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ON THE ‘NEW INTERPRETATION’ OF MARXIAN LABOR THEORY OF VALUE

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The purpose of this paper is to examine the logical structure of the ‘New Interpretation’(NI) of Marxian value theory. After clarifying its theoretical characteristics in relation to the two postulates, we emphasize that the results of NI should be interpreted carefully.

1. Introduction

In this paper, we try to examine the logical structure of the ‘New Interpretation’(NI) of Marxian labor theory of value developed by Gérard Duménil, Duncan Foley and others since the early 1980s.²⁾

First, the characteristics of NI’s transformation procedure will be analyzed in light of the conventional Marxian procedures. It will be shown that the conceptual change in the value of labor power is indispensable for NI’s results.

Secondly, NI’s alleged merits will be evaluated critically. NI’s normalization with regard to net product can be accepted as one way, not the sole one, of choosing numéraire. However, it will be argued that the alleged ‘double counting’ is not necessarily related to the problem of normalization. Furthermore, NI’s definition of value of labor power may lead to errors in the sense that the deviation of prices from values is neglected.

Finally, with the above points in mind, the implication of NI’s ‘value of money’ will be pursued in the context of commanded versus embodied labor and interpreting inflation. Particularly, it will be emphasized that the results of empirical studies using ‘value of money’ should be interpreted with great care.

2. The basic structure of NI

The basic equations of NI are as follows.³⁾⁴⁾

$$\lambda = A\lambda + l = A\lambda + wl + (1 - w)l \quad (1)$$

$$P = (1 + r)(AP + wl) = AP + wl + r(AP + wl) \quad (2)$$

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Ph.D in Economics (Seoul National University).

2) See Duménil(1980),(1983-4), Foley(1982), Glick & Ehrbar(1987), Mohun (1994) and Campbell (1997),(2002) etc.

3) Originally, w in (1) and (2) were different. Both can be the same in dimension and magnitude only because the second equality in (1) assumes that ‘value of money’ is equal to 1. ‘Value of money’ will be explained later.

Here λ, P, A, l, r and w represent value vector, price of production vector, input coefficient matrix, labor input vector, rate of profit and wage per unit of labor, respectively.⁵⁾

NI's common postulates can be summarized in two points.

(A) 'Value of money'(m)⁶⁾ is defined with regard to net product;

$$my'P = x'l \quad (3)$$

Here y and x denote, respectively, net product vector and gross product vector. Namely,

$$x' = x'A + y' \quad (4)$$

The postulate (A) represents the ratio of transforming the prices of net product into the total labor expended in the same period. The dimension of m is [hour]/[Yen].

(B) Value of labor power(λ_l) is defined as follows;

$$\lambda_l = wm \quad (5)$$

The postulate (B) defines value of labor power as the product of money wage and 'value of money'.⁷⁾

NI's interpretation is derived from (A) and (B).

First, from (2), profit per unit of commodity is

$$P - AP - wl \quad (6)$$

In the same way, from (5), surplus value per unit of commodity is

$$l - \lambda_l l = (1 - wm)l \quad (7)$$

Without doubt, value and price are dimensionally different. Therefore, dimensional consistency must be secured if we want to discuss aggregate equalities of transformation. NI chooses to multiply m to price equation of (6), or divide value equation of (7) by m . In the latter case, denoting t as the difference between profit and surplus value represented in price terms,

$$t = P - AP - wl - (1/m - w)l = P - AP - (1/m)l \quad (8)$$

4) Recently, the so-called 'Temporal Single-System Interpretation' argues that the point of time of input and output must be differentiated. See Nakatani, forthcoming, and Rieu(2003).

5) In this paper, vectors are column vectors and ' means transposed, row vector.

6) Foley(2000) uses the term, 'monetary expression of labor time' instead of 'value of money' because the latter can cause and actually caused some misunderstanding. The former is defined as the inverse of the latter. In this paper, we use 'value of money' for convenience of description. However, it cannot be overemphasized that 'value of money' is different from 'value of money commodity'.

7) As can easily be shown, this conception is equal to wage share in value added. Namely, $\lambda_l = wm = w(x'l/y'P) = wx'l/y'P$.

Multiplying gross product vector x by both sides of (8),

$$x't = x'(I - A)P - \frac{1}{m}x'l = y'P - \frac{1}{m}x'l = 0 \quad (9)$$

Here $x't = 0$ is derived from the definition of m . From (1) and (4),

$$x'l = y'(I - A)^{-1}l = y'\lambda \quad (10)$$

Therefore, equation (9) means that total price is equal to total value with regard to net product.

