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The nature of surplus value in the "new solution"

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Abstract

The "new solution" to the transformation problem in Marx's labor theory of value rests on treating two aspects differently than in the traditional formulation: net value is used instead of gross value to avoid double counting, and the division of new value into variable capital and surplus value is determined at the point of production by the wages paid to the workers, instead of by the bundle of goods they subsequently select with their consumption decision. Campbell [*Review of Radical Political Economics* 29 (3) (1997) 59] developed a simple but formal presentation of the first of these issues. This paper addresses as the other crucial issue in the new solution approach, the issue of determining variable capital and surplus value. The role of the money wage in the process is highlighted. Comparison to the treatment of these issues in the traditional formulation is included for the purpose of better understanding the nature of the new solution.

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1. Introduction

Opponents of Marx's general approach to economics have long claimed that his concept of the transformation of values into prices of production was mathematically and logically inconsistent, and they have dismissed his labor theory of value on that basis. In the early 1980s, Duménil (1980, 1983) and Foley (1982) independently put forth the "new solution," an interpretation of Marx's labor theory of value which did not suffer from mathematical

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inconsistencies. The new solution to the transformation problem in Marx's labor theory of value rests on treating two aspects differently than in the traditional formulation: net value is used instead of gross value to avoid double counting, and the division of new value into variable capital and surplus value is determined at the point of production by the money wages paid to the workers instead of by the bundle of goods they subsequently select with their consumption decision. As is often the case with pioneering work, both the mathematical presentation and the economic explanations in those papers were more complicated and opaque than was necessary for addressing the issues involved. An earlier companion piece to this work (Campbell, 1997) addressed the issue of double counting and the use of net value, but only briefly referred to the issue of the different treatment of the nature of surplus value and the role of money wages in the models. The purpose of this paper is to give a rigorous yet mathematically and economically simple presentation of these latter issues in the new solution.

The presentation here is fundamentally positive as opposed to comparative, though with some discussion of the traditional formulation included to indicate how the new solution differs from it. This paper does not address other approaches to the transformation problem.[1]

2. Surplus value and money wages

As argued at the beginning of Campbell (1997: 59), Marx held that the substance and quantitative determinant of value is the (average abstract) labor time that produces a good. In his conception, produced inputs simply pass their value on to the final product, and machines used in production similarly pass on their value to the whole collection of goods they are used to create over their productive lifetime. Both of these contributions to the value of a produced good Marx refers to as constant capital c. The other part of value of a produced good comes from the labor directly expended in its creation. Marx did not have a symbol for this quantity, and I will call it n for "new value." If we use the standard W for the value of a produced commodity, we can represent this formally as

$$W = c + n \tag{1}$$

With all symbols defined as in Campbell (1997), including λ for values created in production and k as defined there by Eq. (19) as the inverse of the "value of money," the ratio of the sum of the prices of all goods in the net product y to the sum of the values of the net product,

[1] There have been a number of earlier attempts to address the transformation problem, such as using a luxury good or a standard commodity as numeraire, that do not play a significant role in the current discussions. There are two approaches other than the new solution and the traditional formulation that are important components of the current discussions. Moseley (1993, 1997) has created an approach that shares some of the criticisms of the traditional formulation made by the new solution, including in particular the need for a different role for money wages in determining value components, but differs on others. A fundamentally different approach, the temporal single-system interpretation, holds that there is no transformation problem in Marx's treatment of values and prices, but rather it is a misunderstanding of Marx's method, and in particular what they view as the "static equilibrium formalizations of Marx's value theory" that has given rise to the long debated apparent problem. For a collection of papers that develop various aspects of this latter approach, see Freeman and Carchedi (1996).

$$\overleftarrow{p}\ \vec{y} = k\overleftarrow{\lambda}\ \vec{y}$$

we can define total value, constant capital, and new value W, c, and n for the goods produced, either in embodied hours of labor (column 1) or dollars (column 2) as

$$\begin{aligned} W &= \overleftarrow{\lambda}\ \vec{x}, & kW &= k\overleftarrow{\lambda}\ \vec{x} \\ c &= \overleftarrow{\lambda}A\ \vec{x}, & kc &= k\overleftarrow{\lambda}A\ \vec{x} \\ n &= v + s = \overleftarrow{t}\ \vec{x} = T, & kn &= k(v+s) = k\overleftarrow{t}\ \vec{x} = kT \end{aligned} \tag{2}$$

The key issue that remains is what part of the new value added n is variable capital v, obtained by the workers, and what part is left over as surplus value s, and appropriated by the capitalists.

