C. MARINESCU
E. MARINESCU
L. LACHS

Indexes of Foreign Trade Profitability

The present paper makes a critical analysis of the "return rate", of the opportunities offered by this index in estimating foreign trade profitability.

The authors prove that, in order to understand the foreign trade profitability of a certain product, it is actually necessary to oppose the two prices (the external price (p_e) in lei-currency and the internal price (p_i, in lei), not by computing their ratio $\left(\frac{p_i}{p_e} = \text{return rate}\right)$, *but by subtracting them instead ($p_i - p_e$).*

In its capacity of constituent part of the general foreign trade activities, export may be looked upon as the chief way of providing the financial means designed to effect the external payments, of accumulating the foreign currency fund necessary to meet import requirements.

The need to equilibrate the balance of external payments assigns to foreign trade the task of preferentially solving two problems: the permanent increase of the volume of export goods deliveries and the permanent development of export economic efficiency.

"The problem of foreign trade profitability — as emphasized by Nicolae Ceaușescu, President of the State Council of the Socialist Republic of Romania and General Secretary of the Central Committee of the Romanian Communist Party, in a speech held on the occasion of the Conference on the activity in the foreign trade area — has not always been in the centre of attention on the part of our trade authorities"[1]. To be sure, this state of things must also be related to the lack of a higher concern on the part of economic research workers in our country, in view of studying this most important problem. In our opinion, the lack of unitary methodologic specifications referring to the computation of export profitability indexes, brought about difficulties and will further continue to do so, in the field of foreign trade practical activities.

We consider that indexes used in actual practice, such as the gross or net return rate, the net currency contribution, etc., do not bring sufficiently clear and comprehensive elements for a good estimation of export profitability.

We shall try in this paper, to elucidate some problems which may contribute to a more accurate export profitability determination.

GROSS RETURN RATE DETERMINATION

The chief index used at present for the estimation of export profitability is the gross return rate. It is calculated either for each separate product or for a specified volume of different products.

$$K = \frac{p}{p'} \quad \text{and} \quad \overline{K} = \frac{P}{P'}$$

where:

p = internal unit price (lei per unit),
p' = external unit price of the export product (lei-currency per unit),
P = total value of export, or of groups of products, in internal prices (lei),
P' = total value of export, or of groups of products (lei-currency).
K = return rate per product (lei per 1 leu-currency), and
$\overline{K}$ = average return rate pertaining to a specified volume of different products (lei per 1 leu-currency).

The internal price considered in the return rate computation corresponds to the total free-at-frontier export price. Since within the present price system conditions, some products are endowed with two sorts of selling prices — i.e., an enterprise wholesale price (r) and an industrial wholesale price (r') — the total free-at-frontier export price will also have two forms: r_f and r'_f, respectively. These are calculated by adding to the enterprise (or industrial) wholesale price the additional export costs, if necessary, the circulation costs, the addition at export and the exporting enterprise profit.

Owing to the pecularities of the price system in force (the tax on goods circulation is applied only to some specific products, the changing level of the benefit for different products, etc.) it is desirable to determine the return rate based on a cost price c_f, computed by the addition of export, traffic, and other expenses, to the total cost price of products (c).

Hence, the three possible relationships for the computation of a product return rate, are:

$$K'_f = \frac{r'_f}{p'}; \qquad K_f = \frac{r_f}{p'}; \quad \text{and } K_{cf} = \frac{c_f}{p'}.$$

For a batch of different products, the average return rate is being similarly computed:

$$\overline{K}'_f = \frac{R'_f}{P'}; \quad \overline{K}_f = \frac{R_f}{P'}; \text{ and } \overline{K}_{cf} = \frac{C_f}{P'}$$

that is, the unit prices r', r_f, c_f and p', are replaced by the value of the whole batch of exported goods, expressed in internal and external prices, R'_f, R_f, C_f and P', respectively.

The external price in lei-currency is determined by multiplying the external price expressed in the currency of the importing country (p_e or P_e) by its official rate of exchange (v), i.e. $p' = p_e \times v$ and $P' = P_e \times v$, respectively.

The necessity of computing the return rate in more than one form has naturally stimulated the major concern of experts in this field, to demonstrate which of these forms is more conclusive for the estimation of a given product export profitability.

