

podjetja. Čeprav so ga osvetili z raznih zornih kotov, je v središču kon-traverze dilema, ali je osnovni cilj samoupravnega podjetja maksimi-zacija dohodka na zaposlenega (osebni dohodkov) ali maksimizacija dohodka samoupravnega podjetja pri določeni omejitvi, oziroma maksi-mizacija akumulacije. Ne da bi ocenjevali analitično vrednost posamez-nih prispevkov, mislimo, da stvarnemu samoupravnemu podjetju v krat-koročnem obnašanju ustreza model akumulacije, ki pa je, kot smo po-kazali v analizi, modificiran s premiki v funkciji cilja glede na delež osebnih dohodkov v njej.

THE TRANSFORMATION PROBLEM IN THE LABOUR-MANAGED (AND CAPITALIST) ECONOMY

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Four years after the publication of the third volume of Marx's *Capital* (Marx, 1894) where the *transformation* from labour values, as the quantities of labour *embodied*, to the prices of production was discus-sed, the Russian mathematical economist Dmitriev (Dmitriev, 1898) had unambiguously demonstrated that one can always derive prices of pro-duction *directly* from the given technical data and the (physical) neces-sary product, *without* prior knowledge of labour values.

It should be therefore concluded that the solution of Marx's trans-formation problem could *not* lie in the formulation of the »correct« al-gorithm of *transformation*, as might be implied by Morishima's work in this field (Morishima, 1973, 1974), but rather in the correct *comparison* of prices of production with the corresponding labour values of com-modities, which is tantamount to calculation of the *absolute* prices of production in terms of labour embodied.

In order to reach this solution, two distinct conditions should be met simultaneously:

- (i) An *invariable* standard of value, necessary for the comparison of the two »value regimes« should be found.
- (ii) The calculation of the quantities of (socially necessary) labour embodied in the commodities should be done *properly*.

As is now widely understood, the first condition can always be met due to Sraffa's discovery of the standard system; or standard composite commodity (Sraffa, 1960, Ch. 4). The second condition can be met too, but *without* usage of *classical* labour values as the quantities of labour *embodied*, which is less widely understood.

The problem at issue will be examined, (in contrast to the usual approach) on the model of the *socialist* labour-managed economy. The reason for this is quite simple and lies in the fact that the structure of the *socialist* prices of production is very convenient for *simultaneous*

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discussion of several aspects of the »transformation« procedure. As we are primarily interested in the *formal* properties of this procedure, we shall not be much concerned with the theoretical justification of our »labour-managed« approach, which, of course, does *not* mean that it cannot be justified: As is well known, according to Marx, labour value is a *theoretical* category which is socio-historically specified, being inherent to those economic systems in which *individual* firms produce for *exchange*. This, in turn, implies the existence of the transformation problem in the labour-managed economy, simply because it is a *market* economy.

Our paper is divided in three parts. In the first (I) we set the model of the socialist prices of production as the »normal« prices for the case of the socialist labour-managed relations of production. In the second part (II) we discuss the contradiction between definition of classical labour values as the quantities of labour *embodied* and the assumption that the necessary product is paid in *advance*. This leads us to the formulation of the new labour »theory« of value, based on »augmented labour values« of commodities. Finally, in the third part (III) we are interested in the calculation of the *absolute* (socialist as well as capitalist) prices of production in terms of labour embodied, which is claimed to be the crux of the transformation problem in its historical setting.

