Comments on Moseley: Equal and Unequal Exchange in the Labour Theory of Value

Simon Mohun[1] and Roberto Veneziani[2]

February 27, 2017

Abstract
This note explores the analytics of the labour theory of value as presented by Moseley in this Symposium. It presents a more general approach, which carefully distinguishes equivalent from non-equivalent exchange. It finds that Moseley's results are (a) a special case of this more general approach; (b) independent of the methodology he proposes; (c) characterized by some ambiguity as to the notions of equivalent and nonequivalent exchange and their role in the labour theory of value.

Key words: labour theory of value; equivalent and nonequivalent exchange

1 Introduction

One way in which to approach theory is through a textual analysis of what some theorist has written. The motivation might be that the theorist has been misunderstood, and hence it is important to consider what he or she 'really' said. The serious disadvantage of an exegetical focus on the writings of the theorist rather than the theory itself is that exegesis is always contested and is never definitive. A different way is to approach theory analytically and directly, focusing on its logically coherence and its ability to understand contemporary phenomena of interest. From this perspective, the writings of a theorist are of only second order importance. They might provoke; they might inspire; they might help in understanding how a theory has developed; but they are of secondary interest.

Moseley adopts the exegetical route, proposing a particular interpretation of a labour theory of value, and buttressing it with extensive textual evidence. On his exegesis, this note

[1] School of Business and Management, Queen Mary University of London; s.mohun@qmul.ac.uk
[2] School of Economics and Finance, Queen Mary University of London; r.veneziani@qmul.ac.uk

offers no comments, save to acknowledge the breadth and the depth of his knowledge of the texts. Instead, this note focuses below in Section 3 on the analytical interpretation alone. In order to make sense of this, we first outline in Section 2 a coherent and consistent labour theory of value, in order to provide a benchmark for the assessment of the theory that Moseley presents.

2 Labour-values and Prices

2.1 A microeconomic theory

Consider a competitive commodity-producing society with perfect labour mobility and no institutions of private property, in which production takes place using homogeneous labour alone. In such circumstances it seems natural to suppose that the price of a commodity (its exchange-value) will be determined by the degree of difficulty of the production of that commodity, which in turn can be measured in units of time. So the unit price of commodity i, p_i, (its value in terms of money) will be measured by its labour-time of production, the 'direct' labour hours involved per unit of output l_i (or its value in terms of time). Commensurability between these two forms of value, time and money, then requires a coefficient that converts labour-time into money. Call this coefficient the 'value of money', and denote it λ_m. Its units are hours per unit of money, and its inverse (in units of money per hour) is the 'monetary expression of labour-time'.

With these definitions, the labour theory of value can be written for each commodity i as

$$p_i = \frac{l_i}{\lambda_m}. \tag{1}$$

Since this holds for all commodities, then for commodities i and j, the ratio of their prices p_i and p_j will equal the ratio of their labour-times of production, so that

$$\frac{p_i}{p_j} = \frac{l_i}{l_j}, \tag{2}$$

While this is a somewhat fanciful economy, one can imagine that an arbitraging process via competition in commodity markets and labour mobility ensures that equation (1) and hence equation (2) holds.

Now suppose that production requires nonlabour means of production as well as labour, and institutions of private property arise such that those who have the capacity to work have no access to means of production other than through selling their labour-power to those who have sufficient money (and power) to acquire the nonlabour means of production. The former are called ‘workers’ and the latter ‘capitalists’. Capitalists advance money capital to purchase labour-power and nonlabour means of production, and organize production and the sale of the finished commodities, the proceeds of which recover their money capital advanced and an additional profit. Then the labour hours involved in the production of each commodity are the sum of the ‘direct’ labour hours employed and the ‘indirect’ labour hours embodied in the means of production. Hence equation (1) must be modified to incorporate this complication, so that, for all i and j,

$$p_i = \frac{\lambda_i}{\lambda_m}, \tag{3}$$

where the labour-value of commodity i is λ_i, defined as

$$\lambda_i = \sum_j \lambda_j a_{ji} + l_i \tag{4}$$

or in matrix and vector terms (for clarity) as

$$\boldsymbol{\lambda} = \boldsymbol{\lambda}\mathbf{A} + \mathbf{l} \tag{5}$$

We will assume throughout that the matrix of technological coefficients $\mathbf{A}$ is indecomposable; that all means of production are circulating capital; that there is neither joint production nor choice of technique; that all labour is simple rather than complex, social rather than private, necessary rather than wasted, abstract rather than concrete, and productive; and that hours of labour-power hired are unproblematically translated into hours of labour employed in production.

