONK}]_i = \text{column vector of capitalist consumption basket for industry } i$

Changes in distribution will come about through changes in the last row of equations. Such changes would be 'reckoned' in terms of changes in the heterogeneous consumption baskets for both workers and capitalists and the question Sraffa poses here is whether or not this reckoning in terms of heterogeneous goods is that which is responsible for changes in the physical size of the net product. In the third paragraph of the document Sraffa answers 'no' to this inquiry – whether or not the net product was 'reckoned' in terms of the heterogeneity across consumption baskets or the homogeneity in terms of an industry's product, when compared relative to the price of means of production distributional changes alone can alter its physical size. Sraffa gives the example here of the 'shoe industry', an example that he will use repeatedly in his inquiries from this point further. To see this point clearly, consider the following numeric example taken from Sraffa's shoe industry in notes probably²⁰ written in October 1955. This document is archived as D3/12/59/74 and from it we read the following:

D3/12/59/74

As an example consider a shoe-factory which produces one million pair a year: at a given wage-level, 400,000 pairs go to wages and profits together, while the rest pays for the means of production (raw materials, fuel, etc.). Now suppose that after a given reduction in the wage only 380,000 pairs are required to pay wages and profits at the general rates: the means of production must in the process have risen in relative price so as to absorb the excess 20,000 pairs which are in this way transferred to other industries have ceased to form part of the net product of the shoe factory.

Let us illustrate this numeric example with the following adaptation. First we assume that the shoe industry represents output that is destined for consumption purposes; that is to say the shoe industry produces output for Department II.²¹ Next we introduced the assumption that the physical means of production for shoe production takes the form of tons of leather ($MP_{\text{shoe}} = \text{tons of leather}$). Lastly, following Sraffa, the shoe industry is assumed to be relatively labour-intensive, thus a fall in the wage share will result in a fall in the price of shoes. According to Sraffa's example, the gross output (Q) of the shoe industry is 1 million pairs, the net product at the initial level of distribution (Y_0) is 400,000 pairs, thus 600,000 pairs of shoes will be the initial payment (A_0) in shoes for the means of production, which for simplicity we assume to be 6 tons of leather. It must be pointed out here that the 600,000 pairs of shoes are *payment* in kind for the means of production. In terms of use-values, these 600,000 pairs are Department II output and therefore destined for consumption – they are not means of production themselves. They simply represent the exchange of shoes for the 6 tons of leather, the latter in fact being means of production (hence leather is Department I output which is destined for production). We thus have the following scenario:

Initial conditions:

$\omega_0 = \text{initial wage share}$

$Q_{\text{shoe}} = 1,000,000 \text{ pairs}$

$(Y_{\text{shoe}})_0 = 400,000 \text{ pairs}$

$(A_{\text{shoe}})_0 = 600,000 \text{ pairs} \Leftrightarrow (MP)_{\text{shoe}} = 6 \text{ tons of leather}$

Given these initial conditions the exchange of shoes for means of production will be 600,000 pairs for every 6 tons of leather, or a relatively price of 100,000 pairs per ton. Sraffa then supposes that the wage share falls. After the fall in the wage share the new physical net product amounts to 380,000 pairs of shoes.

New conditions:

$$\begin{aligned} \omega_1 &= \text{new wage share, such that } \omega_0 > \omega_1 \\ Q_{\text{shoe}} &= 1,000,000 \text{ pairs} \\ (Y_{\text{shoe}})_1 &= 380,000 \text{ pairs} \\ (A_{\text{shoe}})_1 &= 620,000 \text{ pairs} \Leftrightarrow (MP)_{\text{shoe}} = 6 \text{ tons of leather} \end{aligned}$$

Nothing has changed with respect to the production process of shoes; hence the gross output remains fixed at 1 million pairs and the means of production required to produce these 1 million pairs remains constant at 6 tons of leather. What has changed however is the quantity of shoes now required to purchase these 6 tons; specifically 620,000 pairs of shoes are now required to purchase 6 tons of leather. Thus, the fall in the price of shoes resultant from the reduction in the wage share causes a rise in the price of means of production relative to the price of shoes. What formerly was 100,000 pairs per ton now becomes $133,333^{1/3}$ pairs per ton:

$\frac{\text{Old relative price of}}{\text{means of production}}$ $\left(\frac{p_{MP}}{p_{\text{shoe}}}\right)_0 = 100,000 \frac{\text{pairs}}{\text{ton}}$	$\frac{\text{New relative price of}}{\text{means of production}}$ $\left(\frac{p_{MP}}{p_{\text{shoe}}}\right)_1 = 133,333^{1/3} \frac{\text{pairs}}{\text{ton}}$
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This numeric illustration, adapted from Sraffa's notes conjectured to be from October 1955, should be sufficient to demonstrate the proposition that he was making in the 1948 'Profits Pool' document.²² The last paragraph of the 1948 document is an insertion made in January 1955 (two months prior to the Majorca Draft). Here Sraffa inquires whether the above scenario was consistent with society as a whole and speaks of 'repetitive' versus 'non-repetitive' systems. A 'repetitive' system is one where the physical quantities on both sides of the equations (inputs and outputs) consist of the same composition of use-values; a non-repetitive system is one where the physical composition on either side is different. This therefore is an early characterization of what would later become basic versus non-basic systems. The non-repetitive system would be the general case, and from this January 1955 insertion Sraffa justifies the profits pool concept as being applicable to this general case.

The next instance of the profits pool concept appears in the Majorca Draft of March 1956. After this draft Sraffa moves into the full development of the profits pool concept. We thus enter the second period of the above periodization.

Second Period: September 1955 through November 1955
(with Spattered Comments in July and August 1955)

We now enter into the most prolific period regarding the concept of the profits pool. We begin with a two page document that Sraffa drafted in July 1955:

D3/12/54/12-13

17.7.55

We now ~~suppose~~ ^{imagine} that, starting from the ^{actual} position ^{as observed in reality} wages and the rate of profit change + we want to see how the prices of the several commodities move.

But first, suppose that we raise wages, how will the rate of profits move? The complications seem to close ⁱⁿ all at once, for, first of all it depends on what is ^{commodity has been} chosen as ^{the standard of wages}. If we raise money wages (i.e. gold wages) by ten per cent we get one result, and if we ran

If the given rise, say 10%, is in money wages (i.e. gold wages) we get one result; if in corn wages, another; ~~for~~ since the movement itself ~~may~~ will bring about a change in the gold price of corn. Suppose that we take the national income (i.e. the comp. com. that forms the Nat Income) as standard, then the rise of 10% means that the share of wages rises, say, from 50% to 55% of the national income. But the rate of profits ~~will~~ further depends on how the price ratio of the ^{aggregate of those} commodities forming the national income to ^{the aggregate of} those forming the means of production varies.

As to the prices of individual commodities, these will move in all directions with a change of wages + profits. Some will rise and some will fall, some more, some less.

Pool of profits

[If some rise and some fall, some take and some give to pool of profits, can we say that there will be an intermediate one which has the 'average' ratio of profits to wages, which will neither draw from nor contribute to pool? No, because, further, change in price of raw materials].

But again, even two commodities produced by two industries which employ the same quantity of labour and means of production of the same value [and with the same q. of l.] would diverge in price with a change of r; for the prices of their means of production would generally themselves diverge. The change in the relative price of two commodities a and b will be due to partly to the particular circumstances of production of commodity a and partly to those of commodity b. Cannot these two sets of circumstances be separated? This is in effect asking whether a commodity can be found which, if adopted as measure of prices has the property that when, with a change of r, the price of commodity a rises in terms of such standard, the rise is entirely due to the circumstances of production of a; and similar for b.

The first property of such a commodity should be that its price is invariable in relation to its own means of production. The standard need not be a simple commodity. It

could be a composite commodity, which we could put together to suit our requirements, adding one article to compensate for a deviation one way over a certain range of r , or subtracting one to make up for another. But having entered on this path, it soon becomes clear that the ideal standard is a composite commodity made up in such a way to its own means of production are to be identical in composition.

We must therefore manipulate the composition of the commodity so as to obtain such a result.

As soon as we say this it becomes clear that this composite commodity cannot include among its components all commodities, since some such commodities are not employed in production. For while in the simple reproduction system all commodities inevitably entered directly and indirectly into one another's means of production, this is no longer true of the system with surplus.