This problem is, certainly, very important; however, we consider that it is not the essential question in export profitability investigation. In our opinion, the further investigation of the return rate is not the most efficient approach in elucidating the manner of practically measuring a product export profitability as, whatever the method of computing the return rate may be, it fails to make obvious simultaneously the financial situation of the exchange.

Any producer of commodities who is selling his wares on any market he chooses — be it an internal, or an external market — is interested to know, above all, if the price he obtains matches the value of the commodities he has produced. When things are considered from this viewpoint, in order to estimate a product export profitability, it is not essential to know the ratio of the internal to the external price — i.e. the return rate — but instead, *the absolute difference between these prices. Only by effecting this subtraction can the producer of commodities clearly understand to what extent the price he has obtained meets the production costs of the respective commodity.*

In this connection, the fact must be pointed out that the return rate too could make conspicuous the financial state of the exchange, but only if it is further developed and provided that the internal price taken into account for its determination corresponds, or is most close, to the internal value of products.

Hence, it follows that the return rate determination, based on the cost price, inevitably tends towards a decrease of its ability in actual practice to allow the estimation of a product export profitability. We consider, in this sense, that the suggestions of some economists concerning the need of calculating the return rate on the basis of the cost price, or even of a cost price from which all accumulations of previous manufacturing steps have been reduced [2], [3], solve neither the problem of estimating a product or a group of products export profitability, nor the comparison of various products from this point of view. The inclusion of the cost price return rate in the computation and the possible reduction of the previous accumulations would lead, "from the very beginning and deliberately, to the alteration of the ratio of external to internal prices" [3, p. 126].

FACTORS AFFECTING EXPORT PROFITABILITY

In order to examine the indexes representing export profitability, it is necessary to point out the factors affecting it, as well as the size of the effect exerted by each factor. It is a well known fact that the factors affecting export profitability are the internal manufacturing and circulation

conditions of products from the producer to the frontier, and the price system.

With this end in view, we shall represent the free-at-frontier export price (r_f and r'_f), taking into account the total trading cost price (c), the products profitability (ρ), the goods circulation tax quota (α) and the export, circulation, etc. costs quota (β).

We obtain:

$$r = c(1 + \rho); \quad r' = r(1 + \alpha) = c(1 + \alpha)(1 + \rho); \quad r_f = r(1 + \beta);$$

it follows:

$$r_f = c(1 + \rho)(1 + \beta); \quad r'_f = c(1 + \alpha + \beta)(1 + \rho).$$

For instance, a product designed for export is manufactured with a profitability of $\rho = 20$ per cent; the tax on goods circulation amounts to 16.7 per cent of the enterprise wholesale price, $\alpha = 0.167$; the additional export, circulation, etc. expenses amount to 8.3 per cent of the enterprise wholesale price, $\beta = 0.083$; the cost price is $c = 10$ lei per piece.

In these conditions, the free-at-frontier export price becomes:

$$r_f = 10(1 + 0.2)\ (1 + 0.083) = 13 \text{ lei per piece.}$$

$$r'_f = 10(1 + 0.167 + 0.083)\ (1 + 0.2) = 15 \text{ lei per piece.}$$

Based on the above mentioned relationships, the return rate can be inferred:

$$K_f = K_c\,(1 + \rho)(1 + \beta); \quad K'_f = K_c(1 + \alpha + \beta)(1 + \rho) \qquad (1)$$

The average return rate, for a batch of different products will be similarly expressed by:

$$\bar{K}_f = \bar{K}_c(1 + \bar{\rho})\ (1 + \bar{\beta}); \quad \bar{K}'_f = \bar{K}_c(1 + \bar{\alpha} + \bar{\beta})\ (1 + \bar{\rho}) \qquad (2)$$

where $\bar{\alpha}$, $\bar{\beta}$ and $\bar{\rho}$ are the mean values ascribable to the entire batch of different commodities designed for export.

Equations (1) and (2) emphasize the influence exerted by the external price, on the one hand, and by the internal production conditions (c), the price system (ρ, α) and the products circulation from the producer to the frontier (β), on the other hand, on the return rate. In actual practice, the above relationships allow the definite statement of causes inducing various return rates for different products, as well as of those bringing about the changing in time of the return rate for each product separately, or for a certain volume of different products.

