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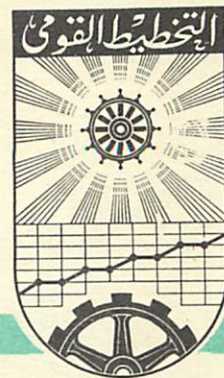
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THE ROLE OF THE RATE OF EXCHANGE IN THE MANAGEMENT OF THE SOCIALIST ECONOMY

BY

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The aim of this paper is to prove that the economic
authorities which manage the socialist economy must take
into consideration the level of all the parameters /steering
norms/ including the rate of exchange, as well as regulate
its level according to changes occurring in the economic
situation of a given country and abroad.

I. The Rate of Exchange in the System of Economic Management

The system of directing of the national economy is a
set of rules of behaviour of different levels of economic
authorities in planning and management.[1]

Planning is one of the most important activities of
economic authorities. We understand it as a process of
decision-making on the commodity and geographical structure
of production and distribution of products.

Economic management consists of three groups of ac-
tivities: steering, financing and organizing.

Steering means the regulation of the levels of dif-
ferent norms /parameters/ such as: price of product, wage
rate, exchange rate, rate of interest, tax rate, tariff,
subsidy etc.

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[1] See: P.Sulmicki: Planowanie i zarządzanie gospodarcze
/Economic Planning and Management/, Warszawa 1973, p.336.

Financing is to provide economic units with indispensable means of payment and means of production.

Organizing means determining who and at which level of the economic structure has the right to make a given decision.

By using orders planning exerts a direct influence on economic units. The level of economic parameters is neutral for executive units and they are stimulated to execute the plans /directives/ only. In this situation the exchange rate is of a very slight importance and sometimes this parameter is of no significance at all. It only plays a passive, statistical role.

The situation is quite different when economic authorities use the indirect system of direction. Then, by steering, financing and organizing they set up the framework of the economic units activity, thus enabling them to take independent economic decisions. In such a system the role of the exchange rate and other parameters is fully manifested. That is why the role of the rate of foreign exchange in the system of economic management /indirect direction/ is the subject of our considerations.

Under the notion of foreign exchange rate we understand the price of a given foreign currency expressed in terms of domestic currency.

However, for further consideration we have to distinguish between the so-called real and official rates of exchange.

The real rate of exchange is the rate of foreign trade equilibrium and it is shown in the optimization model of the national economy as a shadow price of a constraint in the form of the balance of trade exchange. The place of the exchange rate in the model of utilization of existing resources on macro-level is shown in the diagram 1.[2]

Diagram 1

Decisive variables / Shadow prices	X	ϱ^{r1}	x^{1r}	x^{r1}	x^0	Constraints
$p/x/$	$-1+A$	-1	1		1	$\dfrac{-Y}{}$
$p/x/$	A^r	1		-1		$\underline{-x^{r1}}$
ψ^{1r}			$-p^{1r}$	p^{r1}		$\leqslant \underline{-B^r}$
$p/L/$	λ					$\leqslant \overline{L}$
$p/M/$	μ					$\leqslant \overline{M}$
$\overline{u}^{1r}$			1			$\leqslant \overline{x}^{1r}$
$\underline{u}^{1r}$			-1			$\leqslant \underline{-x}^{1r}$
$\overline{u}^{r1}$				1		$\leqslant \overline{x^{r1}}$
$\underline{u}^{r1}$				-1		$\leqslant \underline{-x}^{r1}$
C /min/	0	0	0	0	$p/x/$	W/max/

Symbols used in the model /for the country r=1/:

X - global production

2/ P.Sulmicki, Ibidem, p.112.

