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Marx's theory of value, the 'new interpretation', and the 'empirical law of value': A recap note

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This note is a recapitulation of the present state of the art in the debates on Marx's labour theory of value. It summarizes the main reasons why this theory is problematic. At the same time, it claims that the theory of exploitation does not depend on a labour embodied valuation and can be expounded by resorting to the theory of production prices. Almost all Marxists have now accepted this truth. Most of them have been convinced by a 'new interpretation' which has been able to translate the labour commanded by net output into an amount of living labour and the rate of surplus value into a ratio between unpaid and paid labour. What produced such a result is the use of labour productivity as a numeraire. However there still are Marxists who retain allegiance to the labour theory of value, reinterpreted as an empirical law. Although the results of their econometric research do not seem wholly convincing, they contributed to question the historical appropriateness of the level of abstraction in Marx's value theory.

Key words: Marxian Economics, Labour Values, Prices of Production, Theory of Exploitation
JEL Classifications: B14, E11

1. Introduction

All the debates on the labour theory of value have been sent off track by the way the value *problem* is set up by Marx himself: namely as a problem of the transformation of labour values into production prices. Marx does not realize that there is a basic difficulty, which is independent of the transformation problem. Indeed, although he appreciates Adam Smith's notion of 'labour commanded', he does not grasp his motivation for rejecting embodied labour as a measure of value (Marx, 1861-63, II, 153), namely, that value determination based on embodied labour is only valid in a non-capitalist economy.

Labours commanded are production prices, and are determined in a way that makes them a correct expression of the technical and social conditions of production. Labour values, instead, only express technical conditions. These propositions are put forward in section 2, where a naive model of a corn-corn economy is used to show the validity of a labour commanded measure. Generalization to an economy producing n commodities does not modify this result.

Section 3 addresses the transformation problem: given a double system approach, with a labour value system and a production price system, is it possible to transform

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the former into the latter while keeping the profit and exploitation rates invariant? It is argued that, even when some aggregate invariance postulates are validated with opportune normalization, the basic problem remains unsolved – the problem of the inability of labour values to correctly express the social relations of production in a capitalist economy. In fact no reasonable normalization can achieve the invariance of the rate of exploitation and the rate of profit, which is tantamount to concluding that labour values are unsuitable to measure exploitation.

Section 4 gives up the labour theory of value, and proposes a single system approach. Then, by normalizing prices with the average productivity of labour, the rate of exploitation is defined as a ratio between unpaid and paid labour. This is how many contemporary Marxists, resorting to a ‘new interpretation’, have come to accept the need to abandon the notion of ‘embodied labour’ as a substance of value. Actually, such reinterpretation is based on a re-proposal of Sraffa’s theory of production prices.

Section 5 briefly recalls some contributions that purport to defend the labour theory of value on the ground of empirical research, and argues that the ‘empirical law of value’ is not fully convincing. This literature has nothing to do with the ‘new interpretation’. It is appraised here because it helps us to question the appropriateness of the level of abstraction based on the assumption of a uniform rate of profit, which is what is done in section 6.

2. Labour embodied and labour commanded

Let us start with the model of an economy producing corn by means of corn and labour. The one commodity model is useful to clarify that the basic difficulty in the labour theory of value has nothing to do with the transformation problem, but stems from the very definition of value in a capitalist economy.

Let $A < 1$ be the quantity of corn required to produce one unit of corn, l the labour coefficient, v the labour embodied in one unit of corn, p the production price, and r the rate of profit. The wage is posited as equal to 1, so the production price is measured in labour commanded. The labour value and the production price of one unit of corn are determined with the equations:

$$v = l + v A \tag{1}$$

$$p = l + (1 + r)p A \tag{2}$$

whose solutions are:

$$v = l(I - A)^{-1} = l(I + A + \dots A^t) \tag{3}$$

$$p = l(I - (1 + r) A)^{-1} = l(I + (1 + r) A + \dots (1 + r)^t A^t) \tag{4}$$

where $I=1$, and t tends to infinity. Notice that the wage rate does not appear in any equation, in (1) and (3) because it is not required to determine embodied labour, in (2)

and (4) because it is the numeraire. Equation (3) makes it clear that the labour value of output is the quantity of labour directly and indirectly used to produce it. Equations (3) and (4) reveal that, with $0 \leq r < r_{max}$, it holds $p \geq v$.