The analysis of factors affecting the return rate is not included in the scope of this paper; however, taking into account its high practical significance, we will continue in the following discussion to express the return rate according to equations (1) and (2).

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In order to facilitate the understanding of problems discussed here, our study is based on two assumptions, namely: (1) the unit external price (p') expresses the value of our export product on the external market where the exchange is effected; and (2) the export product value on the internal market is expressed by the industrial wholesale price (r'), as this price also includes the tax on goods circulation, as a constituent part of

the product created by social work. The external as well as the internal prices may show deviations in both senses from the value.

The following three conditions may appear in foreign trade activities: (1) $p' = p$; (2) $p' > p$; and (3) $p' < p$. The first two cases show a favourable condition for our foreign trade, the second one providing even optimal conditions for export. However, in the third case, export is financially unfavourable, the selling conditions becoming the more disadvantageous, the smaller p' is as compared to p. It is quite obvious that in this case, the seller records a loss equal to $p - p'$. The cause of this exchange loss has to be looked for in the labour productivity differences between the internal and the external manufacturers.

Starting from these fundamentals, we shall examine the financial state of the foreign trade company, the cashing and payments to be effected as a result of its activities. This analysis will more clearly illustrate the essence of export economic profitability.

In exchange of commodities designed for the external market, the foreign trade company is to pay off the contractors their equivalent value, in enterprise wholesale prices (R). By including the additional export expenses, circulation expenses, etc., the free-at-frontier value $R_f = R(1 + \beta)$ is obtained. In exchange of these commodities, the foreign trade company receives from the purchaser their external price P_e in the importing country's currency (dollars, roubles, etc.). This price — as converted in lei-currency — is found in the assumed notations as $P' = v \times P_e$ (lei-currency). In these trade operations, one leu-currency has a rate of exchange $K_f = \frac{R_f}{P'}$ (lei per one leu-currency). Thus, the exporting company has to pay an amount of R_f (lei) and to cash $P' = \frac{R}{K_f}$ (lei-currency). By allowing, as an illustration, the assumption $K_f > 1$ to define the condition $p' < p$, it follows that $\frac{R}{K_f} < R_f$; the difference

$$\Delta R_f = R_f - \frac{R_f}{K_f} = R_f\left(1 - \frac{1}{K_f}\right) \tag{3}$$

reflects in this case an unfavourable exchange.

We specify that from the point of view of the gold standard the leu value does not differ from that of the leu-currency. Their discrimination results only in trade relations and essentially reflects the differing purchasing power of the leu, on the internal as compared to the external market. If, in foreign trade relations, the foreign currency had the same exchange rate as its official exchange rate, then the return rate of one leu-currency would be $K_f = 1$ and a discrimination between the leu and the leu-currency would cease to have a practical usefulness.

Essentially, the condition $K_f > 1$ shows that on the internal market the value of an export commodity exceeds its value on the external market; in other words, a fraction of the social labour incorporated in this com-

modity is not acknowledged on the external market. This is, in the last analysis, the cause of the exchange difference.

On the national economy scale, the exchange difference is still greater, owing to the tax on goods circulation due for export commodities, which cannot be drawn up in the budget if the commodity is designed for export. Consequently, the calculation of the exchange difference on the national economy scale has to be made based on the industrial wholesale price, and not on the enterprise wholesale price, as the former is more comprehensively expressing the internal value of the commodities.

Assuming $K'_f > 1$, the total exchange difference on the national economy scale is then equal to

$$\Delta R'_f = R'_f \left(1 - \frac{1}{K'_f}\right). \tag{4}$$

By emphasizing the factors affecting it (production expenses, the profit, the tax on goods circulation), the total exchange difference can be expressed as:

$$\Delta R'_f = C \left[(1 + \alpha + \beta)(1 + \rho) - \frac{1}{K_c}\right] \tag{5}$$

For products having only enterprise wholesale price, the exchange difference will be:

$$\Delta R_f = C \left[(1 + \beta)(1 + \rho) - \frac{1}{K_c}\right]. \tag{6}$$

It can be seen that if $K'_f = 1$, the exchange difference is nullified and as a result, the exchange becomes financially favourable for the seller when $K'_f \leqslant 1$. Otherwise, when $K'_f > 1$, the seller records a loss, which will increase, as the return rate increases.