Q^{r1} - competitive imports from $r \neq 1$

X^{1r} - exports

X^{r1} - imports

Q - residual part of final production destined for distribution in the country

$\underline{Y}$ - required /minimum/ level of final production

$\underline{X}^{r1}$ - required /minimum/ level of imports

$\underline{B}^{r}$ - required /minimum/ value of balance of trade exchange in terms of foreign curreny

$\underline{L}$ - accessible /maximum/ quantity of manpower resources

$\overline{M}$ - accessible /maximum/ quantity of capital resources

$\overline{X}^{1r}$ - upper limit of exports determined, for instance, by productive capacities of the country or the necessity to satisfy domestic requirements /all the export and import limits may be expressed in value or in physical terms/

$\underline{X}^{1r}$ - lower limit of exports, determined, for instance, by the necessity of securing given receipts in foreign currency

$\overline{X}^{r1}$ - upper limit of imports, determined, for instance, by export possibilities of the country, the possibility of obtaining foreign loan, productive capacities of the national economy or commercial policy of exporters

$p/x/$ - shadow price of a product /in domestic currency/

φ^{1r} - shadow price of foreign currency /rate of exchange/

$p/L/$ - shadow price of labour force /wage rate/

$p/M/$ - shadow price of capital resources /rate of profit/

$\bar{u}^{1r}$ — tax /tariff/ imposed on goods when exported quantity exceeds a given limit

$\underline{u}^{1r}$ — subsidy /bounty/ on goods when exported quantities are below a given limit.

$\bar{u}^{r1}$ — tax /tariff/ imposed on goods when imports exceed a given limit

$\underline{u}^{r1}$ — subsidy /bounty/ when imported quantities are below a given limit

A — matrix of material-intensity coefficients; while in the form of /1-A/ it is the so-called Leontieff's matrix

A^r — matrix of import-intensity coefficients

p^{1r} — foreign prices obtained in exports

p^{r1} — foreign prices paid in imports

μ — matrix of capital-intensity coefficients

λ — matrix of labour-intensity coefficients

v — value of residual final production

C — costs of production.

The construction of the dual program enables us to find the equations in which factors determining the level of the real rate of exchange are shown:

$$\varphi^{1r}_e = \frac{p/x/ + \bar{u}^{1r} - \underline{u}^{1r}}{p^{1r}}$$

$$\varphi^{1r}_1 = \frac{p/x/ - \bar{u}^{r1} + \underline{u}^{r1}}{p^{r1}}$$

real rate of exchange in exports is the relation between foreign price corrected by export tax or export bounty

and foreign price. Accordingly the rate of exchange in imports is the relation between domestic price, corrected by tariff or import bounty and foreign price paid in imports. One can easily notice that the real exchange rate, both in exports and in imports, is determined by all the factors which influence the domestic price: costs of materials /domestic and imported/, costs of labour and rate of profit including the rate of depreciation of existing assets. The lower these costs are, the lower is the rate of exchange/and the price of domestic currency is higher/.

The real rate of exchange /shadow price of foreign currency/ shows the impact of the change in a constraint on the value of the function of choice:

$$\varphi^{ir} = \frac{\partial w}{\partial u^r}$$

In other words, the rate of exchange shows how the value of the function of choice would change if the constraint in the form of the balance of trade, were increased or diminished by one unit /for example by 1 $ /. In our model increasing the positive balance or diminishing the negative one causes the decline of the value of the function of choice. It is obvious because in such a case the national income to be distributed /consumption/ is diminished. The opposite situation takes place in case of increasing foreign indebtedness /growth of the negative or decline of the positive balance of payments/.

The rate of foreign exchange may be defined in two ways:

a/ it is the cost of gaining an additional unit of foreign currency from exports, or

b/ it is the marginal cost of replacing a unit of foreign currency spent for imports by the domestic production.

Thus we may assume that the rate of foreign exchange shows the importance of foreign currency being a resource, for the fulfillment of the postulate, expressed in the function of choice.

Diagram 1 shows that the real rate of exchange is closely linked with the other steering parameters as well as with decisive variables and constraints. As these magnitudes, being the components of objectives,means,and conditions of economic activity, can vary in long or short periods of time, the real rate of exchange is also a variable one.

Along with the notion of the real rate of exchange there also exists the term "the official rate of exchange". It means the official price of foreign currency expressed in terms of domestic currency. The level of the official rate of exchange is always set up by the central economic authority, regardless the system of management existing in the country.

If the rate of exchange is to fulfill its informative function, i.e. to fully express the foreign currency shortage, the economic authority has to regulate the former according to changes of economic situation. Thus, the of-

ficial rate of exchange should change along with the
variations of the real rate of exchange. Otherwise it
will deviate from that of equilibrium. The more the
official rate of exchange varies from that of equilib-
rium, the more difficult becomes the achievement of the
optimal value of the function of choice in the plan of
production and trade exchange.

