Labour values and international trade

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Th. van de Klundert

Labour values and international trade; a reformulation of the theory of A. Emmanuel

Research memorandum

TILBURG INSTITUTE OF ECONOMICS
DEPARTMENT OF POLITICAL ECONOMICS
Labour values and international trade; a reformulation of the theory of A. Emmanuel.\textsuperscript{1)}

by

Th. van de Klundert.

1. Introduction.

In his book \textit{L'échange inégal}, A. Emmanuel makes a number of surprising statements about the theory of international trade.\textsuperscript{1)} Contrary to the current neo-classical way of thinking, the author is of the opinion that trade between different countries is not necessarily profitable to all the parties concerned.

Emmanuel "proves" his assertions with the aid of Marxist transformation tables. As basic pattern he uses the following numerical example taken from Marx himself (table 1).\textsuperscript{2)}

\textbf{Table 1.}

The transformation problem according to Marx.

<table>
<thead>
<tr>
<th>Sector</th>
<th>c</th>
<th>v</th>
<th>m</th>
<th>V</th>
<th>T</th>
<th>p</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>80</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td></td>
<td>20</td>
<td>120</td>
</tr>
<tr>
<td>II</td>
<td>90</td>
<td>10</td>
<td>10</td>
<td>110</td>
<td>10%</td>
<td>20</td>
<td>120</td>
</tr>
<tr>
<td>III</td>
<td>70</td>
<td>30</td>
<td>30</td>
<td>130</td>
<td></td>
<td>20</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>60</td>
<td>60</td>
<td>360</td>
<td></td>
<td></td>
<td>360</td>
</tr>
</tbody>
</table>

\textsuperscript{1)} I am indebted to Mr. A. van Schaik for his stimulating criticism and for his assistance with the calculations.
The familiar symbols have the customary meaning:

\[ c = \text{constant capital}; \quad v = \text{variable capital}; \quad m = \text{surplus value}; \]

Moreover \[ V = c + v + m; \quad T = \sum \frac{m}{c + v}; \quad p = T(c + v); \quad L = c + v + p. \]

Thus the letter \( V \) stands for labour values, whereas \( L \) indicates production prices.

In many circles such a model is considered too primitive for a modern analysis. However, this point of view should not be exaggerated. After all, thanks to the work of P. Sraffa, the classical authors have been rehabilitated with regard to their theories of prices. On the grounds of the views expressed by Sraffa, Marx's numerical diagram can be interpreted as a nearly consistent example of a three sector model. The numbers for the variables \( c, v, m \) and \( V \) then represent values that are obtained in the mathematical solution when the total value added \((v + m)\) accrues ex hypothesi to labour. If capitalists also receive part of the income (i.e. the surplus value \( m \)), then these values (or rather, the corresponding unit prices) have to be transformed. This is necessary because competition among capitalists will result in a uniform rate of profit. In Sraffa's model this presents no problem. Marx's solution of the transformation problem following the procedure illustrated in table 1 is, however, not quite correct.

Nevertheless, as R.L. Meek has shown, there is a strong similarity of approach between Marx and Sraffa because: "What both economists are trying to show, in effect, is that (when wages are given) the average rate of profit, and therefore the deviations of price ratios from embodied labour ratios, are governed by the ratio of direct to indirect labour in the industry whose conditions of production represent a sort of "average" of those prevailing over the economy as a whole." In the above table sector I is doing the job.

There is any reason therefore, to suppose that it would be worthwhile to reformulate Emmanuel's theory in terms of the Sraffa system. Not only would this make the work of this French
author more easily accessible, but it would also throw light on aspects which are not apparent when the Marxist numerical diagrams are used.

This article is an attempt in that direction. The model has been kept as simple as possible which means, in particular, that only circulating capital will be dealt with. The introduction of fixed capital in the form of joint production of consumer goods and used machines, presents no insuperable difficulties, as Sraffa has also shown. 6) The labour theory of value is still applicable in this particular case.

Before considering Emmanuel's ideas, it may be useful to compare the labour theory of value with the prevalent neo-classical conception of the process of price-forming. The following section will be devoted to this purpose. In section 3 the connection will be examined between Ricardo's famous theory of comparative costs and price-forming based on the labour theory value. This will open the way for a closer look at Emmanuel's ideas which will be discussed in sections 4 and 5. Some concluding remarks will be found at the end in section 6.

2. Theories of value.

According to neo-classical views prices of all goods and services are determined by the preferences of the economic subjects together with the set of production possibilities and given amounts of inputs. Certain assumptions have of course to be made in connection with production possibilities and preferences but, given the conditions for a solution, the model can be used in many different ways.

The most simple application of the neo-classical system of thought is undoubtedly the explanation of the distribution of income with the aid of one single production function for the whole economy. Under the usual assumptions this implies that demand for factors of production corresponds with marginal productivities so that, with given factor quantities the distribution of income is uniquely determined. The hypothesis of "constant returns of
"scale" ensures, in this case, that the solution is consistent; that is to say, neither more nor less will be paid out in the form of income than is produced of the final product.

The application of this construction to explain income based on the ownership of capital has met with a certain amount of written opposition. As it is put the owner of capital enjoys an income because he has invested a fund of money, but this income cannot directly be related to the contribution this fund makes to the production. The value of the stock of capital goods should, therefore not be introduced as a variable in the production function because this value depends on the prices which are again interdependent with factor rewards.

In the aggregate production function this difficulty is avoided because by definition, there is no difference between capital in physical and in value terms. This applies, moreover, to a two-sector model in which there is place for only one kind of capital good besides the consumer good. The situation changes however, when the set of capital goods is – for whatever reason – a heterogeneous one. The aggregate production function then only exists in special cases and, what is more important, it is then normally speaking, impossible to construct a monotonic decreasing curve to represent the relation between the value of the (heterogeneous) capital stock per man on the one hand and the rate of interest (or profit) on the other. In other words, the curve representing the demand for capital generally has an unusual shape. This is the conclusion reached in recent debates between P.A. Samuelson and P. Garegnani and also between R.M. Solow and L.L. Pasinetti, which will not be discussed here in detail.

Several writers have concluded on these grounds that the neo-classical theory does not lead to an explanation of the distribution of income. Yet this conclusion appears to be unjustified. As has been said earlier, the neo-classical model can be used in various different ways. In the most general version of it allowance is made for the accumulation of capital goods of different specifications over time (the inputs of the
current period are then the outputs of the preceding one). The fundamental data are in this case: given quantities of primary and intermediary inputs at the beginning of the first period, given quantities of primary inputs in every following period and specified stocks at the end of the time-horizon. (Without the assumption of a finite time-horizon, problems arise in connection with the process of accumulation which is then in principle infinite). In addition a convex technology is postulated for each period, and the preferences of economic subjects regarding the consumption of different goods in the same period as well as the consumption patterns over time are assumed to be known. This dynamic model thus represents a direct generalization of the static model, if identical goods supplied at different times are regarded as different goods.  