Equation (3) describes 'equivalent' or 'equal' exchange: the process of exchange is a change in the form of value and not a change in its magnitude: the same magnitude of value is expressed indifferently as a quantity of hours (expended in production) or as a quantity of money (exchanged in circulation), and the value of money translates the one into the other.

Since equation (3) holds for all commodities, it holds for the commodity labour-power. Denote the unit price of labour-power by w (the wage rate or wage per hour, equalized across all occupations by labour mobility), and the value of labour-power (per hour of labour hired) by vlp, then

$$w = \frac{vlp}{\lambda_m} \tag{6}$$

so that

$$vlp = w\lambda_m. \tag{7}$$

Moreover, assuming that all of the wage is spent on consumer goods, whose prices are by assumption proportional to their values, the value of labour-power (per hour) must equal the value of what is purchased (per hour). Hence provided that there is equivalent exchange, the value of labour-power is equal to the value of the commodities purchased with the wage.

Finally, multiplying equation (3) by net output y_i and summing over all net outputs obviously yields the same equivalence for aggregate net output $\mathbf{y}$ as for individual commodities, so that, in vector notation,

$$\mathbf{py} = \frac{\boldsymbol{\lambda}\mathbf{y}}{\lambda_m}. \tag{8}$$

Notice that postmultiplying equation (5) by the gross output vector $\mathbf{x}$, and premultiplying the input-output equations $\mathbf{x} = \mathbf{Ax} + \mathbf{y}$ by $\boldsymbol{\lambda}$, shows that $\boldsymbol{\lambda}\mathbf{y} = \mathbf{lx} = H$, so that the value of net output is just total hours worked. Hence equation (8) can be written as

$$\mathbf{py} = \frac{H}{\lambda_m}. \tag{9}$$

But with competition and capital mobility, equation (3) in general cannot hold. For competitive arbitrage will tend to equalize rates of profit. Under such competitive circumstances, consider two capitals of equal size, one of which is predominantly invested in means of production and the other in labour-power. For an investment of the same magnitude, the labour-intensive capital will produce more value than the means-of-production-intensive capital, so that the rate of profit in the former must be higher than the rate of profit in the latter. In order that competition equalizes the rate of profit, value must flow from the labour-intensive capital to the means-of-production-intensive capital, so that, given the value of money, the price of the former's output must fall relative to its value, and that of the latter must rise. Hence exchange must be unequal or nonequivalent. Consequently the labour theory of value as represented by equation (3) fails.

2.2 A macroeconomic theory

However, generalized unequal exchange is a redistribution of a given total magnitude of hours, so that the total sum of hours is invariant to whatever prices happen to be. In the spirit (but not the letter) of equation (3), suppose that equations (8)-(9) continue to hold, so that aggregate value added in hours and aggregate value in money are equivalent, an equivalence that now defines the value of money as the ratio of H to $\mathbf{py}$. So aggregate value added is conserved as it proceeds through the circuit of capital. This macroeconomic principle of the conservation of aggregate value added through the circuit of capital becomes the foundation stone of the labour theory of value.

Further, the microeconomic equation (3) does continue to hold for one particular commodity despite generalized unequal exchange. Equations (6) (and (7)) are unaffected by the unequal exchanges now characterizing all other individual commodities. The necessity of unequal exchange is determined by the different value ratios of means of production to labour across different production processes (that is, different compositions of capital). But there is no composition of capital to consider in the production of labour-power, and no rate of profit in its production to be equalized via arbitraging flows of capital. Labour-power is an aspect of human beings who are not themselves produced according to capitalist production relations, for the (re)production of people takes place outside of those relations. Hence the exchange of labour-power for a wage is undisturbed by considerations of unequal exchange arising out of differing compositions of capital.

Hence a consistent labour theory of value begins with equations (8) and (9), which are macroeconomic equations describing the conservation of aggregate value added. Total hours worked are divided up into the prices of individual commodities in some manner, so that prices are qualitatively forms of hours, or labour-values, but the only quantitative statements that hold are for the macroeconomic relation between aggregate value added in hours and in money, and for the microeconomic relation between the value of labour-power (per hour of labour hired) and the wage rate.