In conclusion, Marx's two aggregate equalities in the transformation procedure are directly obtained using the two postulates, (A) and (B).⁸⁾ Therefore, at the heart of NI lie two separate postulates, the choice of net product as a numéraire and the new definition of value of labor power. This means that NI has a kind of tautological character, as one of its vindicators admits.⁹⁾

3. The conventional transformation problem

Here we want to check if NI really "follows Marx's own clues".¹⁰⁾ The problem is in what aspect NI can shed a new light on value-price transformation and Fundamental Marxian Theorem. In order to do this, we summarize the conventional approach to the transformation problem as follows.

[**Transformation Problem I:** Okishio (1972), Shaikh (1977), (1982), (1984)]

Marx's transformation problem is to derive production price system from value system. As is well known, Marx himself presented a numerical example of the problem in the 3rd volume of *Das Kapital*. After showing the first step of transformation procedure, however, he stopped there saying it is not necessary "to go into further detail". At the same time, Marx emphasized the necessity of transforming cost price, and warned the reader not to commit an error by ignoring this. Okishio(1972) and Shaikh(1977) developed this transformation process further and proved the convergence of the procedure in the general case. It can be summarized as follows.

$$P_0 = \lambda \quad (11)$$

$$P_{s+1} = (1 + r_s)WP_s \quad (12)$$

8) In this sense, Mohun(1994) argues that equations (3),(5) and (10) define the labor theory of value. Actually, the last equation is another expression of value equation (1), which almost all the interpretations of Marxian value theory have adopted. On the other hand, (5) with (3) means that (9) automatically holds.

9) Duménil(1983-4), pp.445-6. Therefore, parallel use of 'New Solution' with 'New Interpretation' can be misleading.

10) Glick & Ehrbar(1987), p.314.

$$r_s = \frac{x'P_s - x'WP_s}{x'WP_s} \quad (13)$$

where $W = A + lb'$ and $\lambda = A\lambda + l$

This transformation procedure can be proved to converge to the following system of price of production.

$$P = (1 + r)(AP + lb'P) \quad (14)$$

From (12) and (13),

$$P_{s+1} = \frac{x'P_s}{x'WP_s} WP_s$$

Multiplying gross product vector x by both sides,

$$x'P_{s+1} = x'P_s = \cdots = x'P_0 = x'\lambda$$

Therefore, total value comes to be equal to total price with regard to gross product. In this case, however, total profit is not equal to total surplus value.

[**Transformation Problem II**: Nakatani(1995)]

Marx's transformation procedure is not so clear because he himself only did the first step. In the first step of the transformation, prices do not diverge from values, and the detailed process that resulted from the deviation between value and price is not clarified. Therefore, the transformation procedure assuming constant total surplus value cannot be rejected on the ground that it is against Marx's own method. Meek(1956) noted this point, and Nakatani(1995) gave a general proof. It can be summarized as follows. Mere M represents surplus value.

$$P_0 = \lambda \quad (11)$$

$$P_{s+1} = (1 + r_s)WP_s \quad (12)$$

$$r_s = \frac{M}{x'WP_s} \quad (15)$$

The transformation procedure converges to the system of production prices, (14), also in this case. Although total surplus value comes to be equal to total profit, the aggregate equality on gross product does not hold any longer.

4. NI's transformation problem

NI's transformation problem is different from the conventional ones above. In particular, NI tries to start directly with the system of prices of production and give a

value-theoretic interpretation. NI's discussion can be formulated as follows in the same vein of conventional iteration process.¹¹⁾

[**Transformation Problem III**]

$$P_0 = \lambda \quad (11)$$

$$P_{s+1} = (1 + r_s)WP_s \quad (12)$$

$$r_s = \frac{y'\lambda - x'lb'P_s}{x'WP_s} \quad (16)$$

This procedure assumes the aggregate equality with regard to net product considering real wage basket (*b*) explicitly.

If we multiply gross product vector x by both sides of (12) considering (16), the following can be obtained.

$$x'P_{s+1} - x'AP_s = y'\lambda \quad (17)$$

In other words, this procedure is to make total price of product at the $s+1$ -th step be equal to constant capital evaluated by s -th step prices plus total value of net product (therefore, total quantity of embodied labor) in the same period.¹²⁾ Surplus value is obtained by subtracting the conventionally-defined value of labor power from the total value of net product.