The generalized neo-classical model generates a solution for all prices of inputs and outputs without need for a concept called "capital". The rate of interest, which may vary from period to period, then appears as a reward for not consuming (abstinence). The model is, however, very complicated in its full generality and because of this, economists often resort to simplifications. Such a simplification is for instance the "planning approach" whereby the preferences of subjects are replaced by the planners' valuations, and standard planning techniques can be used to solve the system of equations. R.M. Solow has the following to say on this matter: "Here, as elsewhere, but with rather more irony here, the best way of understanding the economics of capitalism may be to think about a socialist economy".  

A different simplification is the restriction of possible accumulation patterns to stationary states or paths of proportional growth. In the stationary state as F.P. Ramsey demonstrated long ago, the rate of interest corresponds with the pure time-preference of economic subjects, provided that these are uniform throughout the economy.  

In the case of proportional growth on the other hand the rate of interest in long-run equilibrium is equal to the sum of the exogeneously determined rate of growth and the rate
To sum up, it may be concluded that the rate of interest is not a scarcity price in the sense that the reward increases as the value of the capital stock per man decreases. It may, however, be considered as a compensation for the maintenance and as the case may be, the expansion of the capital stock. Nevertheless it should not be forgotten that the neo-classical theory is ideologically biased by the emphasis it places on the individual. Society is seen in this theory as the result of separate decisions made by autonomous individuals and not as the outcome of a historical process with its own laws. In such a view there is really no place for the idea of "value" in its classical sense. Exchange values are after all in the classical opinion nothing but the reflection of human relations which, when placed in historical perspective, assume the form of a collision between social classes. Under Capitalism it is the relation between capitalists and workers that dominates the provision of goods and the calculation of prices (exchange values).

To return to the model of stationary equilibria, it might now be said that it is the power wielded by capitalists and not the time-preference of individuals that generates the distribution of income. Of fundamental importance is therefore the degree of exploitation, irrespective of the way in which this ratio is quantitively determined. [In a situation of unemployment of labour the real wage is at a minimum, whereas in times of full employment, the trade-unions are able to extort at least nominal wage increases. This forms a threat to the power of capitalists and it confirms the expressed view of human relations dominated by the collision between social classes.] The private ownership of capital puts the owning class in a position to consume at the expense of workers and this can hardly be called abstinence, although one has to admit the possibility of class mobility through saving out of wages, inheritance and so on.
The aspect of exploitation deserves to be developed further and this can easily be done by means of a Sraffa-Leontief model with only two commodities (a and b) under the assumption - not made by Sraffa - of constant returns to scale.\footnote{15} Assuming a standard net product of one, the price system can then be expressed as follows\footnote{16}:

\begin{align*}
(1) \quad & (x_{aa} p_a + x_{ba} p_b) (1 + r) + a_w = p_a \\
(2) \quad & (x_{ab} p_a + x_{bb} p_b) (1 + r) + b_w = p_b \\
(3) \quad & r = R(1 - w)
\end{align*}

The symbols have the following meaning:

\begin{itemize}
  \item $p$ = price of commodities
  \item $r$ = rate of profit
  \item $w$ = real wage
  \item $x$ = input - output coefficient
  \item $a$ = labour-input coefficient
  \item $R$ = maximum rate of profit (corresponding to $w = 0$)
\end{itemize}

It is assumed that one unit of labour is given and that only net production of a-goods is carried out.\footnote{17} [In Garegnani's terminology this is referred to as the integrated a-goods industry.\footnote{18}] The volume system then reads as follows:

\begin{align*}
(4) \quad & x_{aa} X_a + x_{ab} X_b + C_a = X_a \\
(5) \quad & x_{ba} X_a + x_{bb} X_b = X_b \\
(6) \quad & a_a X_a + b_b X_b = \iota(= 1)
\end{align*}

The capital letter $X$ indicates gross production, whereas net production is symbolized by the letter $C$. 
C_a can be calculated at once from the volume system since from the equations (4) to (6) it follows that:

\[
(7) \quad C_a = \frac{a_a (1 - x_{bb}) + a_b x_{ba}}{(1 - x_{aa})(1 - x_{bb}) - x_{ab} x_{ba}}
\]

Consumption per head of the working population is determined by the amount of labour that is required, both directly and indirectly, for the production of a-goods. The right term of (7) is, therefore, an expression of the cumulated labour-input coefficient of these goods.

By means of the equations (1) to (3) the price of a-goods can be determined at:

\[
(8) \quad p_a = \frac{a_a [1 - x_{bb}(1 + r)] + a_b x_{ba}(1 + r)}{[1-x_{aa}(1+r)] [1-x_{bb}(1+r)] - x_{ab} x_{ba}(1+r)^2} \times \frac{R - r}{R}
\]

For \( r = 0 \) (i.e. \( w = 1 \)) this formula passes into:

\[
(8a) \quad p_a = \frac{a_a (1 - x_{bb}) + a_b x_{ba}}{(1 - x_{aa})(1 - x_{bb}) - x_{ab} x_{ba}}
\]

The formulas show that the price of a-goods is equal to the cumulated labour-input coefficient when the net revenue from the production process accrues entirely to labour. In all other cases, there will be a disparity, as demonstrated by equation (8). It may therefore be concluded that under capitalistic circumstances prices not only reflect the state of technology, but also the power of capitalists. Prices are therefore determined by production forces as well as by production relations. The production forces determine the production possibilities of labour whereas the production relations result in the degree of exploitation. [According to Marx's definition this latter variable is equal here to \( \frac{r}{R w} \). 19]
There is, however, more to the story than this. If the entrepreneur-capitalist has a choice between various activities he will at a given level of real wages choose the activity that gives him the highest rate of profit. Technically speaking, this result ought to fulfill the conditions for full competition.

It should now be remarked that in the framework of the model used the word technique refers to a set of activities according to which the goods a and b can be produced. It is assumed that there are two such techniques with only one switching point \( W \). With each of the two techniques there is a corresponding relation between \( w \) and \( r \) in accordance with the equations (1) to (3). This is illustrated in figure 1. The real wage is expressed in the standard good corresponding with technique I.

![Figure 1](image)

For this reason the relation between \( w \) and \( r \) for this technique is represented by a straight line on the strength of formula (3). The wage-interest relation with regard to technique II is then of course in the form of a curve. The intersection of the two curves with the vertical axis represents the maximum real wage.
for the technique in question. However, with the assumptions
that have been made \( w_{\text{max}} = \frac{C}{a} \). It follows therefore, from
the graphical illustration, that the net production per head
is lower for techniques II than for technique I. This is
illustrated in the lower part of the figure.