As shown in figure 1, the labour commanded by one unit of corn is greater than the labour embodied in it, and the greater the higher the profit rate. Labour commanded is a correct expression of value in an economy in which capitalists exploit waged workers, since it rises when the rate of profit rises and decreases when the technical and labour coefficients shrink. Instead, given the technique, the labour embodied does not change with exploitation, and therefore labour values do not correctly express the social relations in a capitalist economy.

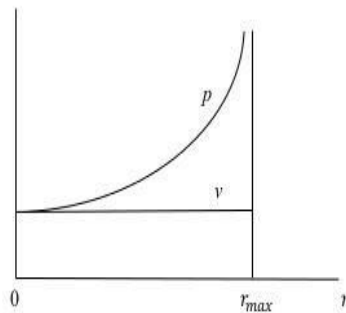


Figure 1

This could be the end of the story for, ‘if the theory is unsatisfactory even in the one-commodity case [...] then the n -commodity case is less important’ (Ellerman, 1983, 315). In any case, let us now reinterpret (1)-(4) as matrix equations. There are n industries and n goods. v and p are vectors of labour values and production prices respectively, l a vector of homogenous labour coefficients, and I the identity matrix. A becomes an indecomposable matrix of technical coefficients. It remains true that, with $0 \leq r < r_{max}$, it is $p \geq v$. In fact $(I - (1+r)A)^{-1} \geq (I - A)^{-1}$.

Whatever the numeraire, $p \neq v$ holds generically.² Since production prices differ from labour values, the question arises: which give a significant theory of value, i.e. one that expresses the social relations of production in a capitalist economy? The answer is immediate: only prices yield a correct valuation, for they change when the social relations of exploitation change.

Among all the possible price vectors, those normalized as labour commanded have a peculiar property: they are increasing functions of r .³ They are a transparent measure of value – transparent with respect to social relations as the labours commanded by all commodities rise with exploitation, given the technique.

Such a property may be seen at work in the definition of the rate of exploitation measured in labour commanded, e_c :

² Apart from when $r=0$, a special case in which the labour theory of value holds strictly ($p=v$) is when l is an eigenvector of A (Kurz & Salvadori, 1995, 110-3).

³ The first derivatives of prices with respect to r are $p'(r) = l(I - (1+r)A)^{-1}A(I - (1+r)A)^{-1} > 0$.

$$e_c = \frac{p(I-A)q-L}{L} = \frac{l(I-(1+r)A)^{-1}(I-A)q-L}{L} = \frac{L^*}{L} \quad (5)$$

where q is a vector of gross outputs, $L=lq$ is the employed labour force, or living labour, and $L^*=p(I-A)q-L$ is the quantity of labour that can be bought by surplus value. The rate of exploitation is an increasing function of the profit rate.

Equation (5) measures the rate of exploitation as a ratio between two quantities of labour, that commanded by surplus value and that commanded by the wage. Capitalists have bought command over L workers, then they have exerted command over them in the production process so as to make them produce a surplus value, which may buy command over a further amount of labour, L^* . Given the magnitude of living labour, the higher the rate of exploitation, the greater is L^* .

Rather interesting is the factor of exploitation, $1+e_c=(L+L^*)/L$, which is equal to the inverse of the wage share in net output. It is a ratio between the labour commanded by the net output and that used to produce it (Screpanti, 2003). In the presence of exploitation, this factor is greater than 1 as ‘the *value* of the total product can [...] buy more living labour than is contained in it’ (Marx, 1861-63, II, 153).

3. The transformation of labour values into production prices

Marx knows that relative prices are different from relative labour values, but he thinks there is no problem in the aggregate. He believes that ‘abstract labour’ is the *substance* of value (Screpanti, 2018), whilst production prices only express the surface appearance of market exchanges in reproduction equilibrium, and the appearance should not alter the substance.

He seems to believe in a sort of a law of value conservation, and is confident that exchanges at production prices only redistribute value and surplus value among the different industries without altering their overall amount, so that the *aggregate* ‘surplus value’, ‘value of labour power’ and ‘dead labour’ are not modified by exchanges at production prices. If this were so, he could use the general rates of profit and exploitation in labour values even when dealing with the price system.