In this document Sraffa explores the conditions necessary for the standard of wages and prices and develops this in terms of the concept of the pool of profits. Notice here that: (1) the movements in price will depend on the standard adopted; and given different standards prices may possibly move in opposite directions with variations in distribution; (2) the ideal standard in fact could be a composite of different commodities; (3) Sraffa introduces the idea of the different properties of a standard and explicitly discusses the first, namely that of recurrence in circumstances of production for the standard; and (4) the profits pool remains a significant conceptual apparatus in hypothesizing about price distortions. The second and third points Sraffa would develop into the Standard commodity. At this juncture what is most important for our purposes is the heuristic nature of the pool concept seen through the last point.

September 1955: Rise of the Pool

In September 1955 Sraffa begins an intensive endeavour in developing to complete fruition the concept of the profits pool. Tied to the concept of the pool is a clear exposition of the important properties of a standard of wages and prices and the corresponding causes of changes in prices when distribution varies. In document D3/12/17/20 we find an outline of Sraffa's plan:

D3/12/17/20

SCHEMA {written in red pencil}

If we look at the equation of each product we notice two causes of change in price relatively to any other commodity:

- a) different proportions of q . of lab. to value of means
- b) ~~relative~~ change in the value of the agg. means of production of one of the commod. relatively to those of the other.

The former is well-known ^{straightforward} + carries with it a relative fall in the commodity with the larger prop. of labour. But the latter influence may be overwhelming and is capable of reversing the ~~tendency~~ effect of the former [not on the same footing: the second results from first, not conceivable without it]

We consider the first effect, assuming the second to be absent (i.e. assuming that the means of the first com. are stable in terms of those of the second with respect of wage variations).

Pool of Profits

Socialist Pricing²³

The second, it should be noticed, could not be considered indep. of the first: for, if we supposed the first absent, the second would ipso facto disappear; it is a complication

Consider second effect: seems barren, not so bad; ^{area restricted; like reduction}

Results from the first; prices are set in motion by first; as soon as prices change this in itself is cause of further change

Criss-crossing: up and down

~~Seems barren~~

~~Not so bad — area restricted; ref to reduction~~

Criss-crossing

Difficulty of standard

The second criterion not objectionable as criterion for stability; constant ratio of product to means

Also, self-contained, wages and profits constant

Second effect: a complication of the first [like compound interest: could not exist without interest]

In this document Sraffa identifies the two major conditions that cause prices to change in the face of changes in distribution. The first has to do with the different proportions of labour to means of production involved in the immediate production process of the commodity in question; the second has to do with the change in the value of the means of production with distributional changes. At this juncture Sraffa places his major emphasis on the first condition and in fact argues that the second effect is actually a subsidiary function, or 'complication' of the first. With respect to the concept of the profits pool, Sraffa abstracts from the second effect. The profits pool, in other words, belongs to that class of conditions that is primal or logically prior to the subsidiary 'secondary' effects. The notion of 'criss-crossing' refers to the complex movements of prices that arise from distributional changes such that, no matter the intricacies of

such changes, nonetheless restore balance between wages and profits across industries.

Sraffa recognized that price movements are much more complex once the second complicating factor comes into play. Indeed, such complications may in fact reverse the expected price movements which would arise with consideration of the first condition alone. Sraffa develops this in the following document:

D3/12/17/19

As soon as we leave this position and transfer some of the income from wages to profits we are left without any simple rule as to the resulting prices of commodities. Individual prices will move in all directions in apparently unpredictable ways. The one factor which, on looking at the equations, offered itself as a possible guide is the familiar one of the different proportions of the quantity of labour to the value of the means of production shown by different industries. If this were a reliable guide, the matter would be simple; as wages fell, commodities produced with a higher proportion of labour would steadily fall in price compared with those of a lower proportion. But it is not reliable. The moment prices begin to diverge, the divergence itself becomes a factor of further change, since prices of products and prices of their means of production must keep in step. The relative price change may go so far as to reverse the order of some commodities with regard to the proportion of labour to the value of the means of production, turning higher proportions into lower ones and vice versa – so that what seemed to be the one rock to cling to is upset.

Thus, the one 'rock to cling to' with respect to knowing the direction of movements in prices given changes in income distribution – namely that of the proportions of labour to means of production for the immediate production process – is itself 'upset' once the secondary complications are taken into account. This idea is echoed in the following document:

D3/12/59/69

Thus a tendency is set up, as the wages fall towards a fall in the price of commodities produced by a high proportion of labour relatively to those produced by a low proportion But no sooner is a price movement on these lines been set in motion that it is diverted from its course by a secondary influence

On September 9, 1955 Sraffa once again picks up the related idea of the 'criss-crossing' of prices:

D3/12/50/8

7.9.55

... But as soon as we recognize that prices are moving, the prices of means of production will move creating a most intricate (criss cross) of tracks (path movements) the

movement of prices itself becomes a source of movement. Deferring consideration of the intermediate, we go directly to the other extreme, where the whole of N.I. goes to profits; r maximum or R ...

Desirability of distinguishing to whose circumstances due ...

Pool of profits ...

Sraffa's thoughts are left incomplete although we can discern that concerned here are the secondary or subsidiary effects vis-à-vis the price of means of production. What is important for our inquiry is that the profits pool concept is used here again as a conceptual device that helps Sraffa work through the logic of price changes. On the same day Sraffa develops the profits pool concept in the context of describing its relation with an invariable standard of value:

D3/12/53/2

7.9.55

Approach

To say that a commodity is independent of the pool of profits is identical to say that it is invariable in price relatively to its own means of production (for any such change in price 'releases' or 'absorbs' income on behalf of the pool)... If a commodity falls in price relatively to its means of production, it inevitably contributes to the pool of profits – and there is less of itself to be divided between its own workers and capitalists (and similarly if it rises in price). Also, if a commodity does not change in price relatively to its means, and transfers to wages as much of itself as it removes from profits (or vice versa) it is (at the point where it so behaves) an invariable commodity ...

In a document dated September 10, 1955 Sraffa begins to pull much of this stuff together:

D3/12/17/16

10.9.55

As a result in an industry which employs a higher proportion of labour to the value of the means of production the given reduction in the wage rate will yield more than is required for the corresponding increase in profits; while in an industry where that proportion is low it will yield too little {marginal note: 'But, quid if the proportions are reversed by a change of price?'}

If the rate of profits is to remain level in the two industries the proceeds of the deduction from the wages of the workers in the first industry cannot pass entirely into the pockets of the capitalists who employ them; part of it must be transferred to the capitalists of the second industry. It is as if there were ^{What is needed is something like} a pool of profits into which as wages are reduced and the rate of profits rises, some industries pay their surpluses and others draw upon to make good their deficiencies. To which industries contribute in proportion to the labour they employ and draw in proportion to the

value of their means of production. (Thus what is deducted from the wages in one industry does not go ^{pass entirely} directly into the pockets of their employers). The mechanism through which such a transfer ^{pool} is operated is that of price ^{price system}. The price of the product of an industry which employs a large ^{high} proportion of labour falls relatively to its own means of production, when wages fall {marginal note: 'Quid, if the means are produced by a still larger prop. of labour and fall faster?'}; thus a larger share of its gross output must go to buy from the other industries the replacement of its means of production, leaving a correspondingly smaller net product to be divided between wages and profits {marginal note: 'shoes?'}

On the other hand, the price of the product of a low proportion of labour would rise relatively to its means of production, thus providing ^{releasing} a larger net product from which can be paid a larger increase of profits than the reduction of wages by itself would allow.

We see here how Sraffa gives his argument some polish. The first paragraph deals with first condition that causes price changes in the face of income distribution, namely the different conditions of production across industries. The second paragraph develops the argument in terms of the pool concept and places emphasis on the price system as the mechanism which accomplishes the transfer of profits between industries. Notice that both the reference to 'pockets' and that of 'shoes' which from the above discussion we now know refers to the transfer of profits between industries and the changing physical size of the net product of an industry, respectively.

That the redistribution of the pool of profits is accomplished through the price system itself is even further evidenced in a series of three documents written at the end of September 1955. The first two are drafts of an outline of Sraffa's plan and the last is but another restatement of the argument advanced:

D3/12/53/22

24.9.55

SCHEMA

1. first $w = 1$, back to first, not labour value
2. All pos
3. Offers itself – rock cling
4. Profit pool (anti-socialist)

To visualize ...

REDUCTION

the usual method of reducing whole cost to wages and profits

The TWO EXTREMES

1st, 'Values' shown by reduction, this is only level where simple rule ...