Now suppose that the real wage is equal to \( w = w_1 \).
The desire to achieve maximum profits then points to the choice
of technique II. This implies that the net production per
head is lower than it might be. Although from a capitalistic
point of view the choice has fallen on the most efficient tech-
nique (the one that gives the maximum rate of profit at the
given level of wages) from a social point of view the situation
must be considered suboptimal. 20a) Exploitation manifests
itself therefore, in two ways. Firstly, as has already been
said, in that capitalists consume at the expense of workers.
Secondly, with a positive rate of profit the real wage is
lower than the maximum attainable level. This means that it
might be more profitable for entrepreneurs-capitalists to waste
labour by applying relatively labour-using techniques. The
more labour used in production, the lower the total consumption
per head will be. Both aspects are reflected in the prices;
the first via the rate of profit \( r \) and the second via the rele-
vant technical coefficients. That these results are not
peculiar to the simple model used here was recently demonstrated
by D.M. Nuti. 21) Working with fixed capital, reswitching of
techniques of which there were a large number and proportional
growth, this author reaches similar conclusions. Only under
socialist production relations can a maximum consumption per
head be guaranteed in principle. This puts a curious light
on Solow's remarks about the study of capitalism which were
quoted earlier.

In the following sections we shall see what can be
said about international trade in the light of the introduced
labour theory of value. Thereby we shall first consider
Ricardo's famous law of comparative advantage.


Under the title "La carrière d'une 'loi'", A. Emmanuel discusses the fate that has befallen D. Ricardo's theory of international trade. A particular point of this theory is that when two countries trade with each other in two commodities, the relative commodity prices are determined only after demand has been introduced into the model. As we know, J.S. Mill amplified the Ricardian model with regard to this point. Since then, this model of international trade has been recognized in the post-Walrasian era as the first example of a correct solution of the price system. According to Walras and other neo-classical authors, it is after all, supply and demand that determine prices; and although nowadays, the standard theory of international trade follows the lines set out by E. Heckscher and B. Ohlin, most text-books on the subject devote some space to Ricardo's law of comparative advantage. (To a lesser degree, the theory of differential rents by the same author, in which demand also plays an essential part, befalls the same fate.) Did Ricardo with his theory of international trade knock the bottom out of the labour theory of value on which his scientific work was largely founded? That is the question to which Emmanuel gives a negative answer in his book *L'échange inégal*.

In the two-sector model introduced in section 2, it was assumed that only net production of a-goods takes place. If this restriction is removed, demand for final products has nevertheless no influence on prices. This is because there is only one scarce production factor in the model, namely labour. The transformation curve is then a straight line as shown by the following equation deduced from (4) to (6):

\[
\begin{align*}
\tilde{\alpha}_a C_a + \tilde{\alpha}_b C_b &= k,
\end{align*}
\]
in which $a$ symbolizes the cumulated labour-input coefficient. P.A. Samuelson calls this characteristic of the model the non-substitution theorem. If there are more scarce factors such as, for instance, labour and land, then consumers' preferences do, of course, enter into the price-forming process. The term land in this example should not however, be replaced by capital, as is done often. After all, capital goods are themselves produced and cannot therefore in the long run be regarded as scarce factors of production. This is the essence of the labour theory of value. Apart from that the classical authors had never had any difficulties with the view that prices of goods that cannot be reproduced (regardless of whether they are luxury consumer goods such for instance as paintings, or factor services such as land, labour etc.) are determined by supply and demand. Neither were the special problems connected with non-proportional returns to scale entirely unknown to them. In this article these problems are eliminated by the assumption of constant technical coefficients.

The Ricardian theory of international trade is in no way incompatible with the ideas expressed above. On the contrary, it is a direct application of these principles. The two autarchic systems with one scarce factor each are in case of trade in "all purpose" commodities across the frontiers replaced by one system involving two scarce factors of production, namely the quantities of labour in both countries.

In accordance with the system of equations used in section 2 it is now assumed that country 1 and country 2 in the autarchic situation, both produce a-goods and b-goods. The technique varies however from country to country. It is further assumed that both the structure of demand and the exogeneous determined real wage are the same. The quantity of labour per country is given but it is not necessarily the same in both countries. Commodity a functions now as numéraire. The comparative advantages follow from the comparison of $\frac{p_1^1}{p_1^b}$ with $\frac{p_2^2}{p_2^b}$ (the upper indices
represent the countries).

Suppose that: \( \frac{p_a^1}{p_b^1} < \frac{a^1}{a^2} \), then there will be trade with complete specialization (country 1 in commodity a, and country 2 in commodity b) as long as the point of intersection of the reciprocal demand curves lies between the autarchic price-lines. This latter is here assumed.

The model of international trade with complete specialization can then be specified as follows:

**Country 1**

\[
\begin{align*}
(10) (x_a^1 & = 1) (x_b^1 \cdot p_a^1 + x_b^1 \cdot p_b^1) \cdot (1 + r^1) + a^1 & = p_a^1 \\
(12) & \alpha a^1 x_a^1 = a^1 \\
(14) & \frac{c_a^1}{c_b^1} = \frac{p_b}{p_a}
\end{align*}
\]

**Country 2**

\[
\begin{align*}
(11) (x_a^2 & = 1) (x_b^2 \cdot p_a^2 + x_b^2 \cdot p_b^2) \cdot (1 + r^2) + a^2 & = p_b^2 \\
(13) & \alpha b^2 x_b^2 = b^2 \\
(15) & \frac{c_a^2}{c_b^2} = \frac{p_b}{p_a}
\end{align*}
\]

**International**

\[
\begin{align*}
(16) x_a^1 = c_a^1 + c_a^2 + x_a^{1a} x_a^1 + x_a^{1b} x_b^2 \\
(17) x_b^2 = c_b^1 + c_b^2 + x_b^{1a} x_a^1 + x_b^{1b} x_b^2 \\
(18) \{ (x_a^1 - c_a^1) - x_a^{1a} x_a^1 \} p_a \ = \ \{ (x_b^2 - c_b^2) - x_b^{1b} x_b^2 \} p_b \\
(19) p_a = 1
\end{align*}
\]

There are ten equations with ten unknowns \( (x_a^1, x_b^2, c_a^1, c_b^1, c_a^2, c_b^2, p_a, p_b, r^1, r^2) \). The equations (10) to (13) require no further explanation. The equations (14) and (15) represent the identical
structures of demand (the elasticity of substitution with regard to demand is equal to one). From (16) and (17) it appears that both markets are cleared. Equation (18) implies that the balance of payments in both countries is in equilibrium: the value of exports of country 1 is equal to the value of exports of country 2. Formula (19) speaks for itself.

Complete specialization on the basis of the above Ricardian model of international trade leads according to the current view to a benefit for both countries. This benefit can be measured in terms of the consumption (or net production) of both commodities. In order to reach an unequivocal conclusion, both quantities $C_a$ and $C_b$ must of course have increased. In this connection it is often suggested that both countries start trading with each other especially with a view to the possibility of such a benefit. It will now be shown that these conclusions in their generality are not correct.