The official exchange rate can be used as a required
norm /standard/ of efficiency in foreign trade. Then the
individual rates in different transactions are compared
with the official rate.

In exports the individual rate of exchange can be
expressed by the following formula:

$$\varphi_e^{1r} = \frac{x^{1r}/p^1 + C_k^{1r} + \bar{u}^{1r} - \underline{u}^{1r}/}{x^{1r}/p^r - C_z^{1r}}$$

where:

φ_e^{1r} – individual rate of exchange in the export trans-
actions,

x^{1r} – volume of exports,

p^1 – domestic price of exported product,

C_k – domestic costs of the enterprises /general and
transaction costs/,

p^r – foreign price of the exported product,

C_z^{1r} – foreign costs per unit in exports,

$\bar{u}^{1r}$ – export tax,

$\underline{u}^{1r}$ – export bounty.

The individual rate of exchange shows the real costs of the unit of foreign currency for exporter. By comparing the rates from different transactions we may find out which transaction is the more profitable one. For instance: $\varphi^{1r}_{o/1/} > \varphi^{1r}_{o/2/}$ means that the second transaction is more profitable because the costs of the unit of foreign currency are lower. It is obvious that such a comparison can be done within the framework of the same currency zone only, because the denominator in the above formula is expressed in terms of foreign currency.

To find out whether foreign transaction is a profitable one, we must have the so-called norm of efficiency, which could be compared to the individual rate of exchange. Such a norm constitutes an official exchange rate $\overline{\varphi}^{1r}$. The transaction is profitable when:

$$\varphi^{1r}_{o} \lessgtr \overline{\varphi}^{1r}$$

Analogically, in imports the individual rate of exchange can be expressed as follows:

$$\varphi^{1r}_{i} = \frac{x^{r1}/p^{1} - c^{r1}_{k} - \overline{u}^{r1} + \underline{u}^{r1}}{x^{r1}/p^{r} + c^{r1}_{z}/}$$

where:

φ^{1r}_{i} - individual rate of exchange in import transaction

x^{r1} - volume of imports,

p^{1} - domestic price of imported goods

c^{r1}_{z} - foreign costs per unit in imports

p^{r} - foreign price of imported goods,

$\bar{u}^{r1}$ - import tariff,

$\underline{u}^{r1}$ - import bounty.

In this case the comparison of individual ex-
change rates is also possible but only in a given cur-
rency area. For instance $\varphi^{1r}_{1/1/} \nearrow \varphi^{1r}_{1/2/}$ means that
importer obtains more domestic currency units for one
units of foreign currency spent on imports in the first
transaction than in the second one. So the first trans-
action is more profitable. In other words, the costs of
substituting imports by domestic production will be high-
er in the first case than in the second one. The require-
ment of the effectiveness of import transactions can be
expressed as follows:

$$\varphi^{1r}_{1} \geqslant \bar{\varphi}^{1r}$$

It means that to make the import transaction profitable
one must obtain the individual rate of exchange not lower
than the rate of exchange being the foreign trade effi-
ciency norm.

It should be stressed, however, that the rate of
profit is a better measure of foreign trade efficiency
than the individual rate of exchange. The rate of profit
can be expressed by the following formula:

$$i_t = \frac{S_t}{F_{w/t-1/}}$$

where:

i_t - rate of profit in the enterprise in the period t,

S_t - net profit of the enterprise in the period t,

$F_{w/t-1/}$ - the enterprise's own funds at the end of the period /t-1/.

The net profit means the difference between the surplus /S^*/ and taxes, interest charges, and reserves, special funds etc. The surplus of the enterprise can be shown as follows:

$$S^* = x_t^{1r} \left[\overline{\varphi}^{1r} /p_t^{1r} - c_x^{1r} / - /p_t^1 + c_k^{1r} / \right] +$$
$$+ x_t^{r1} \left[/p_t^1 - c_k^{r1}/ - /p_t^r + c_x^{r1} / \overline{\varphi}^{1r} \right]$$

The symbols are the same as in the previous equation.