I THE SOCIALIST PRICES OF PRODUCTION

In order to solve the transformation problem it is, at the first place, necessary to know what kind of equilibrium prices appear as the »final result of transformation«. As is well known, in the *capitalist* economy that are the prices of production. The question is what kind of equilibrium prices appear in the *labour-managed* economy. We have argued elsewhere (Suvaković, 1978, 1978a) that such prices, their column vector being denoted with P , have to meet the following requirements¹:

- (i) to cover the costs of the means of production (AP) and the (socially planned) *minimal personal incomes*, equal to the value of the necessary product ($LbP = BP$)
- (ii) to provide the accumulation at the (socially planned) *minimal rate of accumulation* r_0 ($r_0(AP + LbP) = r_0A^+P$)
- (iii) to distribute the profit (Π), i. e., the remaining part of the surplus product ($\Pi = eP - (I + r_0)eA^+P$), in proportion to the number of workers (man-years) employed in particular industries, where the proportionality factor π ($\pi = \Pi/L_0$) is called *profit per worker*

¹ We shall use simple »uniform production periods — single technique — circulating capital — homogeneous labour« model of production with the following symbols (the actual gross outputs are taken as the quantity units):
 A — matrix of inputs or means of production
 L — column vector of direct labour inputs
 b — row vector of the unit basket of necessary product
 $B = Lb$ — matrix of necessary product
 $A^+ = A + B$ — matrix of augmented inputs
 e — unit row vector
 $L_0 = eL$ — total number of workers (man-years) employed in the economy

Taken together, (i), (ii) and (iii) give us the following equilibrium prices:

$$(1) \quad P = (AP + LbP)(1 + r_0) + \pi L$$

or, in more »compact« form:

$$(1a) \quad P = A^+P(1 + r_0) + \pi L$$

For the given rate of accumulation r_0 , which must not exceed its maximal value (r_m) computed at $\pi = 0$, (1a) gives us n relative prices and the profit per worker, which are positive:

$$(2) \quad P = \pi(I - A^+(1 + r_0))^{-1}L$$

It is appropriate to call these prices the socialist (or labour-managed) prices of production. At the same time relation (2) represents the first step in solving the transformation problem in the labour-managed economy.

II AUGMENTED LABOUR VALUES

As can be concluded from Medio's article (1972), the basic »problem of the transformation problem« is to find the correct labour measure of equilibrium prices. In order to do that it is necessary to compute the quantities of (socially necessary) labour embodied in the particular commodities.

If we were to follow classical labour theory of value, the vector of labour embodied per unit of output should be identified with the vector of classical labour values (λ) obtained, as the sum of *live* (L) and *past* labour ($A\lambda$), from the well-known equation²

$$(3) \quad \lambda = L + A\lambda = (I - A)^{-1}L$$

where the quantity of *past* labour is identified with the labour embodied in the corresponding *means of production*.

However, if we assume, like classical economists, that the necessary product is *advanced*, classical labour values can by no means represent *real* quantities of labour embodied, because the labour embodied in the means of production is no longer the only constituent part of past labour: As in this case the necessary product has to be produced *before* the current outputs are available, the labour contained in the necessary product is the part of the past labour *just like* the labour embodied in the means of production.

It follows that the vector of *real* quantities of labour embodied (λ^+) should be represented as the sum of *live* (L) and *augmented* past

² For the mathematical formulation see, for example, Dmitriev (1898), or Morishima (1973).

labour ($A^+\lambda^+$), where the latter is defined as the sum of labour embodied in the means of production and in the means of subsistence

$$(4) \quad \lambda^+ = L + A\lambda^+ + B\lambda^+ = (I - A^+)^{-1}L$$

It will be appropriate to call λ^+ the vector of augmented labour values of commodities. In this sense, we conclude that augmented labour theory of value, rather than classical labour theory of value, is relevant for the calculation of labour expenditures in the labour-managed (and capitalist) economy as long as we assume, like classical economists, that the necessary product represents the *part of* (social or private) capital.

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At the end of this section it may be interesting to note that we can always establish the formal relation between augmented and classical labour values.