From the price-equations (1) and (2) which are valid in the autarchic situation, it follows that:

$$\frac{P_a}{P_b} = \frac{a_a + (a_b^{x_{ba}} - a_a^{x_{bb}})(1 + r)}{a_b + (a_a^{x_{ab}} - a_b^{x_{bb}})(1 + r)} \quad (20)$$

In a graphical representation with the variables $\frac{P_a}{P_b}$ and $(1 + r)$ along the axes, formula (20) produces an orthogonal hyperbole with asymptotes that may lie in different quadrants. With the aid of (3) this relation can be converted into an equation between the price ratio and the real wage. Figure 2 illustrates this for both countries whereby it is assumed that the curves have a point of intersection in the relevant area of the real wage. For reason of comparability it is also assumed that the wage is expressed in standard commodities of the relevant country.
According to whether the level of the real wage in both countries (which is assumed to be equal) is higher or smaller than $w^*$, there will result another specialization in international trade. Trade is in first instance determined by absolute price differences. People buy in the place where a commodity is cheapest. If in the initial situation the nominal price levels are not the same, adjustments will have to be made via the balance of payments or the rate of exchange, as every text-book explains.

It will however, be clear that the possible benefits from international trade are dependent on the characteristics of the volume system. To illustrate this, in figure 3 the transformation curves of the net productions have been drawn on the basis of formula (9). In the figure, the lines intersect each other, but this is not of essential importance. 26)
As shown, both countries can benefit by trade if country 1 specializes in commodity a and country 2 on the other hand produces only commodity b (the respective specialization-points are indicated in the figure by the letters A and B). In case of international trade, the lines drawn from both specialization points representing the international price-ratio can be regarded as new transformation curves. As indicated by the dotted lines in fig. 3, these new transformation curves are above the old ones. With a converse specialization which, on the grounds of prices in the autarchic situation is, as we have seen, a possibility, opposite conclusions are valid. The new transformation curves should then be drawn from points C and D whereby they then appear below the old transformation curves. From this it may be concluded that when trade is carried on in accordance with comparative cost differences, the level of consumption in both countries may drop.

Emmanuel, who has indicated this possibility without having elaborated it sufficiently, notes about this: 27)

"Or, pour que l'indicateur des coûts comparatifs puisse refléter les conditions objectives de la production, il faut que des variations de salaires, de nature institutionnelle, par suite d'une lutte syndicale, de circonstances politiques, etc., aient un effet neutre sur les prix d'équilibre. Comme cela n'est possible que dans les cas où toutes les branches, à l'intérieur de chaque pays pris séparément, possèdent la même intensité capitalistique, ou, selon la terminologie marxiste, la même composition organique du capital, il s'ensuit que l'optimisation dont il est question dépend de cette hypothèse particulièrement forte. Sans cela les variations des salaires dans l'un ou l'autre des pays participant à l'échange peuvent déplacer l'avantage comparatif de l'une à l'autre des branches considérées, sans aucun changement des conditions objectives de production, ce qui transformerait l'optimi-
In the above quotation the author relates the situation of disadvantage for both countries to an initial position with real wage differences. It appears from figure 2 that this is not necessary. In fact, as Emmanuel rightly points out, the reason must be sought in the differences in technology. With equal input-proportions prices always correspond with the (direct) labour-input coefficients irrespective of the distribution of income.\(^{28}\) (The original theory of Ricardo is, therefore, based on the same simplification as Marx introduced in parts I and II of Das Kapital). With unequal proportions it only can be said with certainty that the right specialization will be chosen when \(w_1 - w_2 = 1\).

There is a striking resemblance here to the instance discussed in section 2 of the "wrong" choice of technique. The wrong kind of specialization means a loss to the community, but a gain for the capitalists in the form of a higher rate of profit in both countries. Trade on the basis of comparative cost differences is in fact always accompanied by higher rates of profit. However, maximalization of profits with relatively low wages leads here to a labour-using production in both countries. So labour is wasted in both country 1 and country 2. Instead of a "contre-sens" it would more apt, in this case, to speak of just another example of suboptimalization under capitalistic relations.

By way of elucidation, this section will be concluded with some numerical examples. Calculations are based on the following fundamental data:
Case I (w = 0.8)

A. Confrontations in case of autarchy.

<table>
<thead>
<tr>
<th>Country 1</th>
<th>Country 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>factor costs</strong></td>
<td><strong>expenditure</strong></td>
</tr>
<tr>
<td>( L^1 = w^1 x^1 = 0.8 \times 170 = 136 )</td>
<td>( C_{ap_a}^1 = 71,579 \times 1 = 71,579 )</td>
</tr>
<tr>
<td>( P^1 = r^1 K^1 = 0.111 \times 64,422 = 7,158 )</td>
<td>( C_{bp_b}^1 = 89.474 \times 0.8 = 71,579 )</td>
</tr>
<tr>
<td>( y^1 = 143,158 )</td>
<td>( y^1 = 143,158 )</td>
</tr>
</tbody>
</table>
The new symbols have the following meaning:
L = total wage sum; P = total profit; K = value of stocks of capital goods (also equal to total depreciation and gross investments, since only circulating capital is assumed); Y = net national product.

Conclusion: Country 1 specializes in commodity b and country 2 in commodity a because:

\[
\frac{P_a^1}{P_b^1} > \frac{P_a^2}{P_b^2} \left( \frac{1}{0.8} > \frac{1}{1.1} \right).
\]

B. Confrontations in case of complete specialization.

Country 1.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>(L^1 = 0.8 \times 170 = 136)</td>
<td>(C_a^1 = 102 \times 1 = 102)</td>
</tr>
<tr>
<td>(P^1 = 0.5 \times 136 = 68)</td>
<td>(C_b^1 = 102 \times 1 = 102)</td>
</tr>
<tr>
<td>(Y^1 = 204)</td>
<td>(Y^1 = 204)</td>
</tr>
<tr>
<td>(M^1 = 170)</td>
<td>(E^1 = 170)</td>
</tr>
</tbody>
</table>

Country 2.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>(L^2 = 0.8 \times 170 = 136)</td>
<td>(C_a^2 = 108.8 \times 1 = 108.8)</td>
</tr>
<tr>
<td>(P^2 = 0.6666 \times 122.4 = 81.6)</td>
<td>(C_b^2 = 108.8 \times 1 = 108.8)</td>
</tr>
<tr>
<td>(Y^2 = 217.6)</td>
<td>(Y^2 = 217.6)</td>
</tr>
<tr>
<td>(M^2 = 170)</td>
<td>(E^2 = 170)</td>
</tr>
</tbody>
</table>

The letter E stands for the total value of exports, whereas M represents imports.