A first conclusion may be drawn from the above discussion. Although it is not bringing forth new elements, it is emphasizing particularly important aspects. Thus, the treating of the alternative described by $K'_f > 1$, as a hypothetical antithesis, of the favourable alternative described by $K'_f \leqslant 1$, the pointing out of its negative implications for the national economy, more clearly outlines the need of obtaining on the external market a price able to provide the integral recovery of the exported goods value. Simultaneously, the achievement of an equivalent exchange internally assigns the task to permanently reduce the socially necessary costs of goods, eventually designed for export, in order to speed up the rate of labour productivity increase in areas producing export goods.

In the afore said speech, Nicolae Ceauşescu pointed out that "until recently, some people considered that the most important problem was to obtain dollars, no matter how much they cost. Such an outlook has nothing to do, not only with the activity of a real tradesman, but also with the elementary attributes of an economist. Commerce, including foreign trade is not being done for its own sake. We do not sell just for the sake of selling and we do not want foreign trade to force us to lose part of the working people's surplus product".

We shall further assume that $K'_f > 1$. In order to obtain the amount of foreign currency (P' lei-currency) necessary to meet the demands of import, the foreign trade company sells on the external market a quantity of commodities amounting to R'_f lei, recording a total exchange difference having the size given by equation (4).

This means that for each leu-currency, a unit exchange difference is recorded, equalling

$$\Delta r'_f = \frac{\Delta R'_f}{P'} = K'_f - 1. \tag{7}$$

By setting off the factors exerting an influence, we obtain:

$$\Delta r'_f = K_c(1 + \alpha + \beta)(1 + \rho) - 1 \tag{8}$$

and

$$\Delta r_f = K_c(1 + \beta)(1 + \rho) - 1 \tag{9}$$

The above discussion supports the thesis according to which export economic profitability must be measured by the index *exchange difference*, having the following forms in actual practice:

1) *Unit exchange difference* (lei difference per 1 leu-currency)

$$\Delta r'_f = K'_f - 1 = K_c(1 + \alpha + \beta)(1 + \rho) - 1 \tag{10}$$

and

$$\Delta r_f = K_f - 1 = K_c(1 + \beta)(1 + \rho) - 1 \tag{11}$$

2) *Total exchange difference* (lei difference)

$$\Delta R'_f = P' \times \Delta r'_f = R'_f\left(1 - \frac{1}{K'_f}\right) = C\left[(1 + \alpha + \beta)(1 + \rho) - \frac{1}{K_c}\right] \tag{12}$$

and:

$$\Delta R_f = P' \times \Delta r_f = R_f\left(1 - \frac{1}{K_f}\right) = C\left[(1 + \beta)(1 + \rho) - \frac{1}{K_c}\right] \tag{13}$$

3) *Weight of exchange difference* in the internal value of the exported product (per cent)

$$\frac{\Delta r'_f}{r'_f} = \frac{K'_f - 1}{K'_f}$$

and

$$\frac{\Delta r_f}{r_f} = \frac{K_f - 1}{K_f} \tag{14}$$

4) *Recovery degree of the exported product internal value* (per cent)

$$1 - \frac{\Delta r_f}{r'_f} = \frac{1}{K'_f}$$

and

$$1 - \frac{\Delta r_f}{r_f} = \frac{1}{K_f} \tag{15}$$

We shall now illustrate the practical application of relationships (11),..., (15), by assuming

$$K'_f = 2.50 \text{ lei per one leu-currency}$$

We shall asume 100,000 pieces of a certain product being delivered for export, the total value in the industrial wholesale price amounting to $R'_f = 100{,}000 \times 15 = 1{,}500{,}000$ lei.