Let e_v and e_p represent the rate of exploitation in labour values and production prices respectively; r_v and r_p the rate of profit in labour values and production prices respectively; \hat{p} the price vector with a new normalization; w_v and w_p the unit ‘value of labour power’ and the wage. And let us consider the following:

a) Fundamental invariance postulates

1. $e_v = e_p$

2. $r_v = r_p$

b) Secondary invariance postulates⁴

1. $v(I-A)q = \hat{p}(I-A)q$

2. $w_v L = w_p L$

⁴ Other invariance postulates can be deduced from these three. The invariance of gross output results from (b.1) and (b.3). The invariance of surplus value, from (b.1) and (b.2).

$$3. \quad vAq = \hat{p}Aq$$

The transformation problem boils down to finding a diagonal matrix D such as $vD = \hat{p}$. In general, prices are determined up to a proportionality factor. Therefore there are many D , one for each possible numeraire, and the standard can be chosen in order to obtain one of the secondary invariance postulates.

Embodied labour is a natural standard in the labour value system, which is made up of n scalar equations with n unknowns. Once labour values have been determined, it is sufficient to fix a basket of wage goods, b , to determine the ‘value of labour power’, $V = w_v L = vbL$, and the surplus value, $S = L - vbL$. There are no degrees of freedom, because labour values are determined without knowing the distributive variables. The case of the price system, in which prices depend on labour costs and the rate of profit, is different. Since social and political forces exogenously determine either w_p or r_p , the system is made up of n scalar equations with $n+1$ unknowns. There is one degree of freedom, and the possibility of introducing a normalization equation to validate one secondary invariance postulate – but only one.⁵

Validation of a secondary invariance postulate does not imply validation of the fundamental ones. The rates of exploitation in the two systems are:

$$e_v = \frac{v(I-A)q - w_v L}{w_v L} \quad (6)$$

$$e_p = \frac{\hat{p}(I-A)q - w_p L}{w_p L} \quad (7)$$

The rates of profits are:

$$r_v = \frac{v(I-A)q - w_v L}{vAq} \quad (8)$$

$$r_p = \frac{\hat{p}(I-A)q - w_p L}{\hat{p}Aq} \quad (9)$$

It is easy to see that $e_v = e_p$ and $r_v = r_p$ if and only if (b.1), (b.2) and (b.3) hold, which is not the case.⁶

⁵ However, it is possible to force a further invariance postulate. If we assume that both distributive variables are unknown, i.e. that neither of them is determined exogenously, we end up with $n+2$ variables. Thence we can posit two secondary invariance postulates and obtain, as a result, a fundamental one, but not both. For instance, by positing (b.1) and (b.2), (a.1) holds too. Loranger (2004) posits (a.2), which implies the invariance of aggregate capital and surplus value. Unsurprisingly, these devices have not met with much success among Marxist economists, as they boil down to an imaginative theory of exploitation according to which the profit rate and the wage are determined not by the social and political forces of class struggle, but by the theoretical requirements of an ingenious thinker.

⁶ To see what kind of problems could arise from this result, suppose $e_v < e_p$ and renormalize prices (now \check{p}) in such a way as to yield $w_v L = w_p L$. Then the wage in the price system coincides with the quantity of labour embodied in the workers’ consumption. Now, since the rate of exploitation does not change with a change of standard, it is $v(I-A)q - w_v L < \check{p}(I-A)q - w_v L$. This means that,

Summing up, if value is a social relation, as claimed by Marx, then production prices are meaningful measures of value, for they convey information about both the technical and the distribution conditions of production, and change when exploitation changes. Labour values, instead, respond only to changes in technical conditions. This is the reason why the rate of exploitation and the profit rate are not invariant in the transformation procedure. Now, the actual rate of profit, r_p , is associated with the actual rate of exploitation, e_p , not with e_v . Thus the latter is an improper measure of exploitation.

One might observe that the labour and capital coefficients of production convey information about the way society allocates ‘necessary labour’ among the various industries, given a certain output composition, and therefore the labour values they determine do, in fact, represent social relations. This proposition is correct if only one technique is available, yet it does not endorse the superiority of labour values, for all such ‘social’ information conveyed by them is also conveyed by production prices. In any case, it remains a ‘technicist reading of the theory of value’ (Elson, 1980, 126) or the expression of a purely ‘technological paradigm’ (De Vroey, 1982) because it makes labour values dependent on the sole technical conditions of production.