Comparing the rate of profit in the enterprise with the required norm of effectiveness /for instance with the interest rate which is in operation in a given country/ we can check whether the activity of the economic units is effective or not. In other words the economic effect of export and import transactions /gross profit/ must, at least, cover the interest charges and allowances for superior authorities which have to be paid by the enterprise. Thus the rate of profit may easily be linked with price and volume of credit on which depends, to a high degree, the maintenance and extension of economic activity.

One must remember, however, that both the individual rate of exchange and the rate of profit will play their role of coefficients of efficiency in foreign trade only when the official exchange rate together with the other parameters are good informants about scarcity of different

products and resources. It means that the official rate
of exchange must be established on the level close to
the rate of equilibrium.

The central economic authority, which steers the
rate of exchange, must be able to answer the following
questions:

a/ to implement an uniform official rate of exchange
or to introduce the system of multiple rates.

b/ to which extent the official rate of exchange
should be stable.

c/ how to calculate the level of the official rate of
exchange.

II. Uniformity of the Official Rate of Exchange

The uniform rate of exchange means the same price of
foreign currency in all export and import transactions,
for all   countries and for every economic unit.

Uniformity of the exchange rate is a fairly popular
postulate. Such a rate enables the introduction of   full
convertibility of domestic currency. It also constitutes
a uniform,required norm of effectiveness in foreign trade,
which makes the assessment of the economic units' activi-
ties in this field possible. The uniform rate of exchange
enables the geographical and commodity optimization of
foreign trade under given conditions. In such a case the
incomes of enterprises depend on their competitive posi-
tions on foreign markets.

However, the uniform rate of exchange, to a higher
degree than the multiple rates, transfers the fluctuations
of foreign prices on the domestic ones. It can neither be
used by the economic authorities as the means of a select-
ive influence exerted on economic units and on geographic-
al and commodity structure of foreign trade. It also must be
established on the equilibrium level; otherwise it requires
extended system of norms of protection and distribution
/bounties, subsidies, tariffs, taxes etc./.

While introducing the system of the multiple exchange
rates the economic authorities establish two or more levels
of the foreign currency price. Then there is no uniform cur-
rency market, but a certain number of partial markets with
different prices for given foreign currencies. Such a si-
tuation may exist only when the economic authorities in-
troduce foreign exchange control which makes the flows of
monetary means between the partial markets impossible.
It is of particular importance that the economic units
must not be entitled to effect payments directly to foreign
customers nor to receive foreign monetary means from abroad.
All the foreign currency payments have to be effected by the
central bank or the foreign trade bank, which is under the
control of the economic authorities of a given country
and which is in a position to check the terms of contract.

Multiplication of the rates of foreign exchange may
be carried out according to different criteria:

a/ according to economic units effecting payments, which
result from the same types of foreign transactions;

b/ according to the type of foreign transaction /trade
in commodities, services, capital transactions, tourism
etc./;

c/ according to the commodity which is the object of
the transaction /strategic raw materials, other materials
luxury goods, etc./;

d/ according to the country which pays or to which the
payment is to be effected;

e/ according to the type of transactions: exports or
imports;

f/ according to the type of the capital transation.
The multiple foreign exchange rates, differentiated accord-
ing to the economic units which effect payments, are used
rather seldom. Here the differentiation aims at protecting
certain economic subjects. It is also possible to discrimi-
nate certain enterprises by establishing worse conditions
of payments than those commonly existing.

The second type of differentiation is used very often.
As a rule, one type of the rate of exchange is introduced
to foreign trade, and another one to capital transactions
or to payments conne ced with tourism.

The differentiation of rates according to the commodi-
ty structure of foreign trade is also very common. Theore-
tically there can be as many rates as many products are
traded. In practice the different rates are established
in relations to the more significant groups of goods in

foreign trade of a given country.

The system of multiple exchange rates which differen-
tiated according to the geographical structure of payments
may exist only when the domestic currency in inconvertible.
Such a structure of exchange rates causes changes in the
directions and volumes of flows of goods in foreign trade.
Geographical multiplication of the rates may be a good
instrument of regulation of the balance of trade in bilateral
economic relations. Exporters and importers are encouraged
or discouraged to sell or to buy on a given market for a
given currency. Such a role has been played in Poland by
the so-called "coefficients of a relative value of the
currency".