The return rate $K'_f = 2.50$ being known, we can infer:

— the unit exchange difference

$\Delta r'_f = K'_f - 1 = 2.50 - 1 = 1.50$ lei per one leu-currency

— the total exchange difference

$$\Delta R'_f = 1{,}500{,}000\left(1 - \frac{1}{2.50}\right) = 900{,}000 \text{ lei}$$

— the weight of exchange difference in the exported product value:

$$\frac{\Delta r'_f}{r'_f} = \frac{K'_f - 1}{K'_f} = \frac{1.50}{2.50} = 0.60$$

— recovery degree of the exported product value

$$1 - \frac{\Delta r'_f}{r'_f} = \frac{1}{K'_f} = 0.40.$$

The conclusions drawn out of this example are: a product amounting to 1,500,000 lei is exported, but by its external price only 40 per cent of its value are recovered. Consequently, 900,000 lei are lost, representing 60 per cent of the product internal value.

The first two indexes are supplementing one another. The possibility exists that for a certain product with $K'_f > 1$ a considerable unit exchange difference should result; however, the export quantity not being large enough, the total exchange difference is comparatively small. There exists also the reverse situation, i.e. the total exchange difference is comparatively large, but it is not provided by the unit exchange difference, which may be relatively small, but by the considerable quantities of products being delivered for export.

The computation relationships for these indexes point out the fact that the so-called "return rate" index is one of the computation elements for obtaining the "exchange difference". Owing to its economic content, the return rate is not able to measure an export product profitability, hence it is not reasonable to found conclusions exclusively on this index. Decisions relying on the return rate may lead to the risk of undesirable negative effects.

We shall materially illustrate this fact. The assumption will be that for a certain product the external market conditions prescribe a return rate increase from $K'_f = 1$ to $K'_f = 2$. This unit increase is comparatively small and, as such, it could be easily enough admitted. Although at first sight it has no particular significance, this increase has considerable economic results, by leading to a substantial alteration of the exchange financial situation.

Indeed, as can be seen from the diagram (curve No. 10) for $K'_f = 1$ the exchange difference is $\Delta r'_f = 0$, but it increases to $\Delta r'_f = 1$ leu per 1 leu-currency, when $K'_f = 2$. Hence, if for $K'_f = 1$ the exchange is equi-

valent, in this case the external price providing the integral recovery of the internal value, for $K'_f = 2$ this value recovery is provided yet only to the extent of 50 per cent (curve No. 15), the remaining 50 per cent becoming loss on exchange.

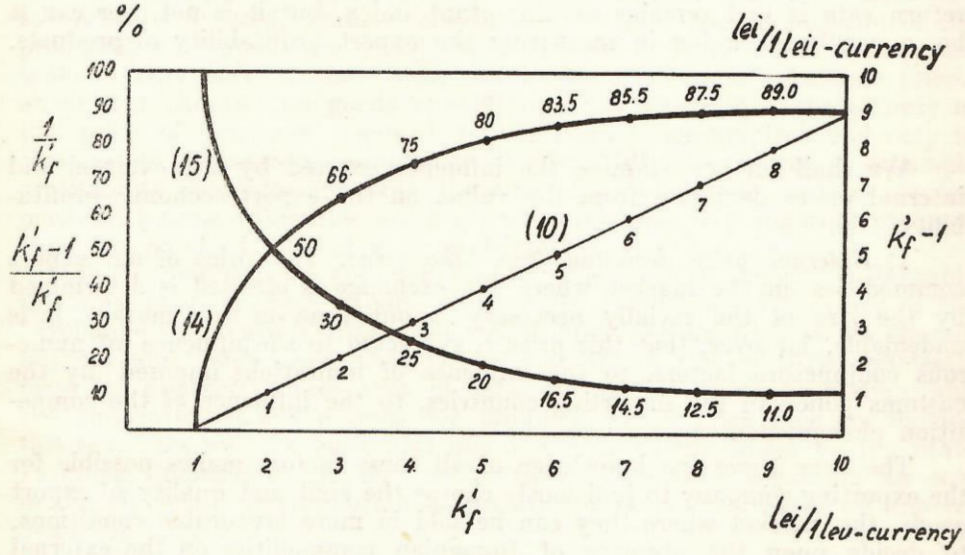

Fig. 1

By keeping in mind that the total value of an export product may amount to tens of millions of lei, it is easy to visualize the size of this exchange difference in the above mentioned example.

If we continue the analysis for the successive values which the return rate could assume, it is easily seen to what considerable errors may lead the decision founded exclusively on this index. This is a result of the fact that the return rate index does not emphasize the financial implications involved by its increase, in actual practice.