Conclusions: (1) The international price ratio lies between the autarchic price ratios;
(2) The volume of consumption in both countries has risen because of specialization;

(3) Both rates of profit \( r^1 \) and \( r^2 \) (as well as the invested capital values \( K^1 \) and \( K^2 \)) have increased owing to international trade. 29)

Case II (\( w = 0,6 \))

A. Confrontations in case of autarchy.

Country 1.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L^1 = 0,6 \times 170 ) = 102</td>
<td>( C^1_a ) ( P^a_1 ) = 82,586 \times 1 = 82,6</td>
</tr>
<tr>
<td>( P^1 = 0,905 \times 69,825 ) = 63,2</td>
<td>( C^1_b ) ( P^b_1 ) = 75,078 \times 1 \frac{1}{w} = 82,6</td>
</tr>
<tr>
<td>( Y^1 = \frac{165 \times 2}{2} = 165 \times 2 )</td>
<td>( Y^1 = \frac{165 \times 2}{2} = 165 \times 2 )</td>
</tr>
</tbody>
</table>

Country 2.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L^2 = 0,6 \times 170 ) = 102</td>
<td>( C^2_a ) ( P^a_2 ) = 80 \times 1 = 80</td>
</tr>
<tr>
<td>( P^2 = 0,99 \times 58,9 ) = 58</td>
<td>( C^2_b ) ( P^b_2 ) = 84 \times 0,95 = 80</td>
</tr>
<tr>
<td>( Y^2 = \frac{160}{2} = 160 )</td>
<td>( Y^2 = \frac{160}{2} = 160 )</td>
</tr>
</tbody>
</table>

Conclusion: Country 1 specializes in commodity a, country 2 specializes in commodity b:

\[
\frac{P^1_a}{P^1_b} < \frac{P^2_a}{P^2_b} \quad (\frac{1}{1,1} < \frac{1}{0,95}).
\]
### 3. Confrontations in case of complete specialization.

#### Country 1.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x^1 = 6.6 \times 170 = 102$</td>
<td>$p^1_x = 68 \times 1 = 68$</td>
</tr>
<tr>
<td>$y^1 = 34$</td>
<td>$y^1_y = 136$</td>
</tr>
<tr>
<td>$z^1 = 85$</td>
<td>$E^1 = 85$</td>
</tr>
</tbody>
</table>

#### Country 2.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x^2 = 6.6 \times 170 = 102$</td>
<td>$p^2_x = 69.7 \times 1 = 69.7$</td>
</tr>
<tr>
<td>$y^2 = 37.4$</td>
<td>$y^2_y = 139.4$</td>
</tr>
<tr>
<td>$z^2 = 85$</td>
<td>$E^2 = 85$</td>
</tr>
</tbody>
</table>

**Conclusions:**

1. The international price-ratio lies between the autarchic price-ratios;
2. The net production of both commodities in both countries is lower after specialization;
3. The rates of profit have increased because of specialization (in contrast, the invested capital values have diminished). 30)

### 4. The integrated capital market (absolute cost differences)

From the equations (10) and (11) it appears that with trade according to the law of comparative advantage, the rates
of profit in both countries will differ. In the numerical example of the foregoing section, for instance, when $w = 0.6$, $r^1 = 1$ and $r^2 = 1.22$. According to Emmanuel, the reason for this is to be found in the immobility of the factor capital. To this the author adds 31): "La non-péréquation des profits est chez Ricardo une condition nécessaire et suffisante pour le fonctionnement de la loi des coûts comparatifs, et ceci est un point important qui ne semble pas avoir été remarqué jusqu'ici."

In this connection it might be asked what is meant by immobility of capital. According to those who support the labour theory of value capital is, after all, not a factor of production in a physical sense. Agreeing with this, Emmanuel defines the concept "factor of production" as a "droit établi à un premier partage du produit économique de la société." 32) Capitalists obtain such a right by investing. Mobility of capital therefore implies that funds may be used anywhere at will. When capital is mobile, an integrated world-system of production results. The capitalists will invest there where the rate of profit is highest. In the second place, because of mutual competition, the rate of profit in the different countries will then be equalized.

The factor labour is generally characterized by a large measure of immobility; certainly if one considers the situation between the continents. Where there is immobility of labour, there is, from the point of view of international competition no reason to assume equal real wages. Nevertheless, this is assumed in this section. In order to rationalize this supposition it must be assumed either, that workers, regardless of their local position succeed in achieving the same position of power, or that local positions are identical. An example of this latter case is the 19th century situation of an universal surplus of labour. 33)

With equal factor costs throughout the world, trade is determined by absolute cost differences or, to quote Emmanuel once again 34):
"Un pays donné ne pourra survivre que dans la mesure où il existe une branche dans laquelle il a un avantage absolu sur tous les autres, ou, si l'on tient compte du transport, une branche dans laquelle son coût est égal ou inférieur au meilleur coût international majoré des frais de transport. La population sera réglée sur les capacités d'absorption de cette branche, le surplus étant ou anéanti par la faim dans le cas d'immobilité, ou rejeté au dehors par l'émigration dans le cas de mobilité."

In this case there is no real difference between national and international trade. This, according to some, is the reason why Marx went no further into the classical theory of international trade. It must be admitted that the specific model of international trade with two commodities and two countries does not particularly lend itself to an analysis of the case of absolute cost differences. Nevertheless it might be useful with the aid of this model, as far as it goes, to compare the situation characterized by an integrated capital market with that of immobility of capital.

When capital is mobile it will be directed entirely to places where the rate of profit is at a maximum. In the framework of the model with two countries, two commodities and one technique per country it is possible to calculate four equilibrium rates of profit. namely one for each of the following combinations of production: $a_1^1b_1^1$, $a_2^2b_2^2$, $a_2^2b_1^1$ and $a_1^1b_2^2$. If the maximum $r$ is found in one of the two first combinations, production will be concentrated in one country; the available labour in the other country remains unused. If one of the two last combinations dominates, production will take place in both countries and international trade will be carried on. The model used in section 3 [the equations (10) to (19)] is then applicable after a slight correction. As one of the variables has to be cancelled out, because $r^1 = r^2$, one equation must also disappear. This could be either equation (12) or (13). As a result of the restriction on the balance of payments (18) it is in this case
impossible to maintain a situation of full employment in both countries. (One exception to this is the coincidence of an equal \( p_b \) in case of calculating according to the price-relations and in case of determination by supply and demand in the international field). For the rest, it depends on the data of the model where the unemployment will occur.

It must be concluded that the supposition of a uniform rate of profit means that full employment can be realized in only one of the countries. This bears out the theorem that demand has no effect on prices when there is only one scarce factor. Though there are two scarce factors in the model, \( \ell^1 \) and \( \ell^2 \) it appears that only one of them is binding. At this point a theoretical problem arises. Structural unemployment indicates a shortage of capital. This long-term shortage of capital has still to be explained with the aid of the model. It is after all conceivable that when the investment outlets at the maximum rate of profit are exhausted, the capitalists will prefer to invest at a lower rate of profit rather than to consume their funds. In such a case there could well be full employment in both countries, but as apart from the rates of profit also the prices for identical goods would be different, there arises a marketing problem. It must therefore be concluded that the supposed additional investment outlets do not appear to exist.

The question of the integration of capital markets has not been correctly dealt with by Emmanuel. The author is of the opinion that after a levelling off the rate of profit will lie between those rates of profit that correspond to the initial autarchic situations. He visualizes a flow of capital from the country with the low rate of profit to the one with the higher rate, which will mean an increase of \( r \) in the former country and a decrease in the latter. The following numerical example serves as a "proof" of this statement (table 2). 36)
Table 2.