2nd Misleading impression from reduction that $r = \infty$, because:

- a) its amount of profit rises
- b) Its 'base' falls to zero

This overlooks, infinite N^0 of terms, i.e. there is always a commodity residue, multiplied by high powered $(1 + r)$

But – R

INTERMEDIATE

First: ALL POSITIVE [measures 'labour values but fulfilled by Red{uction} after 1)]

Then: POOL OF PROFITS + Anti-socialists

Need of inv. comm.: wages and r

INVARIABLE COMMOD. and q system

Tangible r non-price

Unique

Linearity: and EXTEND to any system because of unit

intersection disappears

Where Nat. Income?... (one possible place is after pool of profits, when the appearance of Nat. Income being St. Comm is created)

D3/12/53/24

First, Reduction

1st extreme

Linear equations with L 's

Values proportional to labour – shown by reduction

2nd, Jump to

where $w = 0$

From reduction one might have gotten impression that as w tends to 0 r rises without limit, for not only it increases, but its 'base' tends to 0. This impression based on overlooking the infinite no. of L terms, or in other words, that there is always a commodity residue which is multiplied by higher powers of $(1 + r)$:

R

Intermediate: 1st all positive

No cling to: means vary

Nor org. comp. in other sense; for while aggregate wages vary proport., interest does not owing to powers which have different gradients as we shall see in detail

Pool of profits

Anti-Socialist

Invariable commodity and q 's

Tangible that r non-price
?Nat. Income

Intersections

D3/12/53/25

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Parallel to this criss-crossing of prices there goes an intricate shifting in the quantity and distribution of the net product.

From the standpoint of the national income as a whole it is clear that what is taken from wages must go, item by item, to profits. But for a single industry the matter is not so simple. For while the wage and the rate of profits must always be uniform throughout the system, the proportion of aggregate wages to aggregate profits varies from industry to industry and moves in different directions with changes in distribution. As a result, a given reduction in the wage will in some industries yield too little to provide for the requisite increase in their aggregate profits, while in others it will yield too much.

If the same rate of profits is to apply to all industries what is deducted from the wage earners of the latter type of industry cannot pass entirely to their own employers, some of it must be transferred to the capitalist of the other group. What is needed is a sort of social pool of profits into which, as wages are reduced and the rate of profits rises, some industries pay their surplus profits while others draw upon to make good their deficiency. Such a pool is in fact operated through the price system

In D3/12/53/22 we have a first draft of the outline that appears in a more developed form in D3/12/53/24. In both of these outlines we notice that the reduction to quantities of dated labour appears early, an indication that Sraffa at this stage intended to put that chapter before that of the development of the Standard system. In both versions of the outline the idea that the 'rock to cling to' – namely that the direction of price changes can be known simply by knowing the value of the composition of capital – is upset, and after this idea the profits pool logically follows. Both outlines also speak to the idea that the rate of profits is a non-price phenomenon. In the last document Sraffa clearly states his contention that the price system is that through which the necessary redistribution of profits occurs.

The last document we consider from the month of September is D3/12/17/18 and is a more refined version of D3/12/53/25 (recall that D3/12/53 is in the 'discard' folder while D3/12/17 is in the file folder that Sraffa in fact utilized heavily). There we read the following:

D3/12/17/18

29.9.55

Parallel to this criss-crossing of prices there is an intricate shifting in the size of the net product of each industry and its distribution between wages + profits. From the point

of view of the national income as a whole it is clear that what is taken from wages must go, item for item, to profits. But with any one industry we find there is not such balancing. For while the wage rate and the profit rate are uniform throughout the system, the proportion of the sum of wages to the sum of profits varies from industry to industry, and moves in different directions with changes in distribution. As a result, a given reduction in the wage will in some industries yield too little to provide for the requisite increase in their aggregate profits, while in others it will yield too much. Since the same rate of profits is to apply in all industries, what is taken from the wage-earners of the latter type of industries cannot go entirely to their own employers; some of it must be transferred to the capitalists of the other group ... What is needed for carrying out this transfer is a sort of profits-pool into which as the wage falls and the rate of profits rises some industries pay their surpluses while others draw upon to make good their deficiencies. Such a profit pool is in effect operated through the price-system by means of adjustments in the prices of products relatively to those of their means of production.

This last document provides the most developed version of the profits pool argument that emerged from the month of September. Throughout the month of September the notion of profits pool remained for Sraffa a very important heuristic device and allowed him to work through the logic of the very complicated subject of price distortions in the face of income distribution. At this stage of the development of Sraffa's project we remain confident that the concept of the pool of profits was still held in high esteem and that he had every intention of including it in the final version of his book. However when as Sraffa began to evolve further in his thinking through the months of October and November 1955, the profits pool concept was met by increasing uncertainty to the point of its ultimate 'collapse'. It is to this stage we now turn.

October–November 1955: Collapse of the Pool

In late October 1955 Sraffa begins to question the efficacy of the profits pool concept. We have already seen that Sraffa develops the numeric example of the 'shoe industry' in this month, and that this numeric example was used to illustrate the idea that the net product of industry changes in size simply due to the changes in distribution. The document that immediately precedes the numeric example provides a concise explanation of the logic involved in this question:

D3/12/59/73

14.10.55

If the shoe making industry is one with a high proportion of labour to capital the price of shoes will fall with a fall of wages relatively to commodities with a low

proportion. But shoes will also fall relatively to the raw materials + tools used to make them (+ whose value we have supposed stable at the opening of this section), so that some of the shoes which formerly were part of the net product of the industry must go to pay for the replacement of these means of production: fewer pairs and of lower price will remain to be divided between the workers and the capitalists of the industry. The opposite happens in industries with a low proportion of labour: with the fall of wages more units of their product become available from the same source for distribution.

Thus the net product of each industry varies both in value and in quantity with the proportions in which it is distributed.

This idea of a physical change in the net product of industry with changes in distribution occupies much of Sraffa's attention in October of 1955. Indeed we argue that it was along these lines that he began to question the legitimacy of the pool concept altogether. But at this stage in mid-October it seems that Sraffa was still intent on retaining the pool concept and the logic of the argument that he advanced in September. This is evidenced from two documents which are drafts of each other, dated October 15th and 16th, where the basic line of argumentation from September is retained:

D3/12/59/68

nat. inc.?

New 15.10.55

P. 10^a 3rd para.

Whilst the proceeds of the reduction of wages (in any one industry) depend on the number of workers employed, the sum required for the payment of profits at the higher rate depends on the value of the means of production. As a result the two sums will not in general balance within each industry: in some the reduction of wages will yield too little to provide for the required increase in profits, while in others it will yield too much. What is taken from the wage earners in industries with a high proportion of labour cannot therefore go directly into the pockets to swell the profits of their own employers; if the rate of profits is to be uniform, some of it must be transferred to the capitalists of other industries which have a low proportion of labour.

To effect this transfer ...

D3/12/59/67

16.10.55

In industries whose wages fall by more than their profits rise, the difference (excess ^{surplus}) will go to redressing the price [10.10.55 price, in terms of what?] of the product: in inds. where the fall of wages is insufficient to provide for the required rise of profits, the shortage (deficiency) will be made good by a rise in the price.

Although these documents do not make explicit mention of the pool concept, clearly the logic of the September arguments in which the pool concept does appear is retained. The October 15th document breaks off exactly where we would logically expect the pool concept to come into play.

In late October we begin to find cracks in Sraffa's confidence regarding the pool concept. On October 28, 1955 we find the following short statement by Sraffa:

D3/12/59/53

28.10.55

Check on St. Comm. Is not the price of means completely independent? (largely also the price of our product may be indep. of it).

Is then not the Pool a myth? For how can the price of means absorb or release commod. when we require it to adjust its (the product's) balance between w and r ? Try a comm. with very high and one very low comp. Cannot price of means move contrary to predicted? P.T.O.

{on back of page}

Test Case: Case of a product which has higher org. comp. than St, Comm but lower than its means.

This is the first document our research has uncovered where Sraffa openly questions the legitimacy of the pool concept. The basic criticism he levies against the 'myth' of the pool surrounds its possible tautological character, something that Sraffa will return to on at least two separate occasions in November 1955. Note here that the absorption and releasing of physical net product ('commodities') plays a significant role in Sraffa's questioning of the pool concept.

In two drafts of outlines that date from November 1955 Sraffa puts some emphasis on the possible tautological character of the pool concept.