Moreover, if more than one technique exists, then the labour value system may not convey correct information on the technical conditions of production. This is a big problem because Marx attributes a great importance to technical change in the process of capital accumulation and in class struggle. Okisho (1961) proves that, since the choice of techniques is motivated by profit, the evolution of technical change in a capitalist economy cannot be understood by using labour values. If there are two techniques, for instance, the price system correctly reveals which one is chosen by the capitalists, whilst use of the labour value system could lead to the wrong technique being chosen. The case of many techniques brings to light another reason why labour values do not convey correct information about the social relations of production: they do not regulate the actual production conditions when technical change is motivated by profit.

4. A single system approach

A way out of the labour value impasse is to give up equation (1) and stick with equation (2) as the sole correct representation of values. The double system approach to value determination gives way to a single system approach: ‘There is only one economy, one system, not two. There is no “underlying”, hidden economy, which operates in [labour] values’ (Duménil & Foley, 2006, 9). In other words, the only solution to the transformation problem is its dissolution.

notwithstanding the value of labour power is identical in the labour value and price systems, the surplus value produced in the latter is greater than that produced in the former. It is as if the surface appearance of market exchanges had produced a surplus value over and above that produced in the labour value system.

Yet value can still be expressed in labour units, provided prices are normalized with labour productivity. This is the essence of the ‘new interpretation’ put forward by Duménil (1980; 1983-4), Foley (1982), Wolff, Roberts and Callari (1982) and Lipietz (1982). Following these contributions, other authors proposed reinterpretations which are rather different from each other but have in common the device of adopting labour productivity as a numeraire.

So, let y represent the productivity of labour and take it as a numeraire:

$$y = \frac{\hat{p}(I-A)q}{L} = 1. \quad (10)$$

When the net output is equal to the employed labour force, $\hat{p}(I - A)q = L = v(I - A)q$,⁷ the wage share becomes a share of living labour. Then the rate of exploitation can be written as

$$e_p = \frac{\hat{p}(I-A)q - w_p L}{w_p L} = \frac{L - w_p L}{w_p L} = \frac{1 - w_p}{w_p} \quad (11)$$

Now we can confidently say that the rate of surplus value is a ratio between unpaid labour, $L - w_p L$, and paid labour, $w_p L$. If 1 is a working day, w_p is the part of it which is used to produce the wage, so e_p is a ratio between the number of hours a worker works for the capitalist and the number she works for herself.⁸ Finally, recall equation (5). Then notice that, since the rate of exploitation is a pure number, it must be $e_c = e_p$, or $L^*/L = (1 - w_p)/w_p$. The ratio between the labour commanded by surplus value and that commanded by the wage is equal to the ratio between unpaid and paid labour.

It seems that a re-reading or rather a re-writing of Marx is required. The ‘new interpretation’ works as a ‘monetary’ theory of labour value. y is called ‘the monetary expression of value’ or ‘the monetary expression of labour time’, and $1/y$ is meant as the ‘labour expression of money’ or the ‘value of money’. In this approach ‘labour value’ is immediately represented by money, as one unit of labour is equivalent to one unit of money.

To be true, a single system approach can be developed without any reference to equation (2), and a labour productivity numeraire can be applied to any conceivable price system (Mohun, 1994, 407; Duménil & Foley, 2006, 1). Equation (2) is the one that determines prices at the highest level of abstraction compatible with that of Marx’s analysis of value (Screpanti, 1993). At a different level of abstraction, the

⁷ A labour productivity standard can already be found in Sraffa (1960, 10-1), who also develops a single system approach to value determination. He posits $L=1$ to normalize the level of activity. Then, to normalize prices, he makes the value of net output equal to unity, $\hat{p}(I-A)q = 1$. The two normalizations imply $\hat{p}(I-A)q = L = 1$, and thence the (10).

⁸ However, these definitions of unpaid and paid labour do not coincide with Marx’s definitions of surplus labour, $L - vbL$, and the value of labour power, vbL . Also notice that, once normalized with y , the prices of capital goods could be called ‘labour time-equivalents of constant capital’ (Foley, 2000, 25). In any case, they correspond to Sraffa’s ‘dated quantities of labour’, $\hat{p}A = l[A + (1 + r)A^2 + \dots + (1 + r)^t A^{t+1}]$ rather than to Marx’s ‘dead labours’, $vA = l(A + A^2 + \dots + A^{t+1})$.

labour productivity standard could be applied to a fix-price oligopolistic economy with differential profit rates, as better argued in section 6 below.