Equalization of rates of profit according to Emmanuel.

<table>
<thead>
<tr>
<th>var. sector</th>
<th>( c )</th>
<th>( v )</th>
<th>( m )</th>
<th>( V )</th>
<th>( T(1) )</th>
<th>( T(2) )</th>
<th>( p(1) )</th>
<th>( p(2) )</th>
<th>( L(1) )</th>
<th>( L(2) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>I A</td>
<td>80</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td></td>
<td></td>
<td>20</td>
<td>25</td>
<td>120</td>
<td>125</td>
</tr>
<tr>
<td>II A</td>
<td>90</td>
<td>10</td>
<td>10</td>
<td>110</td>
<td>20%</td>
<td></td>
<td>20</td>
<td>25</td>
<td>120</td>
<td>125</td>
</tr>
<tr>
<td>III A</td>
<td>70</td>
<td>30</td>
<td>30</td>
<td>130</td>
<td>25%</td>
<td></td>
<td>20</td>
<td>15</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
<td>I B</td>
<td>40</td>
<td>20</td>
<td>20</td>
<td>80</td>
<td></td>
<td></td>
<td>20</td>
<td>15</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
<td>II B</td>
<td>50</td>
<td>10</td>
<td>10</td>
<td>70</td>
<td>33\frac{1}{3}%</td>
<td></td>
<td>20</td>
<td>15</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
<td>III B</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>90</td>
<td></td>
<td></td>
<td>20</td>
<td>15</td>
<td>80</td>
<td>75</td>
</tr>
</tbody>
</table>

The symbols for the different variables have the same meaning as in table 1 (see section 1). The Roman numerals again indicate the production sectors while the letters A and B here represent the different countries. The numbers 1 and 2 placed in brackets after the variables indicate respectively the autarchic situation and the situation with a uniform rate of profit. The author arrives at the uniform rate of profit of 25% by dividing total constant and variable capital into total surplus value, whereby all totals are taken over both countries \( T = \frac{I_m}{C+V} \). The procedure which is used and which is approximately accurate for a closed economy, is here mistakenly applied to the international situation. It may be said that Emmanuel allows the sectors that are inefficient with regard to their location to influence the equilibrium rate of profit. However, under the pressure of international competition, these sectors will disappear. The procedure followed therefore becomes pointless.

In order to arrive at a correct solution, the rate of profit for every possible combination has to be calculated separately. The results of such a calculation based on the data specified in section 3, are given in table 3. When \( w = 0.6 \) combination \( a^1b^2 \) gives the highest rate of profit. Conversely,
when $w = 0.8$ combination $a_2b_1$ dominates.

Table 3.

Rates of profit at equal wages.

<table>
<thead>
<tr>
<th>Case</th>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$w = 0.8$</td>
<td>$w = 0.6$</td>
</tr>
<tr>
<td>1</td>
<td>0.111</td>
<td>0.905</td>
</tr>
<tr>
<td>2</td>
<td>0.5873</td>
<td>0.9943</td>
</tr>
<tr>
<td>3</td>
<td>0.0101</td>
<td>1.04</td>
</tr>
<tr>
<td>4</td>
<td>0.6133</td>
<td>0.8716</td>
</tr>
</tbody>
</table>

The numerical example has so been chosen that with integration of the capital market and with trade according to the comparative advantage, there will be the same specializations. The remarks made earlier regarding suboptimalization when $w = 0.6$ are therefore entirely applicable to the case in question of an integrated capital market. It should further be remarked that, contrary to Emmanuel's results shown above, the rate of profit with integration is higher than the rates of profit in the autarchic positions. However, it can be said that both in case I and in case II the uniform rate of profit lies between the $r^1$ and $r^2$ of the Ricardian model. This is quite logical. The technique of production and the real wage are, after all, the same in both models. Therefore, in this connection, it may rightly be maintained that the rate of profit is equalized because capital is withdrawn from investments giving a lower rate of profit in favour of alternative investment outlets with a higher rate of profit.

The rest of the results that can be determined by using the model of the integrated capital market are summed up in the following confrontations of factor costs and expenditure.
I. Confrontations when \( w = 0.8 \) (combination \( a^2 b^1 \))

Country 1.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L^1 = 0.8 \times 163.4 = 130.7 )</td>
<td>( C_{aPa}^1 = 106.7 \times 1 = 106.7 )</td>
</tr>
<tr>
<td>( P^1 = 0.6133 \times 135 = 82.7 )</td>
<td>( C_{bPb}^1 = 100 \times 1.066 = 106.7 )</td>
</tr>
<tr>
<td>( Y^1 = 213.4 )</td>
<td>( Y^1 = 213.4 )</td>
</tr>
<tr>
<td>( M^1 = 172 )</td>
<td>( E^1 = 172 )</td>
</tr>
</tbody>
</table>

Country 2.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L^2 = 0.8 \times 170 = 136 )</td>
<td>( C_{aPa}^2 = 106.8 \times 1 = 106.8 )</td>
</tr>
<tr>
<td>( P^2 = 0.6133 \times 126.44 = 77.6 )</td>
<td>( C_{bPb}^2 = 100.2 \times 1.066 = 106.8 )</td>
</tr>
<tr>
<td>( Y^2 = 213.6 )</td>
<td>( Y^2 = 213.6 )</td>
</tr>
<tr>
<td>( M^2 = 172 )</td>
<td>( E^2 = 172 )</td>
</tr>
</tbody>
</table>

II. Confrontations when \( w = 0.6 \) (combination \( a^1 b^2 \))

Country 1.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L^1 = 0.6 \times 164.47 = 98.68 )</td>
<td>( C_{aPa}^1 = 66.11 \times 1 = 66.11 )</td>
</tr>
<tr>
<td>( P^1 = 1.04 \times 32.24 = 33.53 )</td>
<td>( C_{bPb}^1 = 68.87 \times 0.96 = 66.1 )</td>
</tr>
<tr>
<td>( Y^1 = 132.21 )</td>
<td>( Y^1 = 132.21 )</td>
</tr>
<tr>
<td>( M^1 = 81.9 )</td>
<td>( E^1 = 81.9 )</td>
</tr>
</tbody>
</table>
Country 2.