Starting from relation (4) we can write augmented labour values as follows (see fn. 1):

$$(4a) \quad \lambda^+ = A\lambda^+ + L(b\lambda^+ + 1)$$

This can be represented as [see (3)]:

$$(4b) \quad \lambda^+ = \lambda(b\lambda^+ + 1)$$

If we premultiply (4b) with the row vector b and divide it by scalar product $b\lambda^+ b\lambda$, after some rearrangements, we get:

$$(4c) \quad \frac{1 - b\lambda}{b\lambda} = \frac{1}{b\lambda^+}$$

The fraction on the left-hand side represents well known rate of «nonaugmented» surplus labour (s). However, one can easily conclude that the fraction on the right-hand side represents the rate of augmented surplus labour (s^+). It follows that these two rates are equal ($s = s^+$) so that (4b) may be written as:

$$(4d) \quad \lambda^+ = \frac{1 + s}{s} \lambda$$

We see that augmented labour values are uniformly proportional to «nonaugmented» labour values, their relative distance being equal to the reciprocal value of the rate of surplus labour:

$$(4e) \quad \frac{\lambda^+_i - \lambda_i}{\lambda_i} = \frac{1}{s} \quad (i = 1, \dots, n)$$

III THE COMPARISON OF THE SOCIALIST PRICES OF PRODUCTION AND THE AUGMENTED LABOUR VALUES

Finally we are in a position to solve the transformation problem in the labour-managed economy. Following Sraffa (1960, ch. 4) and Medić (1972), but using the augmented labour theory of value, it will not be difficult to find the correct solution.

First, it is necessary to construct the corresponding standard system:

$$(5) \quad QA^+(I + r_m) = Q$$

which employs the same quantity of labour (L_0) as the real economy:

$$QL = L_0$$

In the above equations Q is the row-vector of Sraffa's transformation coefficients and, at the same time, due to the unit normalization of total outputs, the vector of standard proportions in which in standard system augmented inputs (QA^+) are used, and outputs (Q) and aggregate surplus products ($Z = Q - QA^+$) are produced. In the relation (5) r_m represents the maximal rate of accumulation, equal in the real and standard system, which may be expressed in the latter by a fraction of corresponding physical aggregates, but also through the augmented labour values of these aggregates:

$$(6) \quad r_m = Z\lambda^+/QA^+\lambda^+ = L_0/QA^+\lambda^+$$

The augmented labour value of any standard aggregate represents now the absolute measure of value in which socialist prices of production should be expressed. At that moment they become comparable to the augmented labour values and the solution of the transformation problem is obtained. We shall take augmented labour value of standard surplus product as the absolute measure of socialist prices of production:

$$(7) \quad ZP = Z\lambda^+ = L_0$$

This measure can also be called the augmented standard surplus labour²⁴.

When the prices are normalized, the profit is also measured by the augmented standard surplus labour. If we assume that the proportion of profit in the augmented standard surplus labour is u , the total profit may be presented as: $\Pi = uL_0$. It follows that the corresponding rate of accumulation is:

²⁴) It may be noticed that equation (7) represents, in effect, the solution of the "capitalist" transformation problem as well: Assume that minimal personal income (bP), the minimal rate of accumulation (r_c) and the profit per worker (π) are respectively "transformed" in the subsistence wage, the rate of profit and the surplus wage. The socialist prices of production (P) will represent then an excentric kind of the capitalist prices of production. The regular capitalist prices of production are obtained by making surplus wage equal to zero.

$$r_o = L_o(1-u)/QA + \lambda^+$$

or, because of (6):

$$(8) \quad r_o = r_m(1-u)$$

However, since the profit per worker, with the assumptions made, is equal to the proportion of profit in augmented standard surplus labour ($\pi = u$), the relation (8) finally becomes:

$$(8a) \quad r_o = r_m(1-\pi)$$

or, in the "causal" order:

$$(9) \quad \pi = (r_m - r_o)/r_m$$

where the profit per worker is measured by the augmented standard surplus labour.³⁾

When the relation between the profit per worker and the minimal rate of accumulation is established, it can be used for correct theoretical measuring of socialist prices of production, which automatically become comparable to the augmented labour values.

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In summary, we conclude that the "labour-managed" transformation problem may be solved only when Sraffa's device of standard system and augmented labour theory of value are simultaneously used.⁴⁾ And in this procedure it is neither necessary to compute the elements of the standard system, nor the augmented labour values.