D3/12/59/70

Organize

Begin with Suppose the prices don't change

To see how prices work on redressing balance we consider a simplified case – stable means (and take means as standard)

Spectrogram²⁴

Pool

Socialism

However, as prices change, means change

Complicationstautology, prices det. by prices,

But a)...b)... and means a)... and b)... and so on²⁵

The difficulty is standard – on what depends 'invariable measure', in terms of what? measure or measured.

Now, in the simplified case, as there was unbalances both ways, there was room of one balance which needed no change in price. It would change in rel. prices but not due to its own circs.

This would be an invariable standard, but only in the simplified case.

As soon as prices of means move, its balance is upset (price example

In second case the condition must take the form of an infinite series, as above:

If the commodity (at starting point) has such a proportion as gives balance; and its means have such proportions as give balance, and the means of its means,, and so on. Then it does not need prices to restore balance at any level.

D3/12/59/71

- 1) Make $w=1$. Revert to origin. Labour value [Proof in cold storage]
- 2) As we move away from it no simple rule applies and we can say little about them in general ^{a priori}. We can however say that for all the values of w between ... the equations will have a set of positive solutions for the prices the effect (proof of positive p's)
- 3) In the range of variation the factor that stands out (org. comp.). Second factor (source of much complication [and no more?])
- 4) First factor in isolation ['implies St. Comm' in cold storage; Reserve of Nat. Inc. – not St. Comm]
Spectrum (in this simplified case the price curves are straight lines)
Extremes
Imbalance of w and r
Shoemaking example (change in net product)
Image of pool (limitations)
Reverse movement (ex Socialism)
- 5) Second factor
Not isolatable; mere complication: unsatisfactory but area restricting (cp Reduction)
But, consequently if 1 oh'se {?} appears, it disappears
- 6) Difficulty without invariable standard
Ridiculed – stable ... in what?
Internal stability. Balance of w and r
Mixture – tailored to suit
- 7) Construction: a) in words and num example

In the first outline the idea of a tautology comes into play. Here Sraffa questions whether or not the pool concept leads to the determination of prices by prices. In the second outline the term 'pool' is accompanied by the term 'limitations', and we take this as an indication of a loss of confidence if the concept itself.

This loss of confidence is even further indicated in a document dated November 4, 1955. The title of this document is 'After Pool' which we take as an effort by Sraffa to move beyond the concept of the profits pool.

D3/12/59/55

'After Pool

The image of a pool is suggestive but not accomplished too far.

The simile ^{analogy} of a pool should not be taken too literally, for the compensation ^{balancing} is not exact. The N.I. even in a rep. syst., is not composed of the same objects as forms the net product of the single indus. (some may produce only replacement for national industry while non-basics only for N.I.). It will be equal in value to their sum, at each level of w- but [values are diff. at diff. levels of w and] the aggregate will not be composed of the same objects at various levels.

4.11.55

From back.

More exact than is suggested here. The sum of the industry net products will be always equal in value to the N.I.; and the latter (though of course not the formers) is always composed of the same commodities.

Notice here how Sraffa warns that the 'image of the pool ... should not be taken too literally' and that the stumbling block, so to speak, has to do with the use-value character of the net product of individual industries and the lack of replacement 'item-by-item' when the aggregate net product is necessarily expressed in commensurate value units. He does return on the back of the note to make an attempt to temper the previous tone, but as we shall see the stage is already set for the ultimate abandonment of the pool. Indeed, on the very next day Sraffa speaks on how the pool 'collapses'. From a document penned 11/5/1955 we read the following:

D3/12/59/57

5.11.55

This collapse of the Pool of profits seems ever more disastrous. It is clearly quite possible for a commodity whose profits increase by more than its wages fall, actually fall in price relatively to its means, so that less will be available as net product: so, more goes

to replacement more goes to profit, and also more than ever since the value of means (on which profits are a %) rises!

Yet it all is possible if the price of the product rises enough relatively to labour even though it may fall relatively to its means.

The whole blunder has arisen from having overlooked that the price of means is largely independent of the price of the product (there being so many other variables which may compensate for it)

P.T.O.

They could even say the 'unbalance' in quantity can always be entirely compensated by the product's change in value (not relatively to means, but to the standard of wages). The change in quantity of net prod. is purely a subsidiary, accidental result, which depends on the composition of means of prod.

But it is nonsense to put the main burden on 'unbalance' of quantity.

N.B. Even for the N.I. the value of what goes to profits may be larger than the value lost by wages, although the items transferred are the self-same. [This can only have a meaning in relation to what happens in terms of St. Comm. In St. C. when wages fall from 50 to 25, profits increase from 50 to 75: but here wages are also halved (but fall much more in quantity of product) while profits rise by much more, both in value and in quantity.

From this point forward Sraffa becomes less and less concerned with the *origin* of the surplus value *a la* the concept of the pool of profits and more and more concerned with the isolation of price movements generally with changes in distribution. In this winding down of the concept of the pool of profits, Sraffa erects in its place the dominant role of surplus and deficit industries.

Aborted Retrieval of the Pool

Two documents from November 1955 specifically evidence this transition, one written November 6 and the other November 17. In the latter document Sraffa explicitly attempts to 'retrieve the pool', but as we argue, to no avail:

D3/12/59/78

6.11.55

In view of the disproportion between $w + p$. it is clear that in some the mere transfer within each industry of units of product from wages would be insufficient to provide for the required rise of profits, in others they would be in excess.

There must therefore be a transfer from the latter to the former of some share of the national income; as if there were a pool into which as wages fell were contributed by the various industries paid contributions in proportion to the number of workers

employed from which they drew, in proportion to the value which what is of their means of production, what was necessary required for the increase of profits is paid out in prop. to value of means.

This is effected in one or both, of two ways:

- 1) A rise in the price of the product relatively to we say rather vaguely at the moment the majority of commodities, which makes fewer units of the product go a longer way in the paying of the wage, thus enabling more units of greater value to be transferred to profits
- 2) A rise in price relatively to its means of production which a) makes a given number of units go a longer way towards fulfilling the general rate of profits, b) releases some units which previously went to replacement.

This last effect (2b) increases the number of shoes in the net product, while the others make them more valuable.

- a) a rise [or fall] in the price of the product relatively (let us say for the moment) 'most other commodities' in terms of (let us say for the moment) 'commodities in general' and
- b) a rise [or fall] in the price relatively to its own means of production

The former adds to the value of the n.p. available for distribution; the latter adds to its quantity (since fewer units will have to go pay for the replacement of the means). The resultant of the two (which will move at different rates and possibly in opposite directions) will be the increased value of the n.p.

D3/12/59/60

17.11.55

On the retrieve of pool

The point of this is that it makes the balance or unbalance of profits and wages truly independent of any price-relations between product and means.

We assume that there are no price-changes + show what happens to the balance. Then we shall proceed to show how it can be redressed by price-movements.

(The problem will be to settle when first to bring in the second, complicating cause, i.e. variation in price of means). This is a sort of compound interest problem – and, in fact, is the compound interest problem in a different aspect: but is is the same as the problem that we see in Reduction.

[But it can be eliminated by an assumption as to price of means being stable in one another. The same assumption (i.e. that price of means is equal to their value at $w = 1$) would give the same result – linear prices.]

We could say: The price of comm.. depends on a) proportions and b) price of means. The price of means depends on a) proportions and b) price of their means. And so on, the area of proportion becoming wider and wider while that that of price of means narrowing down indefinitely, although it can never be completely eliminated

Whereas, previously, we were trying to discern the balance or unbalance while prices were moving: for even there there are possibilities of 'physical balance' (i.e. when the price of means is constant) but dependence on prices makes it look tautological as a cause of prices. How to get round this?

Notice how Sraffa ends this effort to 'retrieve the pool' by once again lamenting over the tautological implication of prices determining prices.

Third Period: Post-November 1955 through March 1956

We now enter into the third period in the evolution of the pool concept. Here we find very few direct references to the pool concept, something which we argue is related to Sraffa's growing uneasiness vis-à-vis that concept. In this section we present evidence from only three documents, the first from late December 1955; the second from early January 1956; and the last from early February 1956.

The document from December 1955 contains no direct reference to the pool concept, but rather develops the notion of price movements resultant from distributional changes in terms of surpluses and deficits at the level of the industry. Here we have a distancing of the pool concept at the level of the *commodity* where most of his previous energy had been devoted and a movement toward the idea of surplus and deficits *industries*. Notice here how Sraffa refers to this conceptualization as a 'stronghold' point:

D3/12/61/47

20.12.55

We must therefore begin thus:

In order to see what are the causes of the rise or fall of individual prices, we shall suppose at first that, as we transfer part of the net product from wages to profits, prices remained unchanged. Suppose that, as we reduce wages from 1 to, say, $\frac{4}{5}$, we find from the solution of equations of the particular system in hand, that the corresponding rate of profit is 3%.