If this procedure converges, (17) becomes

$$y'P = y'\lambda \quad (18)$$

This means that aggregate equality holds for net product. However, the aggregate on surplus value does not hold. As is self-evident from the numerator in (16), profit explicitly depends upon P_s . And when (18) is satisfied at the state of convergence, $b'P = b'\lambda$ does not hold but in special cases.¹³⁾

As NI thinks that the two aggregate equalities are *sine qua non* of Marx's transformation procedure, the 'value of money' concept and the new definition of value of labor power are introduced. For the purpose of NI, not only postulate (A), the normalization by net product, but also postulate (B), the definition of value of labor power, must be introduced. The following formulation shows this.

11) Glick & Ehrbar(1987) gave numerical examples.

12) From (17), $x'P_{s+1} = x'AP_s + y'\lambda = x'AP_s + x'l = x'(AP_s + l)$. Therefore, if $AP_s + l$ is taken as λ_{s+1} , $x'P_{s+1} = x'\lambda_{s+1}$, namely, total price is equal to total value with regard to gross product. This is nothing other than the 'Temporal Single-System Interpretation'.

13) Special cases are equal organic composition of capital case or the case of the same internal composition of wage basket and net product.

[**Transformation Problem IV**]

$$P_0 = \lambda \quad (11)$$

$$P_{s+1} = (1 + r_s)(AP_s + mwl) \quad (19)$$

$$r_s = \frac{y'\lambda - mwx'l}{x'AP_s + mwx'l} \quad (20)$$

In (20), nominal wage is represented as the value of labor power using ‘value of money’ while the real wage basket is not conceived. And surplus value is obtained by subtracting value of labor power from constant value of net product. If this procedure converges, (17) can also be obtained by (19) and (20). Therefore, the aggregate on gross product holds. On the other hand, from (18), ‘value of money’ at the s -th step converges to 1 as s approaches infinity.

$$m_s = \frac{x'l}{y'P_s} \rightarrow \frac{x'l}{y'P} = \frac{x'l}{y'\lambda} = 1 \quad (21)$$

From (20), total profit can be shown to be equal to total surplus value as follows.

$$r(x'AP + wx'l) = y'\lambda - wx'l = (1 - w)x'l \quad (22)$$

Therefore, we can say that transformation problem IV reflects NI’s intention very well.

5. Critique of NI’s transformation

Can transformation problem IV be a faithful representation of Marx’s procedure? To answer this question, we examine the two alleged merits of NI.

5.1 The problem of normalization

NI argues that the object of transformation should be net product. Its alleged foundations are: double counting is contained in gross product and, therefore, two conventional aggregates do not hold simultaneously.¹⁴⁾

As already stated, price and value are dimensionally different. In order to compare them on the same dimension, transforming one into the other is inevitable. The conventional procedures starting with (11) express prices as values. In this sense production price in the transformation has the same dimension with value. So it can be named as ‘production price-value’. Transformation problem IV also represents value of labor power as wm , namely nominal wage is expressed as value.

Next, when we compare value and price quantitatively, some kind of normalization is necessary. Historically, a price standard of money commodity was adopted at first.

14) See Glick & Ehrbar(1987).

Transformation problem I chooses the aggregate equality on gross product, while transformation problem II does the aggregate on total profit. Newly introducing the aggregate equality on net product, NI argues that it is the only 'correct' standard. Then, can alleged double counting validate the normalization by net product? Without doubt, in the gross product traded within a certain period of time are contained not only final output, but also the intermediate goods necessary for its production. In this sense, total price of gross product entails the well-known double-counting problem similar to that of GNP calculation.¹⁵⁾ However, this problem has no logical bearing upon the choice of numéraire for comparison between value and price. Any one among money commodity, wage goods, gross or net product basket will be fine. This is also expressed in that the problem of so-called aggregate equalities results from disproportionality between value and price. For example, all the aggregate equalities hold when organic compositions of capital are equalized in all the sectors. In other words, the aggregate equality on gross product holds in spite of double counting if value and price are proportional.¹⁶⁾

5.2 Equilibrium price and wage basket

NI's alleged contributions are; first, there is no reason to require an equalized rate of profit and equilibrium prices¹⁷⁾ and, secondly, it is not necessary to suppose any conception of specific basket with respect to wage expenditure. The transformation problem is on the formation process of the production price system. The issues at stake are; what general rate of profit is formed as a result of inter-capital competition, how it realizes prices different from values and how those new prices are related to values. In other words, even in the case where rates of profit are not equalized and, therefore, production prices are not formed, the transformation arises insofar as prices are deviated from values. In this sense, NI's emphasis on the necessity of discussing the transformation problem in the state of non-equilibrium is relevant.