According to the diagram plotted in Fig. 1, there are also other conclusions to be drawn. We can, for instance, notice that the weight of the exchange difference in the total export products value increases with a very marked rate in the range $K'_f = 1...4$, particularly in the range $K'_f = 1...2$; for $K'_f > 4$, this increase shows little response to the return rate change. Accordingly, the same return rate increase yields different effects as to their size depending on its range. An increase of the return rate from $K'_f = 9$ to $K'_f = 10$, yields an exchange difference increase equal to 1 per cent of the R'_f value (curve No. 14). The same return rate increase, however, in the range 2...3, leads to an additional exchange difference amounting to 16 per cent, that is sixteen times greater than in the previous instance (i.e. from 50 per cent to 66 per cent of the R'_f value).

Moreover, we must notice that for large return rates, the exchange difference may reach 90 per cent and more, of the export product internal value. Consequently, the price obtained for these commodities on the

external market is so low, as compared to their internal price, that they should not usually be designed for export.

The above examination entitles us to support the idea of measuring export product profitability on the basis of the exchange difference. The return rate is and remains an important index, but it is not, nor can it be, a conclusive index in measuring the export profitability of products.

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We shall further examine the influence exerted by the external and internal prices deviation from the value, on the export economic profitability.

1) *External price deviation from the value.* The price of our export commodities on the market where the exchange is effected is determined by the size of the socially necessary labour time on that market. It is undeniable, however, that this price is subjected to the influence of numerous conjuncture factors, to the influence of limitations imposed by the customs policy in the importing countries, to the influence of the competition phenomenon, a.s.o.

The ever increasing knowledge of all these factors makes possible for the exporting company to judiciously choose the kind and quality of export goods, the market where they can be sold in more favourable conditions, to decide upon the presence of Romanian commodities on the external market at the optimal time and with competitive terms, etc. This knowledge is acquired by continuously inspecting the external market, by way of strengthening the existing trade relations and of extending relations to an increasing number of countries.

As to a possible external price deviation from the value, this being the main problem, it cannot be taken into consideration since the external price, with or without deviation from the value, is set on the external market, which is exclusively fixing it.

2) *The internal price deviation from the value exerts a considerable influence* on export goods profitability and is at present the object of a great number of debates.

Regarding this problem, we consider necessary in the first place to state that the external price is the expression of our product value on the market where the exchange is effected and, as a result, *it must be opposed to an internal price, which in turn has to reflect the product value on the internal market.* A similar internal price is nothing but the industrial wholesale price, including in its size the tax on goods circulation (it is a well known fact that this tax is a constituent of the product created by social labour, hence, a constitutive part of the respective value).

The industrial wholesale price could exhibit, for certain products, positive or negative deviations as compared to their value. These deviations are provided by the government's price policy and are achieved by including a more or less large tax on goods circulation in the prices.

In this respect, we recall that one of the main income chapters in the State Budget is constituted by the tax on goods circulation and that any increase or decrease of this tax leads to the immediate growth or reduction of budgetary revenues.

The taking into account of the industrial wholesale price, although theoretically secured, cannot always find a practical application in the profitability computation of all export products. It is a well known fact that a great part of these products have no industrial wholesale prices, at present the tax on goods circulation being generally included only in the price of products designed for individual consumption and only in some prices of means of production. This is a difficulty in export economic profitability computations, with the effect that in practice a firm decision meets with some difficulties, especially when it comes to comparing products from the point of view of their profitability.

In concluding, we consider that at the present stage it is desirable to compute a product export profitability (expressed by means of the "exchange difference") within the actual price system with all its characteristics and deficiencies, that is, by considering the industrial wholesale price for products whose price includes the tax on goods circulation, and the enterprise wholesale price for products whose price does not include this tax. This was the basic principle of the directions issued by the State Planning Committee and by the Ministry of Finance, regarding the economic efficiency determination of investment objectives, based on the redemption time.

In our opinion, the "exchange difference" for the total volume of export must be computed based on the average value of coefficient α, estimated as a weighted mean for the entire national economy.