21.12.55

NO: It is always necessary to fix a unit, otherwise with n equations and $n + 1$ variables the system is indeterminate; not in the sense that ratios rather than absolute prices are determined – but r is completely indeterminate and so are the prices and their ratios.

It is the constants that constitute the unit. We can either make one of the prices = 1, and then with n variables and n equations all will be determined. But note that we shall get different values of r according to the product whose price is made = 1; and so the

prices will differ and their ratios will differ as well (this is due to the effect noted that the real wage is different according as, say $w = \frac{1}{3}$ is in wheat or in iron, for the prices of these products will move differently with the fall of the wage.)

On the other hand if we replace r with a known number, or with a known $R(1-w)$ we have n equations and n unknowns, and the unit is the unit of the constants, in our case $L_a + \dots + L_n = 1$; or rather, if $w = \frac{1}{3}$ then $3(\frac{1}{3} [L_a + \dots + L_n]) = 1$.

{back of page}

24.12.55

Points (caposaldi {'Stronghold'})

Transfer part of the net product from wages to profits, by fixing wage in terms of one of the aggregate means, equal in value at $w = 1$, to say $\frac{2}{3}$ {of} nat. inc. To see causes we assume that, as we transfer part of the net product prices remain constant.

1) To avoid complication with what we shall deal presently we shall assume at first aggregate means of each product produced by same proportions as others. Commodities produced by different proportions of labour and means of production.

Proceeds of wage reduction proportional to no. of workers; but needs for profit proportional to value of means of production.

So when we transfer, some will have a surplus and some a deficit.

We arrange the commodities in ascending order according to the proportion of labour to means by which they are produced, from the lowest to the highest proportion.

3) to restore the balance it is necessary that products of industries show a deficit should rise in price relatively to their means of production

2) We shall take one of these 'aggregate means' as standard of wages and prices; we shall then, from the equations, find what the rate of profits that corresponds to the new wage; but in order to see what brings about the change in individual prices we shall at first suppose prices to remain unchanged. It is clear that in each industry the proceeds of the w reduction are proportional to the no. of workers employed, while the requirements to pay out of profits at the general rate depend on the value of the means of production. The two sums will in the case of most industries not balance. Those with high proportion will have a surplus and those ...

The above document represents a significant transition toward the ultimate development of the argument that appears in Sraffa's book. Although the direct reference to the profits pool has been abandoned and replaced with that of surplus and deficit industries, we can nonetheless see based on the above archival evidence that the latter concepts definitely evolved from the seeds of the former. This becomes especially evident given that the 'spectrogram' exercise of December 1955 as regards SI and DI is very similar to that first penned in the 'Exploitation' document of 1942 (D3/12/17/2) as regards the 'pool of profits'. In the next two documents we find the last

instance our research has uncovered where Sraffa explicitly used the 'pool' concept.

D3/12/61/48

The movement of prices would be as described each com.. moving in the simple direction required by its 'prop' so long as, according to our simplifying assumption, the aggregate means of production of each industry were themselves produced by the same proportion. But the moment we remove that assumption, all is confusion. For ...

1.1.56

I must, early, show the identity of these things:

- a) 'the proportion' of labour to means (or of net product to means, at values) that gives 'balance'
- b) 'the same proportion in which all products must increase in the St, Comm'
- c) The maximum rate of profits

The link between the two is that unbalance can only result from (or be connected with) a change in the net income of the industry, which can only happen by more or less of the product being required to pay for the replacement of means of production: this is the inevitable accomplishment of unbalance

But then no unbalance of this type can arise when product and means consist of the same composite commodity, for since there can be no change in the relative price, there can be no transfer to, or from, net product to payment of means.

N.B. This is also the opportunity to revive the transfer of profits between industries (profit pool).

3.1.56

A proportion of labour to means in the circumstances defined carries with it 'no change' in price-ratio of means to product throughout the range of wage variation. And therefore such a proportion ...

The proportion of labour to means measured at values corresponding to the whole net product going to labour, is the same thing as the proportion of national income (distributable surplus or net product) to means.

If the proportion is such as to give 'balance' it will remain unchanged throughout the range of wage variation, since 'balance' implies no change in the price-ratio of product to means

Notice that Sraffa speaks of the 'opportunity to revive the pool'. He never did. This leads us to the last document of our research:

D3/12/61/42

7.2.56

We shall see how prices move as we transfer part of the wages to profits.

The cause of these price movements is a simple one. The wages and the rate of profits at level of distribution must be uniform throughout industry. But in one industry the sum saved by an industry on a given reduction of wages depends on the number of men employed; while the sum required to pay out profits at the corresponding rate depends on the aggregate value of its means of production. These two sums will not generally balance in any one industry. Industries with a high proportion

...

3) The balance can be redressed by a change in the price of the product. In the case of a deficit industry a rise in price of the product relatively to the means of production employed will mean that a smaller quantity of product is necessary to achieve the required rate of profits, while a rise relatively to the standard in which wages are fixed will make a given quantity go further towards fulfilling the wage requirement. Besides, the rise relatively to the means of production will reduce the quantity of product required to pay for their replacement and thus increase the net product available for distribution, as wages and profits. The price-movements make it possible for the industry to increase its net product both in value and in quantity so as to enable it to meet its commitment for both wages and profits. And conversely in the case of a surplus industry

...

Other products, however, besides the one we are considering, are under pressure to change their values. In particular, its means of production.

These however are only tendencies arising from the initial conditions of one product; they often are not destined ^{will be unable} to be realised, since the products with which it is composed will be under pressures of their own, arising from ^{generated by} the same source, and possible in contrary directions

2. Criss-cross – but in the end balance
3. To see more in detail, simplified example
 - Middle class of commodities
4. Survives in general case

Pool?

In this document the idea of surplus and deficit industries is almost completely developed conceptually. Notice how the document itself ends with the word ‘pool?’, circled with the question mark in Sraffa’s hand. This is the last time Sraffa uses the pool concept. Five days after making this last reference to the ‘pool’ we find the second ‘spectrogram’ figure of price movements in the face of changes in distribution referenced in above. Thus, we argue Sraffa has made a full analytical circle from the early ideas of 1942 to the latest development in February 1956. The pool of profits had been abandoned and from this point forward Sraffa would develop and tweak the

surplus-deficit industry concept and make several drafts of the relevant section of his book, which appears in notes written after March of 1956.

PART II

PRICE MOVEMENTS AS THE WAGE SHARE FALLS

Let us attempt to analytically depict this story.²⁶ Following Sraffa the LMP ratio is defined as the value (price) expression of the total living labour of an industry divided by the total means of production used in that industry, where the latter include inputs from all other (heterogeneous) basic industries. Thus:

$$\begin{aligned} \text{LMP}_{\text{value}} &= \frac{(p_L)L_j}{\left(\frac{\bar{w}}{p_i}\right)\bar{A}_j} = \frac{(w^0)L_j}{\{(p_1)a_{1j} + (p_2)a_{2j} + \dots + (p_n)a_{nj}\}} \\ &= \frac{\text{value of living labour}}{\text{aggregate value means of production}} \end{aligned}$$

L_j = unit of direct labour for industry j

a_{ij} = unit of commodity i necessary for industry j

w^0 = 'complete' wage rate = *numeraire/hour*

p_i = homogenous unit 'price' of i th commodity = *numeraire/unit _{i}*

The numerator of the LMP ratio represents the overall productivity of labour – conceived here as what Pasinetti (1977) calls the 'complete wage rate'²⁷ (w^0) – multiplied by the quantum of living labour of the industry in question (L_j).