Finally, note that some new interpreters (e.g. Duménil, 1984; Duménil & Levy, 1991; Moseley, 1999) define the wage without specifying the workers' consumption basket and consider it as a variable, not as a given. Marx himself does so in his less abstract investigations into wage dynamics. And Sraffa (1960, 33), when treating 'the whole of the wage as a variable', clarifies that the practice of determining it as 'consisting of specified necessities determined by physiological or social conditions [...] loses much of its force'.

5. Are labour values vindicated by empirical research?

In the years in which the 'new interpretation' was gaining popularity, several students⁹ carried out research on input-output tables that led to a surprising result – a sort of empirical law of value. Sectorial market prices seem to be highly correlated to labour values and production prices, with low coefficients of variation and regression lines exhibiting intercept coefficients near to 0, slope coefficients near to 1 and R-squared over 0.9. Interestingly, the fitness of production prices is broadly as good as that of labour values, and sometimes even better.

Now, there are two cases in which labour values are proportional to production prices: when the rate of profit is zero, or when the vector of labour coefficients, l^* , is an eigenvector of matrix A , i.e. the organic composition of capital is uniform. Thus, the differences between production prices and labour values shrink with the magnitude of r or with the differences between l and l^* .¹⁰

So, if we assume $r \cong 0$ or $l \cong l^*$, we can expect a high correlation between labour values and production prices.¹¹ Then, to account for the correlations with *market* prices, we could resort to the classical theory of competition, which conjectures that they undergo small and stable oscillations around production prices.

Is this justification satisfactory? Perhaps not: first, because the assumptions $r \cong 0$ and $l \cong l^*$ are not very realistic; second, because the classical theory of competition is

⁹ For instance, Ochoa (1984), Shaikh (1988), Shaikh & Tonak (1994), Cockshott, Cottrell & Michaelson (1995), Cockshott & Cottrell (1997;1998), Tsoulfidis & Maniatis (2002), Zachariah (2006), Fröhlich (2012).

¹⁰ The first derivatives of $p - \gamma v$ with respect to r are $p'(r) - \gamma v'(r) > 0$, where γ is a proportionality factor. In fact $p'(r) = l(I - (1 + r)A)^{-1}A(I - (1 + r)A)^{-1} > 0$ and $\gamma v'(r) = 0$. This proves the first proposition. As to the second, consider that, when the organic composition of capital is uniform, $l^*A = \mu l^*$ and $p^* = \gamma v$, where μ is an eigenvalue of A (Kurz & Salvadori, 1995, 112). Now let us compare two techniques, one with different organic compositions of capital, (l, A) , and one with a uniform organic composition of capital, (l^*, A) . The price vectors are p and p^* . Then $p - \gamma v = p - p^* = l(I - (1 + r)A)^{-1} - l^*(I - (1 + r)A)^{-1} = (l - l^*)(I - (1 + r)A)^{-1}$.

¹¹ Another possibility is to assume that the matrix of technical coefficients is a stochastic matrix tending to approach a structure with a uniform organic composition of capital. Schefold (2014) considers this 'an important special case', and proves that the same assumptions which validate the labour theory of value also validate the neoclassical surrogate production function.

difficult to accept as a correct representation of the market process in a modern capitalist economy.

It seems that the above-mentioned empirical findings are incompatible with the theory developed by Marx, who does not assume low profit rates and a uniform organic composition of capital. On the other hand, he is very clear about the existence of a divergence between relative prices and labour values. Thus, what is really at stake is not Marx's, but Ricardo's labour theory of value (Díaz & Osuna, 2005-6, 345), which does not accurately distinguish between labour values and production prices and does not claim to be 100% valid. Even so, the empirical law of value still lacks a theoretical justification, and the suspicion may arise that it is a statistical artefact.

A considerable body of methodological literature has now cast 'doubts on the logic of the so-called empirical labour theory of value' (Mariolis & Soklis, 2010, 87). For instance, Ochoa (1984), Kliman (2002; 2004) and Nitzan & Bichler (2009, 95) observe that, since input-output prices result from aggregation into industries, problems with spurious correlations could be caused by differences among industry sizes. Petrovic (1987) and Steedman & Tomkins (1998) argue that the strength of correlations could vary depending on the choice of numeraire. Díaz & Osuna (2005-6; 2007; 2009) identify a major indeterminacy problem, caused by the unavoidable arbitrariness of the chosen measurement units. Interestingly, when the deviations between prices and 'labour values' are measured with a 'numeraire-free' standard (such as that proposed by Steedman & Tomkins, 1998, 383-84), they turn out to be not as small as the empirical law of value predicts. Moreover, this law is falsified when panel data are used instead of cross sectional estimates (Vaona, 2014).