Introducing the exchange rate for export transactions,
which is diffrent than that applied for import transactions,
means, in practice, the taxation of exporters or importers.
There exist two different norms of effectiveness - one on
the export side and another one on the import side. Such a
situation cannot be regarded as favourable because the mea-
surement of the efficiency of foreign trade and its influence
on the economic development is much more difficult. Neverthe-
less the differentiation of export and import rates is
applied for fiscal purposes and for the acceleration or
restriction of growth of a given domestic production.

The differentiation of foreign exchange rates according
to the type of the capital transaction is effected so as
to change the distribution of incomes and protect the in-
terests of a given country. It concerns mainly the transfers

of profit, interests and dividends abroad.

The system of multiple exchange rates can also be established by means of different kinds of norms of protection and distribution /rate-of-exchange taxes, equalization charges etc./.

Multiple rates can be utilized by the economic authorities as follows: as a means of influencing the commodity and geographical structure of foreign trade, as a norm of distribution of incomes, as a monetary policy instrument.

The multiple exchange rates can play the role of good steering parameters because they enable the flow of very precise information on preferences of the central economic authorities to the executive units. They require, however, a skilled staff, responsible for the regulation of these parameters and the instant flow of information on the economic situation in the country and abroad. Unproper regulation of the rates may lead to significant loses to the national economy, sometimes difficult to be observed immediately.

The system of multiple exchange rates is used in the management of foreign trade so as to maximize the advantages derived from the international trade.It is mainly a problem of maximizing foreign currency incomes from exports as well as limiting the expenditures on imports. Such a system enables the protection of interests of a given country, especially in trade with a stronger partner. It is a system of a strictly protectionist and distributive character. It also causes a deformation in relations of prices on

international market. The next defect of the system is
the fact that it can lead to autarkic tendencies in economic
development and it does not stimulate economic units to raise
their economic effectiveness.

III. Stability of the Official Rate of Exchange

In the economic policy, apart from the problem of
the uniformity of the rate of exchange, there also exists
a question of stability of this parameter.

In the system of a stable official rate of exchange,
the economic authorities maintain a fixed relation between
the domestic currency and foreign money in a given period.
In other words the price of foreign currency is not a re-
sult of fluctuations of demand for and supply of the given
monetary resources, but it is kept on a level which was
established by the economic authorities. In such a system
all the countries which are weaker in respect of the level
of development must adapt themselves to the conditions impos-
ed by stronger partners.

This is the great advantage of this system that it
diminishes the financial risk in the transactions which do
not require an immediate payment. However, such a risk
exists when a creditor or a debtor are surprised by the
change of the rate of exchange /devaluation, revaluation/.

In the system of a stable rate of exchange, domestic
economic difficulties of a given country can relatively
easily be shifted on the partners /beggar my neighbour

policy/. It is one of the faults of this system. It is
necessary, then, to strengthen the exchange rate mechanism
with a command /a directive/ of the economic authorities
/quantity and legal restrictions, system of licences,
control etc./ or with an expanded system of norms of pro-
tection and distribution /tariffs, bounties, subsidies
etc./. The information transmitted to the executive units
is then complicated and there is no guarantee that it
would be read out correctly.

The most important defect of the stable exchange rate
system is the fact that very rarely such a rate is equal
to the rate of equilibrium /the real exchange rate/.
This is due to the situation, that very rarely the level
of domestic prices, wages and incomes, productivity of
labour etc. vary parallely in the trading countries.
In the system of stable exchange rate there must exist
a situation where the official rate differs considerably
from that one of equilibrium. It may lead to the non-
-optimal decisions, taken by the executive units, concern-
ing the allocation and utilization of productive and non-
-productive resources.

The variable exchange rate does not have such a de-
fect because, in principle, it is the rate of equilibrium.
So it causes the neutral situation in the price competi-
tion between the trading partners. The great defect of this
rate, resulting from its fluctuations, is uncertainty
occurring in the case of the credit payments. The economic
units may avoid these transactions or select more stable

currencies. They can also add the rate of estimated risk
to the price or to the rate of interest.

The advantage of the variable rate of exchange is the
reduction of the monetary reserves necessary in the system
of the stable rate of exchange as well as an increased
freedom of manoeuvre in domestic policy /policy of prices
and wages/.