A MATHEMATICAL MODEL FOR THE DETERMINATION OF THE OPTIMAL EXPORT PLAN

We shall further assume, for illustration purposes, that $K'_f > 1$. In this case, the export of commodities on the external market results in an exchange difference which will certainly be all the more smaller as the return rate draws nearer to unity.

In our case, it follows then that the export plan could be elaborated on the basis of a minimizing computation of the "total exchange difference". The following mathematical model is suggested, with this purpose in mind:

$$\sum_{i \in M} \sum_{j \in N} p'_{ij} \times X_{ij} \geqslant L \tag{16}$$

$$\left.\begin{aligned} \sum_{j \in N} X_{ij} &\geqslant Q'_i \\ \sum_{j \in N} X_{ij} &\leqslant Q_i \end{aligned}\right\} \text{for } i = 1, \ldots, m \tag{17}$$

(18)

$$\left.\begin{array}{l} X_{ij} \geqslant q'_{ij} \\ X_{ij} \leqslant q_{ij} \end{array}\right\} \text{ for } \begin{array}{l} i = 1, \ldots, m \\ \text{and} \\ j = 1, \ldots, n \end{array} \tag{19, 20}$$

$$X_{ij} \geqslant 0 \quad \text{for} \quad \begin{array}{l} i = 1, \ldots, m \\ \text{and} \\ j = 1, \ldots, n \end{array} \tag{21}$$

$$\sum_{i \in M} \sum_{j \in N} p_i X_{ij} - \sum_{j \in N} \sum_{j \in N} p'_{ij} \times X_{ij} = \text{minimum} \tag{22}$$

where

$M = (1, \ldots, m)$ — stands for the set of indexes i affecting each product;

$N = (1, \ldots, n)$— stands for the set of indexes j affecting each external market.

The constants of this problem are as follows:

p_i = the internal price of product i;

p'_{ij} = the external price of product i on market j;

L = the amount of foreign currency to be provided through export, lei-currency (the amount resulting from the external balance of payments);

Q_i = maximum amount of product i, which may be exported;

Q'_i = minimum amount of product i, which must be exported;

q_{ij} = maximum amount of product i, which may be sold on market j;

q'_{ij} = minimum amount of product i, which must be sold on market j;

X_{ij} = the amount of product i, which must be sold on market j;

The restriction system is constituted by relationships (16), (17), (18), (19) and (20).

Relationship (21) is the non-negativity compulsory condition of the variables, a logical condition because of the economic context of the mathematical programming problem raised. Relationship (22) is the mathematical expression of the purpose aimed at in this study; this is why it becomes the function objective.

The economic significance of the restriction system and of the function objective is:

Relationship (16) secures the amount of foreign currency (L), necessary with a view to counterbalance the external payments. Relationships (17) and (18) state that the amount of product i to be exported is not to exceed a maximum Q_i, nor is it to go below a minimum amount Q'_i; Q_i and Q'_i are defined by internal production and consumption conditions.

Relationships (19) and (20) provide the upper and lower limits for the amount of products which can be sold on market j; q_{ij} and q'_{ij} are defined by the demand of product i on market j.

Relationship (22) states a condition according to which the difference between the total value of export goods on the internal market (in internal prices) and the total value of export goods on the external market is to be a minimum. This difference, called the "total exchange difference" will be positive, because the rate of exchange of the leu-currency is, according to our assumption, $K'_f > 1$. When in actual practice $K'_f < 1$, the above

mathematical model remains unaltered with the sole distinction that the function objective becomes a function of maximum type.

Owing to relationships (19) and (20), the problem appears as a linear programming problem with limited variables (upper and lower limits), its solution being thus simplified. Moreover, it may be considered as a linear programming problem, partly in integers (e.g.: sets of furniture, equipment). A special algorithm is necessary for solving a problem of this kind.

As it was formulated, the problem does not take into account the amounts of products previously established by contracts or other firm agreements. The exchange difference due to these amounts will be added to the value of the function to be optimized, after solving the mathematical programming problem.

The investigations carried out in this field show that the index "exchange difference" allows the solution of some other problems, such as: determining the economic efficiency of the inclusion in own production of some products, at present being imported; determining the economic efficiency of organizing enterprises exclusively working for export; choosing the most economical offer for the import of equipment, complex appliances, or raw materials; determining the economic efficiency of investiment objectives, whose production is designed for export; etc.