In expressing the concept of surplus and deficit industries, we consider the 'watershed' LMP ratio in relation to that of each of the industries. Recalling that surplus industries are labour-intensive and deficit industries 'capital'-intensive, the general relationship among the LMP ratios is the following:

$$\text{LMP}_{\text{SI}} > \text{LMP}_{\text{Watershed}} > \text{LMP}_{\text{DI}}$$

Consider now a comparison of the j th commodity's *direct price* or price proportional to labour values when wage share is unity (p_j^0) versus its *price*

of production when the wage share falls below unity and the rate is profit is uniform (p_j^*):

Direct Prices ($\omega = 1 : r = 0$)	Prices of Production ($\omega < 1 : r > 0$)
$p_j^0 = \left\{ \left(\vec{p}_i^0 \right) \vec{A}_j \right\} + \left\{ (w^0) L_j \right\}$	$p_j^* = \left\{ \left(\vec{p}_i^* \right) \vec{A}_j \right\} (1 + r) + w^* L_j$ $p_j^* = \left\{ \left(\vec{p}_i^* \right) \vec{A}_j \right\} + \left\{ r \left(\vec{p}_i^* \right) \vec{A}_j + w^* L_j \right\}$

The relevant term to compare is the form the value of the net product (value added) assumes in each equation. For direct prices, the value of the net product is equal to the value *bestowed* by productive living labour $\left\{ (w^0) L_j \right\}$. For prices of production, the value of the net product is equal to the value *remunerated to or commanded by both* means of production *and* living labour $\left\{ r \left(\vec{p}_i^* \right) \vec{A}_j + w^* L_j \right\}$.²⁸ The former is a productivity relation (or a ‘completely remunerative’ wage relation) and the latter is an ‘incompletely remunerative’ wage or distributive relation.

Given this framework, it can be shown that as the wage share falls the following relations hold:

$$\begin{aligned} (p^0)_{SI} &> (p^*)_{SI} \\ (p^0)_{DI} &< (p^*)_{DI} \end{aligned}$$

We can express this in Fig. 2, which is inspired by the original spectrogram graph that Sraffa penned in 1942.

Fig. 2 shows that as the rate of profit moves from its lower limit of zero to its upper limit of R and the wage share (ω) moves from its upper limit of unity toward its lower limit of zero, value flows out of surplus industries into deficit industries in an effort to redress the imbalance that results from the inequality of each respective industry’s LMP ratio to that of the watershed.

INPUT REMUNERATION AS THE WAGE SHARE FALLS

Fig. 2 also has an expression at the level of the ‘prices’ of the inputs labour and ‘capital’. To simplify the exposition here we adopt the assumption of a single capital good. This allows us to conceptually posit the movement in

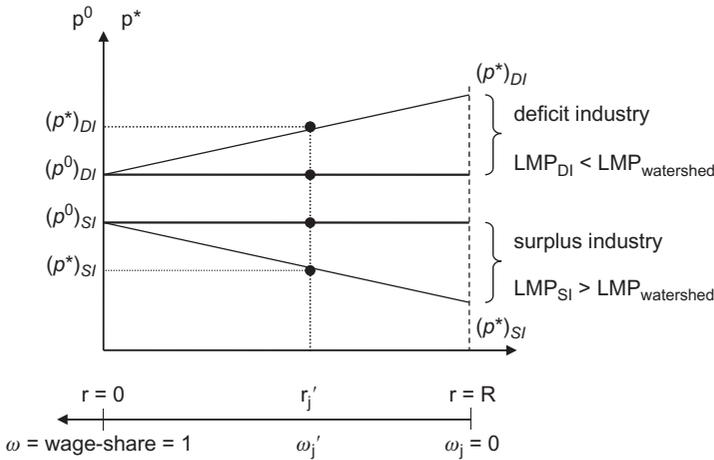


Fig. 2. Surplus and Deficit Industries.

the 'prices' of labour and means-of-production in terms of a simple graph, with means of production now explicitly defined as 'capital'.

Let the following for each input hold:

Input 'Capital'	Input 'Labour'
p_A = initial advancement-price of capital input p_A^* = command-price of capital input $= p_A(1+r) = p_A + r p_A$ where p_A = remuneration to factor 'capital'	w^0 = 'complete' wage rate = labour productivity w^* = wage rate = remunerative price of living labour where w^*L_j = remuneration to factor 'labour'

The initial advancement price of the capital input represents the initial unit-costs incurred by the capitalists in the purchase of means of production. When the wage share is unity the revenue accrued by the capital input will exactly equal its cost and no profit arises. With a wage share less than unity a profit then arises and the revenue accrued by the capital input will now be greater than its costs. Here the initial advancement accrues a revenue according to the general rates of profit (r) such that by the end of the process the quantity of value per-unit this initial advancement leaves with, or commands, is equal to the initial advancement plus the remunerated revenue. The sum may be thought of as the command-price of the capital input. An opposite scenario occurs for labour. When the wage share is unity the

wage rate is ‘complete’ and remuneration is exactly equal to labour’s productivity. When the wage share is reduced, wages are no longer ‘complete’ and the quantity of value the labour input accrues or commands is less than its productivity.

We depict the relationship between changes in input remuneration and the wage-profit curve in Fig. 3.

Quadrant I shows the linear wage-profit relation given by the well-known equation $r = R(1 - \omega)$, where $R = \text{maximum rate of profits}$. Quadrant II shows the movement in factor prices as the wage share falls. Here the quantum of value remunerated to (or commanded by) living labour is of a magnitude smaller than the value of its productivity *qua* ‘complete’ remuneration. Alternatively the quantum of value remunerated to (or commanded by) capital value is of a magnitude greater than its cost. It is here that the Marxian theory of exploitation becomes explicit: labour exploitation is the source of profits and the ‘redressing’ of variations that is ‘fully achieved’ by price movements given the existence of surplus and deficit industries in fact speaks to the manner in which extracted profit (hence extracted unpaid labour) is distributed from workers to owners. Further we argue that for Sraffa, the price mechanism is precisely that which provides the channel through which unpaid labour is extracted while at the same

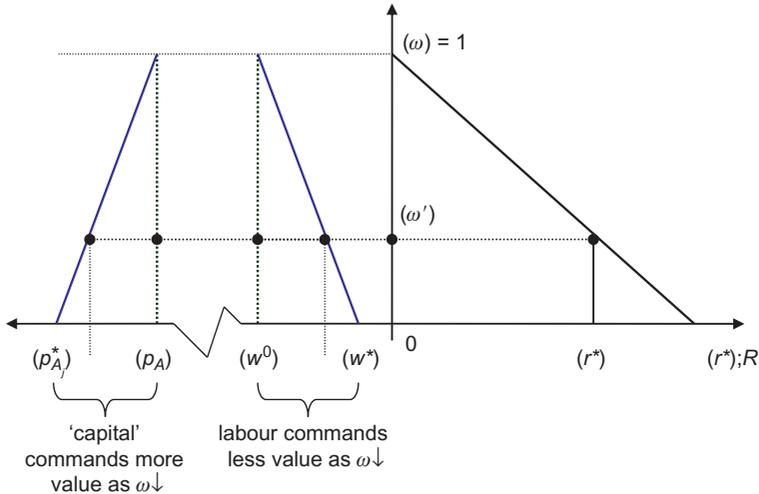


Fig. 3. Wage-Profit Frontier and Non-Distributive and Distributive Prices of Inputs.

time concealing the distribution of the social booty to the capitalist ruling class.

Finally consider how input remuneration is related to surplus and deficit industries. This is seen in Fig. 4.

Here we return to the two-commodity labour- versus capital-intensive model in which case each of the industries will be characterized by its own (local) wage-profit curves. This is seen in Quadrant I where the horizontal axes shows the wage share-profit curves for the two industries as well as the aggregate; note here that the LMP ratios for the capital and labour-intensive industries corresponds to the maximum profit rates for the deficit and surplus industries, respectively. Notice also that the average LMP ratio (LMP*) is here set equal to the maximum rate of profit for the system (R^*) as well as the Standard ratio (ζ).²⁹ Quadrant II shows the remunerative input relations and Quadrant IV the price movements associated with surplus and deficit industries. The need to redress prices clearly relates to the process whereby different quantities of unpaid labour extracted at the