Received: 9. 8. 1978.

Revised: 8. 11. 1979.

³⁾ The relation indirectly shows that Sraffa, in effect, measured the wages by the quantity of "nonaugmented" labour embodied in the net product. But Sraffa's labour unit was L_o times greater than the natural one, let us say, one man-year.

⁴⁾ Of course, the same applies to the solution of the "capitalist" transformation problem in the case of advanced wages (see fn. 2a). However, it seems that from the aspect of the theory of exploitation, the case of non-advanced wages, treated by Wolfstetter (1973), is more interesting: When the wages are advanced, i.e. when the necessary product must exist before the current outputs are available, the rate of (augmented) surplus labour ($s^+ = 1/b\lambda^+$) cannot be regarded as the measure of exploitation because it is the fraction of live and past labour. On the other side, Wolfstetter's main "trouble" lies in the nonexistence of hiring capital. For the preliminary investigations of these problems, see Suvaković (1978a).

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TRANSFORMACIONI PROBLEM U SAMOUPRAVNOJ
I KAPITALISTIČKOJ PRIVREDI

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Re z i m e

• Članak ima trostruki zadatak:

(1) Da ilustruje legitimnost upotrebe neorikardijanskog, odnosno postmarksističkog analitičkog instrumentarija kod izvođenja ravnotežnih cena u samoupravnoj socijalističkoj privredi.

(2) Da razmotri moguću nesaglasnost između definicije radnih (vrednosnih) cena i pretpostavke da je potrebni proizvod predujmljen, što implicira da rad sadržan u potrebnom proizvodu predstavlja deo minulog rada; jednako kao i rad sadržan u sredstvima za proizvodnju. Ova nesaglasnost se može prevazići formulisanjem „teorije proširene radne vrednosti" koja ima za osnovu „proširene radne cene" kao veli-

čine koje su uniformno proporcionalne radnim cenama i ujedno veće od njih.

(3) Da naglasi da je teorijski zadovoljavajuće rešenje transformacionog problema u samoupravnoj, tj. ujedno i u kapitalističkoj privredi, jedino moguće uz istovremenu upotrebu Srafinog pronalaska standardnog sistema i teorije proširene radne vrednosti (mada u samom postupku rešavanja nije neophodno računanje niti elemenata standardnog sistema, niti proširenih radnih cena).

ECONOMIC POLICY IN THE SELF-MANAGEMENT SYSTEM

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1. For many decades, in Marxist and other literature, it was an accepted view that the socialist economy, with public ownership of the important means of production, must be a centralized planned economy as distinct from the capitalist economy. On the other hand, the opinion prevailed that only the capitalist economy, with private ownership of the means of production, can be a market economy. A decentralized and market-oriented socialist economy could not be conceived of in the economic literature up to the thirties and, in practice, up to the fifties of this century. Yugoslavia was the first socialist country to accept a decentralized, market-oriented economic system, the system of workers' self-management, in 1950. It is characterized by the autonomy of working organizations, by free economic decision-making as regards what, how and for whom to produce, i.e., as regards the amount and composition of production and investments, the pricing of their commodities (and services) and the income distribution.

Contemporary economic systems can no longer be viewed as they were earlier. They can no longer be classified only on the basis of ownership of the means of production. The classification into two chief economic systems — the capitalist system with private ownership of the means of production, and the socialist system with public ownership of the important means of production — is no longer satisfactory. This is due not only to the fact that the public sector of the capitalist economy has strengthened, that the market has been restricted, that the state interferes with economic life and that other changes have occurred, particularly in the area of distribution. All this has induced many economic and other authors to talk about a mixed economic system which differs considerably from the classical capitalist system.

The classification of contemporary economic systems, particularly of socialist systems, must also be made on the basis of who is making the decisions. Namely, decisions on production and investments, on how much will be produced and in what way, as well as decisions on prices, distribution and personal incomes, can be made centralistically, i.e., administratively, through planning by a governmental or planning

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