<table>
<thead>
<tr>
<th>factor costs</th>
<th>expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L^2 = 0.6 \times 170 = 102 )</td>
<td>( C_{a^2}^{p_a} = 66.61 \times 1 = 66.6 )</td>
</tr>
<tr>
<td>( P^2 = 1.04 \times 30 = 31.2 )</td>
<td>( C_{b^2}^{p_b} = 69.38 \times 0.96 = 66.6 )</td>
</tr>
<tr>
<td>( Y^2 = 133.2 )</td>
<td>( Y^2 = 133.2 )</td>
</tr>
<tr>
<td>( M^2 = 81.9 )</td>
<td>( E^2 = 81.9 )</td>
</tr>
</tbody>
</table>

Conclusions: (1) Comparison with the autarchic positions leads to the same conclusions with regard to changes in welfare as in the Ricardian model;

(2) Both in case I and in case II there is a certain amount of unemployment in country 1 (the quantity of labour available amounts to 170). The reason why it is country 1 that is affected in this way is that this country always exports the comparatively dearer commodity. Compared with the position in the Ricardian model, the terms of trade of country 1 are more favourable but this has, as it were, to be paid for in the form of an underutilization of the labour potential. 37)

In other words: with such favourable terms of trade, the quantity of labour available in country 2 forms a bottle-neck. The relatively favourable terms of trade of country 1 in the numerical example are by the way entirely determined by the chosen input-output coefficients;

(3) As shown by a comparison with the results of trade according to comparative cost differences, unemployment in country 1 is accompanied by a decline of welfare in country 2. This is to be attributed to a deterioration of the terms of trade of country 2. The welfare positions with respect to country 1 are not comparable because consumption of the one commodity is higher and that of the other is lower. The employment effect and terms of trade effect counteract each other in this case.
Comparison of the invested capitals confirms what has been written above concerning the flow of capital from sectors with a lower rate of interest to sectors with a higher \( r \), on basis of the Ricardian model.

5. Unequal exchange.

The idea of "unequal exchange" is not always very carefully defined in Marxist literature. According to some writers, it would be right to talk about unequal exchange when the prices do not correspond with the (cumulated) labour-input coefficients. This interpretation implies that in the capitalist system, every exchange transaction is characterized by a certain degree of inequality. This is as much as to say that the prices reflect not only the social costs of production, but also the degree of exploitation.

Emmanuel differentiates between the broader and the narrower sense of unequal exchange. The first comes in effect to the explanation given above. However, the French author prefers the second variant whereby situations of unequal exchange are related to market imperfections. This kind of narrower interpretation seems to be more in keeping with Marx's way of thinking, as illustrated in the following quotation about profits from trade:

"Prima facie erscheint der reine, unabhängige Handelsprofit unmöglich, solange Produkte zu ihren Werten verkauft werden. Wohlfeil kaufen, um teuer zu verkaufen, ist das Gesetz des Handels. Also nicht der Austausch von Äquivalenten... Das quantitative Verhältnis, worin sich Produkte austauschen, ist zunächst ganz zufällig. Sie nehmen sofern Warenform an, dass sie überhaupt Austauschbare, d.h. Ausdrücke desselben Dritten sind. Der fortgesetzte Austausch und die regelmässigere Reproduktion für den Austausch hebt diese Zufälligkeit mehr und mehr auf. Zunächst aber nicht
Für die Produzenten und Konsumenten, sondern für den Vermittler zwischen beiden, den Kaufmann der die Geldpreise vergleicht und die Differenz einsteckt. Durch seine Bewegung selbst setzt er die Äquivalenz.

In the model of international trade, which is at the centre of Emmanuel's ideas, capital is mobile and labour, on the other hand, is immobile. The immobility of labour is, in this case, the market imperfection which results in unequal exchange in the narrower sense. It must of course be assumed here that, contrary to what was said in the previous section, there is a disparity in real wages between the different countries.

Unequal real wages result in absolute cost differences, even when the technical coefficients are the same. The country where labour is relatively lowest-paid will, because of this, be able to produce certain commodities which would perhaps otherwise be produced elsewhere. The wage differences therefore have an influence on the world employment situation. On the other hand, the terms of trade are also affected, which allows us to talk about unequal exchange. We then use the situation with uniform wages and rates of profit as a framework of reference.

This can of course be illustrated with the help of a numerical example, whereby the following cases are distinguished: I. \( w^1 = 0.6, w^2 = 0.8 \); II. \( w^1 = 0.8, w^2 = 0.6 \). From the data given in section 3, the following rates of profit can be calculated (table 4).

<table>
<thead>
<tr>
<th>Case Combination</th>
<th>( I.\ w^1 = 0.6, w^2 = 0.8 )</th>
<th>( II.\ w^1 = 0.8, w^2 = 0.6 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( a_1b_1 )</td>
<td>0.905</td>
<td>0.111</td>
</tr>
<tr>
<td>( a_2b_2 )</td>
<td>0.5873</td>
<td>0.9943</td>
</tr>
<tr>
<td>( a_1b_2 )</td>
<td>0.852</td>
<td>0.124</td>
</tr>
<tr>
<td>( a_2b_1 )</td>
<td>0.695</td>
<td>0.786</td>
</tr>
</tbody>
</table>

Table 4.
Rates of profit at unequal wages.
The calculations show that in both cases when there is maximization of profit, production will only take place in the country where wages are relatively low. This result is the consequence of the figures chosen for the technical coefficients. The technologies in the two countries differ only slightly one from the other, so that cost differences are dominated by wage differences.

In fact, this is all there is to be said in the framework of the numerical example chosen. However, to illustrate the observations about the terms of trade and the employment situation, we shall see what are the results of a second-best solution. For this the combination $a^2b^1$ in case II has been chosen. The results thus reached are again grouped in the form of confrontations of factor costs and expenditure.

Confrontations when $w^1 = 0.8$, $w^2 = 0.6$
(Second-best solution case II)

### Country 1.

<table>
<thead>
<tr>
<th>Factor costs</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>$L^1 = 0.8 \times 153.7$</td>
<td>122.8</td>
</tr>
<tr>
<td>$P^1 = 0.786 \times 133.9$</td>
<td>105.2</td>
</tr>
<tr>
<td>$Y^1$</td>
<td>228</td>
</tr>
<tr>
<td>$M^1$</td>
<td>175.5</td>
</tr>
<tr>
<td>$C_{1pa} = 114 \times 1 = 114$</td>
<td></td>
</tr>
<tr>
<td>$C_{1pb} = 96.8 \times 1.177 = 114$</td>
<td></td>
</tr>
<tr>
<td>$E^1 = 175.5$</td>
<td></td>
</tr>
</tbody>
</table>

### Country 2.

<table>
<thead>
<tr>
<th>Factor costs</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>$L^2 = 0.6 \times 170$</td>
<td>102</td>
</tr>
<tr>
<td>$P^2 = 0.786 \times 133.2$</td>
<td>104.6</td>
</tr>
<tr>
<td>$Y^2$</td>
<td>206.6</td>
</tr>
<tr>
<td>$M^2$</td>
<td>175.5</td>
</tr>
<tr>
<td>$C_{2pa} = 103.3 \times 1 = 103.3$</td>
<td></td>
</tr>
<tr>
<td>$C_{2pb} = 87.8 \times 1.177 = 103.3$</td>
<td></td>
</tr>
<tr>
<td>$E^2 = 175.5$</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions: (1) A comparison with the results of combination $a^2b^1$ in the situation of uniform wages shows that unemployment in country 1 has risen considerably. (2) Welfare in country 2 is lower because the terms of trade have become still more unfavourable. In the case of country 1, no simple conclusion is possible in this respect. The employment effect and the terms of trade effect counteract each other here again. (3) Trade between the two countries has increased somewhat. In this connection it must be remembered, that there is now an additional cause for (absolute) cost differences in the form of wage differences.