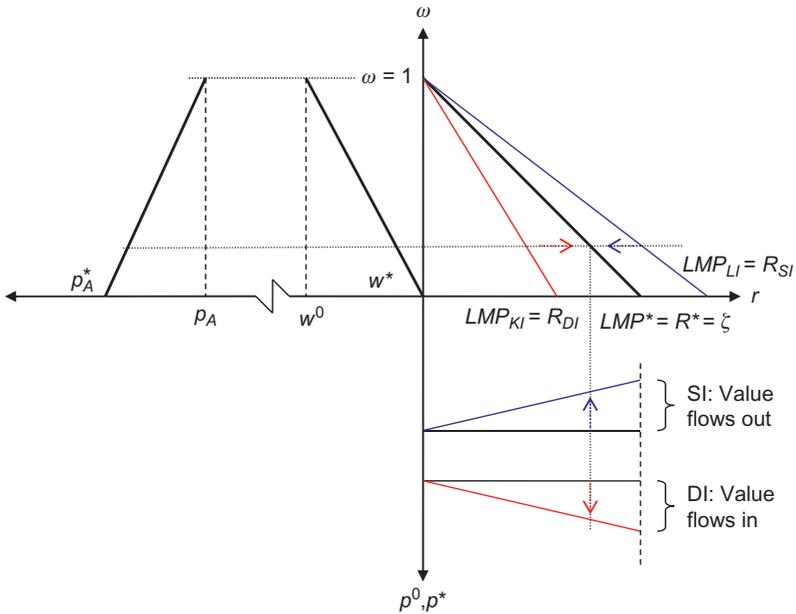


Fig. 4. Wage Share Profit Rate Schedules, Input Remuneration Schedules and Surplus and Deficit Industries: A Diagrammatic Interrelation.

industry level must be equitably distributed to the owners of those industries according to the value of the initial advancement of capital. The inter-capital *convergent* processes in the first upper quadrant reflect the processes involved in the formation of a uniform general rate of profit to redress this problem. This is interestingly juxtaposed to the *divergent* process at work in terms of the price system, seen in Quadrant IV. There prices of production push *away* from the centre of gravity of labour values (direct prices) as the wage share falls from its initial value of unity. This seeming contradictory movement, convergence in one sense, divergence in another, has led to a tremendous amount of confusion in disquisitions on value and distribution in all types of economic theory.

CONCLUSION

This chapter provides archival evidence for the development of an important concept that Sraffa develops in his book, namely that of surplus and deficit industries. We attempted to show that the origin of these concepts which prominently appear in his book belong to the notion of exploitation that Sraffa developed from Marx. Specifically we have attempted to show that contained in the nascent idea of the profits pool are the analytics of the surplus-deficit industry idea. We have also attempted to show that the idea of the profits pool in effect refers to 'extracted unpaid labour' or 'extracted profits'. We further attempted to show that the 'problem' of the transformation from labour values to prices of production (the latter being a function of the general rate of profits) can in fact be traced to the extraction-distribution nexus and that the latter lay at the heart of the transformation procedure. From this we advance the idea that the price changes associated with distributional changes given different compositions of capital across industries are merely external expressions in the general case of the processes in capitalistic systems of production, whereby the booty extracted from the working class is distributed to the capitalist class. We concur with Sraffa, if our reading about him can be seen as correct, that these changes in prices at the same time conceal as well as provide the channel through which capitalistic exploitation manifests.

Admittedly Sraffa chose *not* to include the notion of the 'profits pool' in drafts of his book and after March 1956 we find no further reference to it. However in the ruins of the 'pool' rose the prominence of surplus and deficit industries. Hence in the Marxian reading and reconstruction attempted

in the above pages, herein lies the 'fossil' of the pool notion and with it explicit reference to the notion of exploitation; and given that surplus and deficit industries find themselves conceptually in the pages of Sraffa's book, so too does the implicit foundations of the theory of exploitation upon which they stand.³⁰

NOTES

1. In the analysis here we take this view as our point of departure. In the spirit of full disclosure it must be admitted that acceptance of this view is the source of great debate within the surplus approach. The relation of Sraffa to Marx will remain a source of controversy for some time to come. Bellofiore (2008, 2012, 2014) reviews the important literature that debates the relevance of Marx for Sraffa; in Bellofiore (2014) especially we find a fresh and forward-thinking approach to the relationship of Marx to Sraffa based on heretofore unpublished archival evidence.

2. The Sraffa Papers are housed at the Wren Library, Trinity College, University of Cambridge.

3. In Sraffa's notation for the general case this is seen in the following:

$$L_a + L_b + \dots + L_k \equiv 1 \equiv [A - (A_a + A_b + \dots + A_k)]p_a \\ + [B - (B_a + B_b + \dots + B_k)]p_b + \dots + [K - (K_a + K_b + \dots + K_k)]p_k$$

The LHS of the unit-normalized identity is the living labour added in §10 and the RHS the value of the net output in §12. See Bellofiore (2008, 2012, 2014) and Carter (2011, 2013, 2014) for discussion on Sraffa's normalization in §10 and §12. This normalization is in my opinion equally in line with that of the New Interpretation as that of Sraffa, or perhaps better said it is not quite either but contains important elements of both.

4. It would be more appropriate here to say the value of the means of production now *serve* as capital. Thus, 'capital' emerges here as a value-magnitude serving in a specific role in a specific social context. The social context is capitalist commodity production, wherein labour power is completely rendered a commodity and the means of production are completely in the hands of private profit-maximizing capitalists. A magnitude of value serving the role as capital is thus one that enters the process of production with the expectation of a positive return on that value by the time it 'ripens'. In Marxian terms this involves a social relation of being able to extract or command more from the process of production than initially advanced, and that this is a function of the relations of capitalist private property.

5. In this chapter we do not concern ourselves with the determination of the 'watershed' LMP ratio excepting to say that it represents some 'social average'. And the reason the determination of the watershed LMP is not of a concern here is precisely for the same reason it is not relevant for Sraffa at this stage of the inquiry as well. Indeed all that is occurring here for both us and Sraffa so far is the

identification of the *notions* of surplus and deficit industries, and for that all is required is some idea of a relation around some general ‘social average’. In Carter (2014), we show that for Sraffa the ‘watershed’ LMP will come to ‘coincide’ with the Standard ratio as well as the maximum rate of profits. Hence, further research into this question concerns the application of the exploitation-theoretic interpretation of surplus and deficit industries advanced here for Sraffa’s complete model. Certainly one area of research that is ignored in the present study is the implications the ‘pool of profits’ and surplus and deficit industries have on Sraffa’s ‘Hypothesis’ of the constant ratio of net output to social capital. On what Sraffa often called simply his ‘Hypo’ see De Vivo (2003), Gilibert (2003), Bellofiore (2014), and Carter (2014).

6. In March 1955 Sraffa went to the Spanish island of Majorca to pull together notes and write a working draft of his book. For other references to the ‘Majorca draft’ see Carter (2011, 2014).

7. See ‘Majorca draft, March 1955’ D3/12/52/6-8; also see ‘Notes on Agricultural Schemes, August 1942’ D3/12/19/7. Christian Gehrke (2011) through archival research develops the notion of proportional wages especially in Ricardo and the influence this had on Sraffa.

8. As a general rule for all archival documents cited in this study all inserted and cross-out words and paragraphs are Sraffa’s, as are underlined emphases and both round and square parentheses. Curly brackets within archival documents are insertions that we make.

9. These pages are found in D3/12/17/2-5.

10. These pages are found in D3/12/17/6.

11. The majority of archived folders were for the most part compiled by Sraffa, and that the subsequent preparations of the material after his death retained this content. Hence, we can reasonably certain that it was Sraffa who inserted the contents for this (and every other) folder. On the history and structure of the Sraffa Archive see Smith (1998, 2012). See also the Archive Index in Bellofiore and Carter (2014).

12. Trinity Archivist Jonathan Smith (1998) writes that ‘[t]he surviving papers show three distinct periods of work, 1926–29, during which period much was achieved, 1942–48 and 1955–60, from around the period of the ‘Majorca draft’ to final publication’ (Smith, 1998, p. 48). Our interest in the present chapter with respect to the evolution of the ‘pool of profits’ to ‘surplus and deficit industries’ is to show the relationship and connection especially between the second and third periods.

13. Archival evidence suggests that Sraffa first read the French Edition of *Capital* (the Roy Translation, published as a serial) in the late 1920s and early 1930s. This conclusion is based on the perspective Sraffa’s takes in the Lecture Notes on the Advanced Theory of Value written in 1927 (see D2/4) and by a marginal note on Sraffa’s copy of the Roy Translation dated December 31, 1931 (see Sraffa 4263). On the impact of Sraffa’s re-reading of Marx’s *Capital* in 1940, see Bellofiore (2008, 2012, 2014).

14. Notice here that Sraffa uses interchangeably the wage share and the rate of surplus value as if they express the same idea – which they do. As Sraffa indicates both are functions of distribution of the net product. In fact the two are monotonically related. Let the rate of surplus value $= e = \frac{\text{profits}}{\text{wages}}$ and the wage

share = $\omega = \frac{\text{wages}}{\text{value added}}$. In this case it is simple to show that: $\omega = \frac{1}{1+e}$ or $\frac{1}{\omega} = 1 + e$. The latter equation is the labour commanded standard of value, which Sraffa in his book writes as a function of the rate of profits (r) and the Standard ratio (R'): $\frac{1}{\omega} = \frac{R'}{R'-r}$.