However, it is questionable to argue that NI actually did the transformation procedure with non-equilibrium. What NI did are; first, transforming value into price (or vice versa) in the context of net product, and secondly, allotting value of labor power using the conversion rate of net product. Namely, NI just cut a proportional share in value of net product and moved it to the value of labor power. Neither the deviation between values and prices of wage basket nor the deviation between values and prices of commodities is

15) See Saad-Filho(1996), pp.124-6.

16) Foley(2000) raises one more reason for net product normalization as follows.

"...in the context of ongoing technical change, we would confront the problem that the gross product contains means of production of various vintages, produced under different technical conditions, and embodying labor of different vintages and different productivities"(p.33).

However, this kind of problem also arises in pure NI case where 'value of money' is applied to net product in the sense that there is some conflation between individual and macro-level price-value ratio discussed later.

17) See Duménil(1984), p.343 and Saad-Filho(1996).

taken into consideration. Rather, this point is alleged to be a merit of NI. Values that have different dimension and quantitative determination with prices are actually denied in NI. This is typically represented in the fact that value of labor power is regarded as wage share.

6. On the critique of Shaikh and Tonak

Shaikh & Tonak criticized NI as follows.

“In recent years, several authors (Foley 1982; Lipietz 1982) have tried a “new” solution to the transformation problem by simply defining both the value of labor power and the value of money in the appropriate manner. What they neglect to mention are the implications of such a process. As just defined, value of money λ^* is the living labor commanded *in exchange* by the net product. This means that the value of labor power V is the living labor commanded by the money wage bill of productive workers, and that surplus value S is simply the living labor commanded by the existing mass of profit.The whole relation between surplus value and profit is turned on its head. Moreover, this approach does not even have the virtue of being new, since it is really nothing more than Adam Smith’s second definition of labor value as the living labor commanded by price. Ricardo and Marx decisively rejected this approach, with good reason.”¹⁸⁾

It is clear that NI’s conception of value is different from embodied labor value. However, it is not commanded labor value as Shaikh & Tonak argues. If we denote price of i -th commodity and nominal wage rate as p_i and w , the quantity of commanded labor of the i -th commodity is p_i/w . This represents the quantity of labor purchasable in exchange of one unit of the i -th commodity, and its dimension is, for example, [hour]/[rice 1kg]. On the other hand, NI’s ‘value of money’, m , is the ratio between the quantity of direct embodied labor in a certain period and total price of net product in the same period, of which the dimension is [hour]/[Yen]. Therefore, the two are dimensionally different. ‘Value of money’, m , can be changed as follows.

$$m = \frac{x_1 l_1 + \cdots + x_n l_n}{y_1 p_1 + \cdots + y_n p_n} = \frac{y_1 \lambda_1 + \cdots + y_n \lambda_n}{y_1 p_1 + \cdots + y_n p_n} = \alpha_1 \omega_1 + \cdots + \alpha_n \omega_n \quad (23)$$

where $\alpha_i = \lambda_i / p_i, \quad \omega_i = p_i y_i / \sum p_i y_i$

In other words, NI’s ‘value of money’ can be represented as the weighted average of value-price ratio of commodities, α_i , where the weight is the ratio of net product. If we presume one-commodity economy, ‘value of money’ comes to be equal to value-price ratio.

¹⁸⁾ Shaikh & Tonak (1994), p.179, Italic in original.

How about value of labor power, λ_l ? Marx defined it as the quantity of labor for producing commodities whose consumption is necessary to reproduce labor power. This can be represented as $b'\lambda$ where b denotes the vector of commodities necessary for reproduction of labor power. What is the dimension of this? As value of labor power per unit of labor is [real wage rate per unit of labor]*[value of wage goods]*[unit labor], it becomes

$$b'\lambda = b'\lambda \cdot 1 = b_1\lambda_1 \cdot 1 + \cdots + b_n\lambda_n \cdot 1$$

where [1] represents unit labor. As the dimensions of b_1, λ_1 and 1 are, respectively, [1st commodity/hour], [hour/1st commodity] and [hour], the dimension of Marx's value of labor power becomes [hour].