Moreover, the exchange difference provides, as was shown, the possibility of optimizing the export plan through modern mathematical methods.

For each of the above mentioned problems the optimal solution will certainly result by judiciously combining economic conditions with extra-economic conditions (social, political, etc.) but it is undeniable that, without a detailed knowledge of economic aspects, the managing staff may be confronted with the risk of undesired negative effects, in taking decisions in this field.

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The complexity degree, the need of approaching the export profitability problem on the background of the general foreign trade activities, that is, by also considering the economic aspects of import, lead to the necessity of further investigating this problem. Undoubtedly, this extremely important problem will only be solved if organized studies and exchanges of views are undertaken.

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A PROPOS DES INDICES DE RENTABILITE DES EXPORTATIONS

Cette étude comprend une analyse critique du « cours de revient» et des possibilités que cet indice offre pour une estimation de la rentabilité des exportations.

Les auteurs expriment certaines réserves concernant les propositions parues dans la presse économique spécialisée au sujet de la nécessité de tenir compte, pour le calcul du cours de revient, d'un prix intérieur dégrevé le plus possible d'éléments d'accumulation. Ils estiment en même temps que l'investigation continuelle de cet indice n'est pas le moyen le plus efficace pour tirer au clair la question de la rentabilité des exportations. S'il est effectivement nécessaire, pour calculer la rentabilité de l'exportation d'un produit, d'opposer les deux prix (le prix extérieur (p_e), exprimé en lei-devises, et le prix intérieur (p_i), exprimé en lei), ce n'est cependant pas en calculant leur rapport $\frac{p_e}{p_i}$ = cours de revient, mais en calculant leur différence ($p_i - p_e$).

Et les auteurs d'apporter à l'appui de leur proposition que, dans les conditions de la loi de la valeur, le producteur qui vend sa marchandise est intéressé non pas à connaître le rapport entre le prix obtenu et son prix de production, mais surtout à savoir si le premier est égal, plus grand, ou plus petit que le second. Ce bilan a pour le producteur de la marchandise la signification d'une reconnaissance totale ou seulement partielle de son travail en tant que travail socialement nécessaire.

Les auteurs proposent que les estimations sur la rentabilité de l'exportation d'un produit soient faites à partir de l'indice « différence d'échange» ($p_i - p_e$) qui permet de résoudre dans la pratique un grand nombre de problèmes. L'étude analyse seulement, à ce propos, la posibilité d'optimiser le plan d'exportations et propose en ce sens un modèle mathématique.

К ВОПРОСУ О ПОКАЗАТЕЛЯХ РЕНТАБЕЛЬНОСТИ ЭКСПОРТА

В этом исследовании делается критический анализ «курса пересчета», возможностей, которые представляет этот показатель для оценки рентабельности экспорта.

Авторы выражают несогласие с предложениями, появившимися в экономической печати по специальности, относительно необходимости введения в расчет курса пересчета внутренней цены, как можно более освобожденной от элементов накопления, и считают в то же время, что дальнейшее исследование этого показателя не является самым эффективным путем выяснения вопроса рентабельности экспорта.

В этом смысле доказывается, что для определения рентабельности при экспорте какого-нибудь продукта действительно необходимо противопоставить эти две цены (внешнюю цену (p_e), выраженную в леях валюте, и внутреннюю цену (p_i), выраженную в леях, но не путем их соотношения $\left(\frac{p_i}{p_e}\right)$ = курс пересчета, а путем получения их разницы ($p_i - p_e$).

Чтобы поддержать свое предложение, авторы показывают, что в условиях существования закона стоимости, товаропроизводитель, когда он продает свой товар на рынке — внутреннем или внешнем — заинтересован в том, чтобы знать не соотношение, в каком находятся полученная цена и его цена производства, а знать, если первая равна, больше, или меньше второй. Этот баланс для производителя товара означает полное или частичное признание его индивидуального труда как общественно необходимого труда.

Авторы предлагают в качестве оценки рентабельности экспорта «разницу обмена» ($p_i - p_e$), которая практически дает возможность рашить очень большое число проблем, из которых в работе анализируется только возможность оптимизации плана экспорта. С этой целью предлагается математическая модель.