Notice that these equations (6)-(9) hold *whatever prices happen to be*. Consequently, since aggregate net output is the monetary sum of total wages $V^{£}$ and total profits $S^{£}$, and total hours worked are hours of necessary labour V^{hrs} plus surplus labour hours S^{hrs}, and since multiplying equation (7) through by H shows that $(vlp)H = w\lambda_m H$, so that $V^{hrs} = V^{£}\lambda_m$, then it follows immediately from equation (9) that

1. aggregate profits are the money form of hours of surplus labour:

$$S^{£} = \frac{S^{hrs}}{\lambda_m}; \tag{10}$$

2. the value of labour-power (per hour of labour hired) is the aggregate wage share of net output

$$vlp = \frac{V^{£}}{\mathbf{py}}; \tag{11}$$

3. the rate of surplus-value (rate of exploitation e) is the aggregate profit wage ratio

$$e = \frac{S^{hrs}}{V^{hrs}} = \frac{S^{£}}{V^{£}}. \tag{12}$$

In this way, the labour theory of value is a macroeconomic theory of class exploitation which holds whatever prices happen to be. This is as it should be - the theory of capitalist exploitation is independent of any particular capitalist price structure. Consequently, the labour theory of value is also an empirically applicable theory, since at any point of time prices are whatever they are, and $\mathbf{py}$, w and H are all known quantities, so that vlp and λ_m are calculable.

Now consider a particular case. Suppose prices are such that the rate of profit r is equalized. Such prices are called 'natural prices' or 'prices of production' and are denoted $\mathbf{p}^p$. Assuming wages are paid *ex ante* as an advance of (variable) capital, prices of production are the solution to the equations

$$\mathbf{p}^p = (\mathbf{p}^p\mathbf{A} + w\mathbf{l})(1+r). \tag{13}$$

Equation (13) implies a one-to-one inverse relation between the wage rate and the profit rate which, by equation (7) can be specified in terms of the value of labour-power. The higher the value of labour-power, the lower the rate of profit. But once the value of labour-power is fixed (within the relevant range of strictly between zero and unity), and a numéraire is chosen, then the rate of profit and the corresponding production prices can be derived using standard theorems in linear algebra.

In this particular case, as at every set of prices at which there is generalized unequal exchange, there is no equivalence between the labour-values of the commodities the wage purchases and their prices, so that the value of labour-power is not equivalent to the value of the wage-bundle of commodities; if this bundle is denoted as $\mathbf{b}$,

$$vlp = w\lambda_m = \frac{\mathbf{p}^p\mathbf{b}}{H}\lambda_m \neq \frac{\lambda\mathbf{b}}{H}. \tag{14}$$

Neither is there any equivalence between the labour-values of the nonlabour means of production and their prices, so that the money advanced to purchase means of production at prices of production (constant capital $C^{£p}$) is not equivalent to the labour hours that produced those nonlabour means of production, and hence

$$C^{\pounds p} = \mathbf{p}^p \mathbf{A}\mathbf{x} \neq \frac{\lambda \mathbf{A}\mathbf{x}}{\lambda_m} = \frac{C^{hrs}}{\lambda_m} \tag{15}$$

Equations (14) and (15) show that it is important not to confuse the labour theory of value with an account of equal exchange.

3 Moseley's labour theory of value

3.1 A special case

Moseley proposes a sequential procedure in which there is a macro-determination of total money-surplus-value for the economy as a whole on the basis of a given *money* capital advanced, followed by a micro-determination of how this total is divided between different industries. While the money capital advanced is spent on definite quantities of inputs at prices that are prices of production, what is purchased and the prices it is purchased at are microeconomic issues that cannot be considered until aggregate surplus-value in money terms is determined. Having first determined this latter, he then uses it to determine the general rate of profit which in turn is used to determine total revenues at prices of production.

Does this sequential macroeconomic and monetary focus produce different results from the nonsequential approach outlined in Section 2? For clarity, prefix Moseley's equation numbering with M. Then equation (9) above is Moseley's equation (M4) (noting that he works with the monetary equivalent of labour-time, or the inverse of the value of money), and his definition of necessary labour is equation (7) multiplied through by H. Not surprisingly then, his equation (M8) is equation (10) above. The only analytical difference is that all of Moseley's monetary variables are in prices of production, whereas the argument leading to equation (10) above is true for any price structure.

Moreover, Moseley's approach to prices of production reduces to that of equation (13) above. First, he proposes that the general rate of profit R is the ratio of total surplus value to total capital advanced, all evaluated at prices of production (his equation (M9)). But multiply equation (13) through by gross output levels x and rearrange, to see that Moseley's R is the r that solves equation (13). In Moseley's framework, prices of production must therefore be the corresponding prices that solve equation (13). And this can be seen by taking Moseley's prices of production (his equation (M11)), which are more properly called 'total revenues evaluated at prices of production' and dividing through by gross output levels; the result is equation (13) above.

In sum, Moseley's results do not derive from the methodology he proposes. His macroeconomic and monetary focus is the same as that in section 2. The only difference is that his results are a special case (prices are prices of production) of the more general approach (prices can be anything at all) presented above in section 2. Further, Moseley's determination of prices of production is also the same as that of equation (13).