Now, in a complex modern economy there are myriads of commodities with different prices. Input-output tables reduce this complexity to a few tens of 'commodities' and industries. The output of an industry is estimated as an aggregate of many 'similar' commodities evaluated at their prices. On the other hand, 'the commodity' of an industry is defined as whichever represents the greatest part of sectorial production, all the others being ignored. Moreover, the production coefficients of input-output tables are fictitious technical coefficients. Each of them is calculated not as a ratio between the physical quantity of an input and a level of activity, but as a ratio between an aggregate of many similar inputs and an aggregate of industry outputs, with the disaggregated items being evaluated in terms of prices. All this means that two deeper problems lurk behind the difficulties of dimensional analysis.

A first problem is that labour values, which should be calculated on the grounds of physical coefficients of production, are in fact reckoned in terms of 'technical' coefficients infected by prices. These 'labour values' are permeated by prices. Not by chance some students call them 'direct prices' or 'value prices' instead of 'labour values'. An important statistical implication is that direct prices and market prices are not independent variates. Rather they are the results of two different elaborations of one variate, so the regressions between prices and 'labour values' might actually

‘correlate prices with... prices’ (Nitzan & Bichler, 2009, 96). No surprise, then, if $R^2 > 0.9$.

A second problem is as follows. Since the prices recorded in input-output tables and the direct prices calculated on their grounds refer to sectorial aggregate, their correlation in fact consists of a relation between *averages* of the actual prices and the direct prices of the myriads of real commodities. One can surmise how much dispersion is disposed of in this way. As Steedman & Tomkins (1998, 382) observe, the deviations between prices and ‘labour values’ tend to be smaller the lower the number of industries in an input-output table.¹² How great would they be if the tables had thousands of rows and columns? Consider the following proposition: ‘across input-output years we have found that on average labour values deviate from market prices by only 9.2 per cent’ (Shaikh, 1988, 243) – just a 91% labour theory of value! All the same, how would it sound if it was made clear that each of these ‘labour values’ and ‘market prices’ are in fact averages of many labour values and prices whose dispersion is altogether ignored?

These problems are insurmountable, given the limitations of national accounts data. Therefore it is understandable that some students tend to cope at least with the second one by assuming ‘that the distribution of such variables within each sector is similar in shape to the distribution across the sectors’ (Cockshott & Cottrell, 1995, 6-7). An input-output table is considered as a perfectly representative sample of the real economy.

Summing up, the empirical law of value is defensible under some peculiar conditions. The fictitious production coefficients of input-output tables must be good proxies of the physical (industry average) technical coefficients; ‘labour values’ and market prices must be wholly independent variates; the Cockshott-Cottrell perfect sample hypothesis must be valid; the price-value deviations must remain low when measured with the Steedman-Tomkins ‘numeraire-free’ standard; and, of course, Ricardo’s labour theory of value must have a sound scientific explanation.

6. What is the proper level of abstraction?

Whatever its econometric achievements, this stream of research has an important theoretical implication for Marxist economics, as it raises the question of the historical appropriateness of the level of abstraction in value theory. Marx adopts the classical theory of competition with all its implicit assumptions, such as flexible market prices, price-taking behaviour, no oligopoly or monopoly power, no entry and exit barriers, no product differentiation. By virtue of this theory the actual rates of profit are

¹² To be precise, the deviations should shrink with the dimension of an input-output matrix compared to the dimension of an economy, defined in terms of the number of real commodities produced in it. This calls to mind Cockshott’s (2010, 5) observation that ‘the larger the population of the country, the closer is the fit between observed prices and labour values’. It sounds like an involuntary admission of weakness, presuming that the number of a country’s inhabitants is correlated to the variety of commodities they produce.

expected to gravitate around a uniform rate. However, it is highly doubtful that those assumptions correctly describe an industrial economy.