The fluctuations of the variable rate depend on the
economic situation of a given country. So the countries
which coordinate their domestic policy may find themselves
in the situation where the exchange rates of their curren-
cies will not change even in the longer period of time.
Changes in economic conditions may thus be corresponding and
unidirectional.

The variable rate of exchange well plays its role of
information on the significance of different currencies for
the national economy. It favours the optimization of the
utilization of resources and their correct allocation. It
also enables the country to participate in the international
division of labour so as to maximize the advantages of fo-
reign trade. It is conditioned, however, by the domestic
resources mobility /for instance the capacity to rapidly
adapt the export supplies in accordance with the increasing
foreign demand/.

The variable exchange rate will operate properly only
when there exists a high price elasticity of demand for
exports abroad and flexible supply of exported goods.

Otherwise the fluctuations of the exchange rate will not
bring about the expected effect of the balance of payments
equilibrium. For instance, the depreciation of domestic
currency will cause the increase of prices of imported
goods which may bring about the increase of the costs of
production and further deterioration of competitiveness
of exported goods on the international market.

IV. Methods of Fixing the Official Rate of Exchange

Determination of the level of the official rate of
exchange is the next important problem to be solved by the
economic authorities. There are three main methods of
fixing this rate:

a/ determination of the rate at the level calculated
on the basis of the central short-term model of production
and foreign trade in a given country,

b/ determination of the rate on the basis of the com-
parison of the purchasing power of the domestic and fo-
reign currencies,

c/ determination of the rate at the level resulting
from the supply of and demand for a given currency.

The first method which may be called"a shadow-price
method", is the most correct one. It is, however, impos-
sible to put it into practice in the actual economic con-
ditions. It requires the capacity of the construction of
the plan of production and foreign trade, embracing all
constraints and variables on the macro-level. It is also

necessary to find the solution to the dual program. The
main problem to be solved is to collect the full informa-
tion on the conditions and means of economic activity as
well as the question of data processing.

The second method, called "a purchasing power parity
method", consists of the comparison of the levels of do-
mestic and foreign prices of products and services. The so
calculated rate of exchange is equal to the purchasing
power of monetary units on domestic and foreign markets.
Many variants of this method are used in practice, depend-
ing on the base of comparison /domestic production, exports,
consumption etc./ and prices used in the calculation /whole-
sale prices, retail prices etc./ the most commonly used
variants are the comparisons of the price levels of goods
which are representative in production, consumption or
exports in the countries under consideration.

Taking into account the facility of computations,
the variant consisting in the determination of the level
of the exchange rate on the basis of the costs of obtaining
one foreign currency unit from exports gained a significant
popularity. The so determined rate of exchange may be
based on the marginal or average cost of obtaining one
unit of foreign currency. In the first case we obtain the
so-called "marginal rate of exchange", in the second one -
"average rate of exchange". Both variants were used in
economic policy in Poland and in other socialist countries.
It is necessary to stress that this variant, though used
in practice, induces many discussions and controversies.

In fact only in a few cases the exchange rate determined on the basis of results of exports of a given country will be equal to the equilibrium rate which results from many different factors. It is possible that neither the marginal, nor the average rate will play properly their informative role. If the economic authorities want to establish the official exchange rate on the level of equilibrium, the variant under discussion may help as the first approximation only. The so determined rate of exchange has to be verified in practice.

The third method is called sometimes "a market method" because the price of foreign currency is determined by the supply of and demand for monetary means on the market. The level of the exchange rate is established by the executive units themselves. The economic authorities have to accept this level and to eventually determine the extent of fluctuations. It is clear that such a rate is variable one, though this method can also be used in order to determine the rate fixed in a given period of time. The "market method" is very convenient for the economic authorities because it is cheap, may be easily introduced and it is not labour-intensive. It requires, however, the existence of the currency market and this condition is not fulfilled in the socialist countries.

The decision on the choice of the method of determination of the rate of exchange, its uniformity and stability will always depend on the confrontation of all the defects

and advantages of the adopted solution. Furthermore, it
will depend on the model of management of the national
economy and on the social and economic objectives set
by the economic authorities.