Workers are paid a money wage. With that, they go out and buy a bundle of goods. Marx's idea was that the value of labor power, and hence the variable capital that has to be advanced to engage the workers, is determined by the value of the goods workers regularly consume. They buy the goods in capitalist markets. In equilibrium, the rate of return on the production of any good in a capitalist system should be the same. As discussed in Campbell (1997), Marx envisioned a redistribution of values from the labor time expended in production to achieve in equilibrium the required equal money rates of profit required by the laws of capitalism. Any bundle of goods that can be bought with the wages paid will have the same sum of these redistributed values. Again I will follow the notation from the previous work. Recall in particular that with γ the row vector of redistributed values, $p = k\gamma$, ω is the embodied labor time value equivalent of the money wage w, so $w = k\omega$, and with b the column vector of goods purchased with the money wage, $\omega = \gamma b$. With these definitions, the value v obtained by the workers through their total wage bill wT is

$$v = \frac{wT}{k} = \omega T \tag{3}$$

While this form will generally be the most convenient, one could express this v in terms of any bundle b that the workers could spend their wage on (including savings) as

$$v = \overleftarrow{\gamma}\ \vec{b} \tag{4}$$

With the value v obtained by the workers established, one can now calculate surplus value simply by subtracting this value from the total new value n that their labor produces. Using Eq. (1), we will define this surplus value in line with the discussion as is done in the new solution, either in terms of embodied labor time (column 1) or money terms (column 2), either in terms of the wage (line 1) or the bundle of goods bought with the wage (line 2)

$$\begin{aligned} s &= (1-\omega)\overleftarrow{t}\ \vec{x} = (1-\omega)T, & ks &= (k-w)\overleftarrow{t}\ \vec{x} = (k-w)T \\ s &= (1-\overleftarrow{\gamma}\ \vec{b})\overleftarrow{t}\ \vec{x} = (1-\overleftarrow{\gamma}\ \vec{b})T, & ks &= (k-\overleftarrow{p}\ \vec{b})\overleftarrow{t}\ \vec{x} - (1-\overleftarrow{p}\ \vec{b})T \end{aligned} \tag{5}$$

If one now compares this formal definition of surplus value (and variable capital) to the formal definition used by the traditional formulation,

$$s = (1-\overleftarrow{\lambda}\ \vec{b})\overleftarrow{t}\ \vec{x} = (1-\overleftarrow{\lambda}\ \vec{b})T, \qquad ks = (k-k\overleftarrow{\lambda}\ \vec{b})\overleftarrow{t}\ \vec{x} = (k-k\overleftarrow{\lambda}\ \vec{b})T \tag{6}$$

the different economics being assumed and described by the two formulations can be considered. Two differences in the ability of the traditional formulation and the new solution to explain capitalism as it actually functions become particularly apparent.

A criticism long leveled against the traditional formulation is that "workers are not paid in a bundle of goods, but in a money wage." The problem is that with a given wage, the value λb that appears in Eq. (6) of the goods b that the workers buy with their wage varies from one bundle b they could buy to another. Of course, one could argue that the surplus value is not determined until the workers decide what bundle of goods they will buy. The problem with that as an interpretation of Marx's economic ideas is that he stated clearly that he believed that surplus value was determined in production, and that it did not depend on circulation, which it would if it were not determined until the workers made their consumption choice. Looking at Eq. (5), one sees the new solution is not subject to this criticism. As the first line shows, surplus value can be determined directly from the wages paid, hence in the process of production, and does not depend on what bundle of goods the workers buy. But further, one sees in the second line of Eq. (5) that when the workers do execute their consumption choice and buy some bundle of goods b, these goods, which are in the sphere of circulation and so represent the redistributed values γ required by the capitalist requirement of equal returns on capital, will have the same value (and that will be the value of the wage) regardless of what consumption choice the workers make. The mathematical structure of the traditional formulation implies that either the workers are paid a wage bundle, which is not what occurs in general under capitalism, or that the surplus value is not determined in production, but only after the decision on how to spend wages has been made, a position inconsistent with Marx's general ideas on the origin of surplus value.

The second key difference concerns the issue of savings. The traditional formulation considers the bundle of goods purchased as the measure of the value captured by the workers. If the workers decide to save part of their wages, then compared to the case where they go out and spend all their wage, the value v they capture drops, and hence s increases. Again, either one has to abandon Marx's economic idea that surplus value is determined in the process of production, or one has to deny the observed behavior of some workers in some capitalist countries that they do save, both short term and over their lifetimes.

3. Conclusions

One of the two central aspects that differentiates the new solution from the traditional formulation of the transformation of values into prices of production in Marx's labor theory of value is the treatment of the formation of surplus value. The treatment in the new solution avoids three related problems that critics have long pointed out as plaguing the traditional formulation. First, the new solution naturally expresses the surplus value created in terms of the wages paid. Since surplus value is what is left over from newly created value after workers obtain a part of the value they create, and wages are the way they are given claim to what they obtain, a direct role for wages in the determination of surplus value which is missing from the traditional formulation is necessary. Second, in the new solution, the amount of surplus value created does not depend on which of infinitely many different possible consumption bundles

the workers decide to consume as it does in the traditional formulation. This avoids making the creation of surplus value depend on the consumption decision of the workers in the sphere of circulation, something Marx argued against. Finally, along the same line, in the new solution the amount of surplus value created does not depend, as in the traditional formulation, on the decision by the workers to save or not save part of their wage, again a decision outside the sphere of production where Marx argued surplus value was determined.

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