3.2 Equal and unequal exchange

In section 2, multiplying equation (7) through by H shows that $(vlp)H = w\lambda_m H$, so that $V^{hrs} = V^{£}\lambda_m$, or aggregate variable capital in hours and in money (the wage bill) are equivalent. But the labour-value of constant capital is $C^{hrs} = \lambda\mathbf{Ax}$, and its money-value is $C^{£} = \mathbf{pAx}$, and these two are not equivalent.

Moseley argues that there is a "fundamental logical inconsistency" in determining aggregate monetary amounts of constant and variable capital differently. He is insistent that as "components of the initial money capital ... they should be determined in the same way". What he means by this is not that they are 'determined' differently (there is no determination for Moseley because they are given at the outset), but rather that their price-value relations are determined differently. This argument rests on a confusion between the labour theory of value on the one hand, and the notions of equal and unequal exchange on the other hand. To see this, consider in turn aggregate variable capital and aggregate constant capital.

Aggregate variable capital is the money advanced to purchase labour-power; the aggregate wage bill wH. Because the exchange of labour-power for a wage is unaffected by considerations of different compositions of capital across production processes, then, given the value of money, the wage rate exactly measures the value of labour-power (per hour of labour hired). That is, because the exchange is an equal one, then given the value of money, aggregate variable capital in money terms is exactly equivalent to aggregate variable capital in labour hours. This deduction is part of what is meant by the labour theory of value: equation (3) continues to apply to the commodity labour-power. But Moseley simply *defines* aggregate necessary labour as the aggregate wage bill divided by the monetary equivalent of labour-time, or in the terminology of this paper $V^{hrs} = V^{£}\lambda_m$. He provides no analytical motivation for this definition, but merely the bare assertion. There is no sense here of the peculiarity of labour-power as a commodity, no sense that it has no relative form of value but only an equivalent form. In Moseley's treatment of aggregate variable capital, the labour theory of value is an unmotivated a labour definition of value.

As regards aggregate constant capital, there is nothing to suggest that it is legitimate to write that $C^{£p}\lambda_m = C^{hrs}$, because the different production conditions of the various elements of constant capital must force their unequal exchange, as specified in equation (15). Given the value of money, $C^{£p}\lambda_m$ is an *imputed* sum of labour hours that bears no relation to the labour hours embodied in the means of production.

Hence the reason the labour theory of value in section (2) treats the price-value relations of aggregate variable capital and aggregate constant capital differently is because they are differently constituted, the former by equal exchange and the latter by unequal exchange. As money capital is transformed into productive capital in the first phase of the circuit of money capital, the labour-value of variable capital is conserved (by equal exchange: again $vlp = w\lambda_m$, so that $V^{hrs} = vlpH = wH\lambda_m = V^{£}\lambda_m$). But the elements of constant capital are purchased at prices that do not reflect their labour-values, so that there is no conservation of value for constant capital as between hours and money (because of unequal exchange $C^{hrs} = \lambda\mathbf{Ax} \neq \mathbf{pAx}\lambda_m = C^{£}\lambda_m$). Basic considerations of both structure and meaning of the labour theory of value require that the price-value relation for labour-power be differently treated from all other commodities.

Moseley comments that this different treatment "leads to other problems: the gross price-value equality is not satisfied and the price rate of profit is not equal to the value rate of profit". He is correct on both counts. As regards the first, in price of production terms,

$$C^{£p} + V^{£p} + S^{£p} = C^{£p} + \frac{\left(V^{hrs} + S^{hrs}\right)}{\lambda_m} \neq \frac{C^{hrs} + V^{hrs} + S^{hrs}}{\lambda_m}, \tag{16}$$

and as regards the second, again in price of production terms,

$$r = R = \frac{S^{£p}}{C^{£p} + V^{£p}} \neq \frac{S^{hrs}}{C^{hrs} + V^{hrs}}. \tag{17}$$

If Moseley requires that that these two inequalities be equalities, then he has to assert that the relation between C^{hrs} and $C^{£p}\lambda_m$ is one of equality, and that equality is plainly false (unless of course it is *defined* to be true, which makes a nonsense of different compositions of capital and an equalized rate of profit together requiring unequal exchange).

4 Conclusion

In his presentation of the labour theory of value, Moseley presents a particular methodology which is a distraction, being unnecessary to his analytical results. His analytical results are a special price of production case of the more general approach presented in Section (2). While his criticisms of that more general approach betray a tendency to slide into a confusion between the labour theory of value and the assumption of equal exchange, that confusion is by no means an intrinsic property of his approach, and is easily eliminated. But he then has to accept that he cannot maintain equations (16) and (17) as equalities.