They were not even justified in Smith's times (remember his invectives against the cabals or monopolies who fix prices to squeeze the buyers). In *The Wealth of Nations* they only portray an *ideal* state of 'perfect liberty'. Did they correctly describe the market process in the mid-nineteenth century? After all, Marx himself observes the tendency of company size and market power to grow in the advanced capitalist countries of his times. Thus, by complying with that theory of competition, he accepts a cliché of the science of his times, but at the price of an improper level of abstraction.

Farjoun & Machover (1985) suggest a way out of this difficulty. They consider competitive production prices as unrealistic 'ideal prices'. In the real world, profit rates have no tendency to converge to uniformity, and market prices no tendency to converge to competitive prices of production.

This fact can be explained by the theory of normal pricing. Markets are regulated by oligopolistic competition; prices are rather sticky and are fixed by applying a gross mark-up to variable costs (labour costs plus circulating capital), which are calculated by firms with a view to normal capacity utilization in the long run. The mark-up magnitudes differ across firms and industries, and reflect the diverse 'degrees of monopoly'.

Let us now distinguish between *competitive* production prices and *oligopolistic* production prices, the former yielding a uniform rate of profit. Normal prices are oligopolistic *production* prices, since they are determined by production conditions. Still, they are also *market* prices, i.e. the prices at which commodities are actually sold. From an analytical viewpoint, they are determined by rewriting equation (2) as $p = (l + pA)U$, where $U = \{u_i\}$ is a diagonal matrix of different mark-ups.¹³ Notice that restricting input costs to circulating capital as a basis for price determination is not a simplifying hypothesis in this case, but the illustration of a usual practice of firms. Moreover, there is no need to assume constant returns to scale throughout. It is sufficient to observe that variable costs are constant in a neighbourhood of normal capacity utilization.

The fundamental proposition argued in this article is still valid: oligopolistic *production prices* yield a correct theory of value, as they express both the technical and social conditions of production, now including the oligopoly power by which a firm may exploit consumers and the workers of other firms.

The decision to treat the profit rate as a random variable is theoretically grounded on 'a systematic and principled rejection of the concept of a uniform profit rate' (Farjoun, 1984, 12). Plausibly, this also implies a principled rejection of the concept of 'direct prices' yielding a zero profit rate. All Marxists should learn such a lesson. The assumption of differential profit rates within a fix-price model is more realistic and more general than the assumption of uniformity. More general, because the

¹³ Now wages are treated as paid in advance because this is the way firms fix prices, even if they pay wages *post factum* (Lonzi, Riccarelli & Screpanti, 2017).

classical and neoclassical theory of competitive markets can be considered as a special case – the limit case in which all the degrees of monopoly are nil. This is often assumed in order to simplify theoretical problems and prop up ideological tenets; and therefore it can be legitimately assumed with critical intentions. But it is not very useful to explain the real structure and dynamics of a modern capitalist economy.

7. Conclusions

Several Marxists have contested the ‘new interpretation’ from a methodological and a philological point of view. To mention just a few: Roemer (1990) observes that abandoning the dual system approach opens value determination to arbitrariness; Shaik & Tonak (1994), that it turns the whole relationship between surplus value and profit on its head; Mongiovi (2002), that it redefines value in a trivial way; Fine, Lapavistas & Saad-Filho (2004), that it wrongly assumes value to be immediately represented by money. More generally, it is hard to believe that Marx reasons in terms of a single system approach. But who can claim to have established ‘what Marx really said’, in this era of hermeneutics? In any case, although philological concerns are understandable, it should be acknowledged that the ‘new interpretation’ has helped convince many Marxists that the labour theory of value can be abandoned without prejudicing the theory of exploitation.

Marx seems possessed by a twofold self. He is an essentialist philosopher who believes value has a ‘natural’ substance, and a scientist who knows that value represents social relations (Screpanti, 2018). The labour theory of value is an artefact of the essentialist philosopher and a legacy he receives from Ricardo. It is a source of various analytical riddles and must be skirted by all Marxists who side with the social scientist.

Finally, as brought to light by some ‘empirical Marxists’, the level of abstraction adopted by Marx in developing his theory of value is influenced by a cliché of the economic science of his times, namely, the assumption of perfectly competitive markets. Since Marx himself observes the growth of firms’ size in the advanced capitalist countries of his times, a more appropriate level of abstraction should be based on a fix-price model of oligopolistic competition predicting a stable structure of different profit rates.

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