15. Note the scribbled line and the word 'none' written in the margin; this is written in pencil and dates from September 8, 1955, some thirteen years to the month after he had first penned in ink this set of notes in 1942. Here Sraffa clearly recognizes that 'straight lines' are nowhere to be found. The 'revisiting' of this document in 1955 corresponds precisely to the time that Sraffa was 'weakening' regarding the 'pool' notion. Consult (page 21) the third page in this set of notes (D3/12/17/3) where we also find marginal insertions in pencil again indicating a backtracking, so to speak, of the 'pool'.

16. This folder is a wealth of information surrounding the development of the concepts of surplus and deficit industries.

17. This is the second page of the document 'Exploitation' cited above. Inserted phrases and Böhm-Bawerk citation are in pencil and date from Sraffa's re-reading of this document on September 8, 1955.

18. The document itself (D3/12/2/20) is not dated, but we conjecture that it dates from 1945 for the following reasons: (1) the document that immediately follows (D3/12/2/21) is entitled 'Rent and Social Revenue' and dates 1/1/1945; (2) these two documents together constitute the conceptual crux of the above referenced two inserts by Sraffa in the Majorca Draft; as such it is not unreasonable to think that Sraffa developed them in as a logical tandem even as early as 1945; and (3) Sraffa uses language here that is more consistent with his early notes as opposed to his later ones; specifically the use of the term 'organic composition of capital' which appears in his early notes versus 'proportions of labour to means of production' which he uses rather exclusively in his later developments.

19. The reader must keep in mind that Sraffa's ' w ' is the *proportionate wage* or wage share, which is a monotonic function of the rate of exploitation. Thus once we know the different compositions of capital, we also know the different amounts of unpaid labour extracted at the different levels of the rate of exploitation-qua-wage share. Hence, we know also the contribution of workers in each industry to the total unpaid labour of society (profits pool).

20. Again the document in question (D3/12/59/74) has no date but that which precedes it (D3/12/59/73) is dated October 14, 1955. Both documents deal with the 'shoe industry'; the latter document contains the actual numeric example.

21. We adopt the notation that Marx uses in his reproduction schemes: Department I = means of production sector and Department II = means of consumption sector. We abstract from the possibility that 'shoes' can also be considered a means of production, for example, in the form of work boots, etc., and accordingly regulate the entire output of the shoe industry to consumption.

22. An anonymous referee made some very keen observations out of Sraffa's example of the 'shoe industry'; which the present writer cites in full for the benefit of the reader:

When Sraffa realised that the prices do not change in a linear way when the rate wage falls because of the changes in the prices of capital goods, the idea of the pool was

weakened. However Sraffa developed his line of reasoning referring to the surplus of a single industry (the example of the shoe-factory). Here he wants to indicate the surplus (wage plus profits) in terms of a physical quantity of shoes, i.e. the number of shoes that remains after the shoes with the same value of the capital are given in exchange in order to pay their costs of production. The problem arises because the surplus quantity of the shoes varies when the wage falls. In fact in general the price of the shoes varies in relation to their means of production. If the price of shoes falls, then the amount of shoes that can be distributed between capitalists and labourers employed in their production diminishes. Here it seems to me that Sraffa mixes up a problem of determination of physical quantities (and the macro problem of the value of the aggregated surplus), and a problem of prices Sraffa ... wants to determine the physical quantity of shoes that forms the surplus of a single industry independently from the other industries, but this is obviously impossible, because this can be achieved only *after* prices are settled. Thus the idea that the shoe industry brings to the NI pool less shoes when the wage rate falls is a *deception of the movement of prices*. In fact the shoes can be brought to the pool only by the shoe industry, and their amount remains exactly the same *before* and *after* the falling of the wage rate. But the amount of shoes equivalent to the surplus that remains in the industry of shoes diminishes, because profits are redistributed proportionally to the new value measured in prices of the capital invested in this industry (emphasis added).

The notion that there is a ‘deception of the movement of prices’ with regards to quantity changes (or lack thereof) of the net output is a very instructive. Such ‘deception’ may even be further evidenced when, instead of the heuristically implicit labour-intensive hence *surplus* shoe industry, a ‘capital’-intensive hence *deficit* ‘iron’ industry is considered. In this case (see Fig. 2 below) reduction of wages actually causes the price of the deficit-industry good to *increase*, even further complicating the relation of the price of the net product to that of capital goods.

23. Space here limits us from discussing the implications Sraffa’s notion of the profits pool has for pricing in a socialist system. Suffice it here to say that one of its implications is the demonstration that the critique of socialist pricing is ‘not well founded.’

24. The ‘spectrogram’ refers to the diagram that shows changes in price with changes in distribution.

25. Sraffa here refers to the ‘first’ and ‘second’ conditions of stability of a standard, viz.:

D3/12/45/5

The general condition of stability thus becomes twofold: a commodity must (a) be produced by the right proportions of means to labour and (b) be produced by means which, as an aggregate, themselves satisfy the conditions of stability (this, in turn, implies that the means of production satisfy the conditions, and so on).

26. It is admitted that the following analytical reconstruction remains that of the author’s only and that throughout Part II our interpretation of Sraffa is at time conflated with our reading of Marx. This is seen especially by the fact that this analytical reconstruction develops only the ‘positive’ aspect of the notion of the ‘pool’ without entering into the difficulties that Sraffa recognized as the pool ‘collapsed’.

Having said that, and with apologies to the reader for their formal error especially as regards the linearity of the graphs, the analytical model in the following pages is offered as an initial attempt to develop along Marxian lines some of the relations in the original archival material presented in the first part of this chapter. By no means is this approach unequivocal nor is it intended to be a representation of what Sraffa 'really meant'. However we do deem it instructive and perhaps can contribute to a starting point for a 'new interpretation' (lower case) of the analytical relation between Sraffa with Marx.

27. An 'ideal' system of prices, as understood, for example, by the 'Ricardian socialists' (who has claimed at the beginning of the 19th century that the whole net product of an economic system ought to go to the workers), might be $\mathbf{pA} + \mathbf{w}_n = \mathbf{p}$. This is a linear system of $(n - 1)$ equations. It determines $(n - 2)$ relative prices and a wage rate which absorbs the entire net product per worker of the economic system. This [is] regarded as the 'maximum' wage rate... since it corresponds to a profit rate of zero. We may call it the 'ideal' wage rate here, or, from a different point of view, the 'complete' wage rate (Pasinetti, 1977, p. 122).

28. At first sight it may seem odd to use the notion of 'command' for an object of materialized (dead) labour, such as means of production. Certainly most usages of the 'labour commanded' concept are limited to that of living labour. However, the idea that materialized labour commands a quantum of value is quite consistent with the development of the theory of value in Marx and, as we argue, Sraffa. In *Theories of Surplus-Value*, for example, Marx clearly develops a line of argument where materialized labour commands more than its value. Specifically, under capitalistic relations of production, materialized labour commands a quantum of living labour that is greater than its own value-as-capital. Or what is the same, living labour commands less value than itself. This contradiction is the source of confusion in Ricardo's theory, a fact that was highlighted by Samuel Bailey (1825) and especially Thomas Malthus (1823, 1827, 1836) and it was this above all else which caused the Ricardian school to disintegrate under the watch (and to the dismay!) of Torrens, McCulloch, and J. S. Mill. The one merit Marx gives to Malthus is precisely how he (Malthus) recognizes that capital by its very nature commands more value than its cost. We read in *Theories of Surplus Value*:

The real contribution made by Malthus ... is that he places the main emphasis on the *unequal* exchange between capital and wage-labour, whereas Ricardo does not actually explain how the exchange of commodities according to the law of value ... gives rise to the unequal exchange between capital and living labour (Marx 1971, p. 14).

29. See Carter (2014) for further development of the 'coincident' character of the equality of these three ratios.

30. An anonymous referee sums up nicely the endeavour this chapter has attempted:

Sraffa's apparently *smooth* 'transition' from 'pool of profits' to 'surplus and deficit industries' can thus be interpreted as the most tangible sign of [an] effort ... having as its ultimate goal that of making 'exploitation' logically springing *from within* the system of production prices, and so rendering it again a socially meaningful notion.

Here the effort to make exploitation a scientifically legitimate conceptual category in understanding value and distribution in modern capitalist economies becomes explicit.

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