It may be considered an important theoretical contribution of Emmanuel's that he pointed out the possibility of unequal exchange between nations 40); a contribution that is, moreover, a realistic one if one particularly considers, as the author does, the relationship between poor and rich countries. Hoever, Emmanuel is not content with pure theory. He links his findings to the following practical conclusion: 41) "Il résulte de ce qui précède que la taxe à l'exportation peut être un instrument très utile, notamment entre les mains des pays sous-développés en vue de redresser leurs termes de l'échange affligés par l'inégalité de l'échange provenant des bas salaires." It may be questioned whether the author here - and indeed in the rest of his book - has not too much neglected the employment effect. It is true that he says elsewhere: 42) "Il ne s'agit pas de dire qu'une branche donnée dans un pays donné peut à son gré augmenter ses salaires et répercuter ipso facto la charge sur les acheteurs", but in his book there is no consequent analysis of specialization and employment effects.


From a theoretical point of view, the analysis of the
problem of economic development on the basis of unequal ex-
change in the sense accorded to it by Emmanuel, falls short
in two respects. In the first place, it must be observed that
the hypothesis of full competition is not very satisfactory.
That is to say, it is doubtful whether in reality there will
be an equalization of rates of profit in the face of monopolistic
practices. Admittedly, the author does support his thesis of
equalization with some empirical material but this is all to-
gether not very convincing.

In the second place, it may be suggested that theory
of price-forming based on stationary states seems hardly suitable
for the study of the problem of economic development. Emmanuel
introduces here and there more dynamic aspects, but he has
failed to integrate them sufficiently in his theory.

In spite of these objections, however, it is still true
to say that an approach based on the labour theory of value
provides useful insights. The view that social classes and
nations deal at the expense of one another seems more in keeping
with reality than the idea of a deterministic and harmonious
equilibrium that evolves from the neo-classical conceptions.

This does not, from the methodological point of view,
make things easier. The opinions expressed must not be robbed
of their consistence by a desire for an approach that is in com-
plete accordance with reality. Conversely, a meticulous theore-
tical analysis must not comprise so many built-in simplifying
assumptions that the results become meaningless. At the present
state of economic knowledge it may be concluded that Emmanuel has
made a valuable attempt at a synthesis of both aspects. The
criticisms expressed in this article therefore apply exclusively
to certain analytical characteristics of his work.

Notes.
1) A. Emmanuel, L'échange inégal. Presentation et remarques


4) Emmanuel is also aware of this but suffices himself with a reference to L. von Bortkiewicz; Op cit., footnote 32, p. 105.


6) Stangely enough, Emmanuel attaches more importance to the introduction of fixed capital than to the correct solution of the transformation problem. His objections to a velocity of circulation of capital the size of one, on which Marx based his calculations, are that: (1) "cela nous interdit de distinguer la consommation intermédiaire, qui est un factor neutre, de la somme du capital engagé dans la production, qui est un facteur actif; (2) elle engendre la présomption illusoire que la composition organie varierait plus ou moins parallèlement aux variations de la consommation intermédiaire. Or rien n'est plus opposé à la réalité."

Op. cit., p. 106. The author then appends to the Marxist tables a column for fixed capital after which he calculates the rate of profit by dividing total surplus value by total fixed capital. Neither the objections nor this solution are convincing. For an adequate treatment of this question see P. Sraffa, op. cit., chapter X.


12) See e.g. E.S. Phelps, Golden Rules of Economic Growth, Amsterdam 1967, p. 89.


16) The choice of a numéraire for the price system can be arbitrarily made. The advantage of choosing the standard net product is that the relation between r and w - as shown in equation (3) - can be simply expressed which makes explanations easier. However, for reasons of comparability
as well as to make calculations easier good a will be chosen as numéraire in the sections 3 to 5. For a discussion of the properties of the standard commodity see P. Sraffa, op. cit., chapters IV and V.

17) When both the available labour and the standard net product are assumed to be one, then w symbolizes not only the real wage but also the share of wages in the net product, Cf. P. Sraffa, op. cit. p. 12.

18) P. Garegnani, art. cit., p. 409.

19) The degree of exploitation is defined by Marx as m/v. Expressed in production prices this becomes, according to equation (3): r/R : w, i.e. the share of profit in the (standard) net national product divided by the share of wages.

20) The possibility of "reswitching of techniques" does not affect the conclusions of the argument though it does complicate matters. For a Symposium on this question see: Quarterly Journal of Economics, November 1966.

20a) See also M. Bruno, E. Burmeister and E. Sheshinki, "Nature and Implications of the Reswitching of Techniques", Quarterly Journal of Economics, November 1966, section V. The authors deal also with the case of many consumer goods.


22) A. Emmanuel, op. cit. p. 23,


24) P.A. Samuelson, "Abstract of a Theorem Concerning Substitutability in Open Leontief Models", in Activity Analysis of Production and Allocation (ed. T.C. Koopmans), New York 1951 and by the same author: "A New Theorem on Nonsubstitution" in Money, Growth and Methodology; and other Essays in Economics


26) After all, it is the comparative and not the absolute cost differences with which we are here concerned.

27) A. Emmanuel, op. cit., p. 261. From the author's numerical examples it is not sufficiently clear that both countries can, at the same time, have advantage or disadvantage. Neither is it very evident why the structure of specialization changes.

28) If $x_a : x_{aa} : x_{ab} = a : x_{ba} : x_{bb}$ then formula (20) becomes

$$\frac{P_a}{P_b} = \frac{x_a}{x_b}$$

29) According to Marxist terminology it can be said that the degree of exploitation (P/L) in both countries has increased more than the organic composition of capital (K/L).

30) In this case, the decline in the organic composition of capital in both countries is greater than the decline in the degree of exploitation.

31) A. Emmanuel, op. cit., p. 90.

32) A. Emmanuel, op. cit., p. 55. In his preface to this book, C. Bettelheim objects to this interpretation. Bettelheim prefers to attach central importance to the production relations rather than to particular juridical forms. Bettelheim may be right if one is considering historical developments, but in an analysis of the process of price-forming and corresponding critique of the neo-classical school Emmanuel's point of view will do.

33) This is, in fact, the situation that Ricardo had in mind when he formulated his theory.
34) A. Emmanuel, op.cit., p. 51.

35) See e.g. S. Amin, L'accumulation à l'échelle mondiale, Dakar 1970, p. 70.

36) A. Emmanuel, op. cit., pp. 103-105.

37) The expression "Terms of trade" is here understood to have the usual meaning i.e. the price of the export commodity divided by the price of the import commodity.

38) A. Emmanuel, op. cit., p. 109 and chapter 4.


41) A. Emmanuel, op.cit., p. 250. In this train of reasoning one market imperfection (immobility of labour) is corrected by the other (taxation).

42) A. Emmanuel, op. cit., p. 182.
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