In contrast to this, NI's value of labor power represents wage share. Therefore, its dimension looks like a pure number at first glance.¹⁹⁾ However, also in this case, value of labor power should be conceived as $1 \cdot wm$ by multiplying [1]. Therefore, its dimension becomes [hour]. Namely, the dimensions of NI's and Marx's value of labor power are the same and consistent with common sense. However, their implications are different. Using (23), we can rewrite NI's value of labor power as follows.

$$\lambda_l = wm = b_1\lambda_1\delta_1 + \cdots + b_n\lambda_n\delta_n \quad (24)$$

Here $\delta_i = \frac{\sum \alpha_i \omega_i}{\alpha_i}$ is the proportion of individual price-value ratio to average price-value ratio. If value and price are proportional, therefore, Marx's and NI's definition come to be equal.

With regard to the definition of value of labor power, however, there have been some ambiguous points in NI's discussion. Whilst Foley(1982), Duménil(1984) and Mohun(1994) argue that a new definition should be adopted, Lipietz(1984) and Glick & Ehrbar(1987) seem to think that the two definitions are compatible. In particular, Campbell(2002) vigorously tried to clarify the relation between the two definitions. He newly introduces one more concept into NI, 'the vector of redistributed value' defined as²⁰⁾

$$\gamma = mP$$

Therefore,

$$\lambda_l = wm = (b'P)m = b'(mP) = b'\gamma$$

In other words, λ_l is argued to be a representation of wage basket vector in a somewhat complicated way. However, $\gamma = mP$ is the concept calculated from cutting the total labor proportional to each commodity's price. Namely, it ignores the deviation between value and price.

19) "The issue at stake here is whether the situation of workers must be assessed through a vector of consumption of goods or through a scalar" (Duménil, 1984, p.341).

20) Campbell (2002), p.71

7. ‘Value of money’ and inflation

‘Value of money’ has often been understood with regard to inflation. In what sense can NI’s ‘value of money’ be a measure for inflation? Ordinarily, inflation indicates the relation between physical goods and their price expressions. If prices of commodities change, for example, from 20,000 Yen to 22,000 Yen for a suit of clothes and from 4,000 Yen to 4,400 Yen for one kilogram of rice, then it is said that prices of a goods basket rose, for example, by 10%. Interpreting this from an inverse angle, the quantity of goods purchasable by a certain quantity of money decreased by 10%. In this sense, inflation gives a measure for the purchasing power of money.

However, if we measure the purchasing power of money by the quantity of labor necessary to produce commodities, another measure of inflation emerges. For example, if two hours of embodied labor are needed to produce a suit of clothes which costs 20,000 Yen, then 10,000 Yen of money corresponds to an hour of labor in the economic activity of producing clothes. This is not the quantity of commanded labor as stated above, but the quantity of money represented by a unit of hour, or inversely reading, the labor hour a unit quantity of money represents. This relation can be applied to all commodities, not only to clothes. In order to express the representative relation between money and labor over the entire national economy, this can be weighted by gross product or net product. NI adopts the latter, which is the simplest motivation for NI’s value determination. However, weight should not necessarily be net product. Rather, gross product is more suitable if we want to investigate the corresponding relation between money and the quantity of labor with regard to all commodities.

The corresponding relation between labor and money in this sense of average, as Itoh(2003) argues, has an implication as an approximate measure. One of the present authors has tried to calculate the trend in ‘value of money’ using input-output data of Japanese economy. According to this study, the average value-price ratio weighted by final demand of Japanese economy is 0.401 man-year per million Yen in 1975, 0.258 in 1980 and 0.208 in 1985. Namely, ‘value of money’ decreased by 48.1% points during this period.²¹⁾

8. Conclusion

NI has contributed to the revitalization of Marxian value theory, especially related to macro-level empirical studies. In that case, one merit of NI is that it can show flows of value and surplus value as movements of variables usually used in capitalist accounting, which are visible and operational. For example, equal rate of exploitation is identified with the tendency of nominal wage rate equalization that can be explained by workers’ utility maximization.

21) Nakatani(1994), p.71.

However, as we showed in this paper, NI's 'value of money' concept depends upon a heroic conceptualization of the relation between labor time and price. Despite their heuristic effects, therefore, its results should be interpreted only as first approximate estimates, not correct ones.

As a matter of fact, by setting net product as the context of transformation with the entirely new definition of value of labor power, does NI assume away the conventional theoretical issues such as the aggregate equalities in the transformation of values into prices of production and Fundamental Marxian Theorem etc. Furthermore, NI draws its conclusion too heavily from the presumed connection between the choice of numéraire and the new definition of value of labor power, which has not yet been clarified.

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