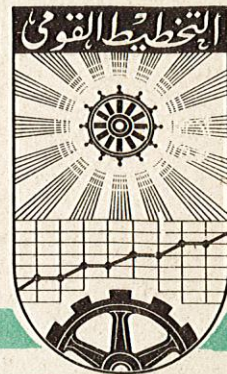


ARAB REPUBLIC OF EGYPT

THE INSTITUTE OF
NATIONAL PLANNING

نسخة



Memo. 1192

THE APPLICATION OF THE THEORY
OF GROWTH IN SOCIALIST ECONOMY
TO DEVELOPING COUNTRIES.

BY

DR. ALEXANDER MULLER

Feb., 1977.

ALEXANDER MULLER H.DR.E.S.
ASOCC. PROF. IN CENTRAL SCHOOL
OF PLANNING AND STATISTICS
WARSAW-POLAND

THE APPLICATION OF THE THEORY OF GROWTH IN SOCIALIST ECONOMY
TO DEVELOPING COUNTRIES.

The general conditions for socio-economic development in developing countries do not make it possible to present a universal type of growth adjustable to the needs of different groups of countries. But in spite of this, there is a necessity to determine some common problems of these countries to research the phenomena which regularly and continuously are existing in all developing economies.

One of the regular processes of development is the economic growth, conditioning to permanent increase of production and of consumption of the population, as well.

The economic theory should suggest the optimum solutions and forecast probable outcome of a policy of growth; the role of the theory consists in shedding light on the problems for the improvement conditions of the practical decision-making. So, within the limited scope of this paper are presented

the basic problems of the theory of economic growth, and especially the main relations between the process of growth and the factors determined its possible rate.

1. THE ECONOMIC GROWTH AND SOCIO-ECONOMIC DEVELOPMENT.

The contemporary economic theory in socialist economy differences two notions of great importance for analysis of the today problems of growth.

The first one is socio-economic development, on the second place we will present the notion described as economic growth.

The socio-economic development consists a wider sense. It means not only the growth of production or of the national income (as well as GNP), but consists within the problems of the structure of the economy, main changes in socio-economic structure of the population, the level of living of the population and improvements in it, as well as, the problems of the economic and social infrastructure of the country.

In other words - the economic development consists all changes in economy and in the social life of the country, evoking the general progress and technical improvements both in the sphere of production and in living standard of the people.

The way by which the socio-economic development may be achieved this is the way of economic growth. The economic growth is defined as the permanent growth of the national income (or of the GNP, as well), conditioned by the activity of main factors of growth. Within the process of growth we can observe changes in the relations between the factors, and as effect of them, the changes in general structure of the national economy.

Among the lot of factors conditioning the economic growth we can difference the direct and indirect factors.

The direct factors of economic growth may be presented as follows:

1. The increment of the employment in the sphere of material¹⁾ production;
2. The increase - of the productivity of work in the sphere of the material production;

-
- 1) In marxist economy the national income is described as a result of the activity of the sphere of material production only. This sphere consists:
- industry, both mining and manufacturing;
 - agriculture, forestry and fishery
 - building
 - transport
 - Commerce - both home trade and foreign trade

3. the savings of productive equipment and means: machines, engines, productive buildings, instalations, means of transport and raw-materials, semi-manufactured products, materials, as well as, fuel, energy et cetera.

In fact the both factors 2 and 3 may be reduced to one because the savings of the productive means are the form of savings the labor inputs, so may be defined as an increase of the productivity of work.

The influence of these factors on the rate of growth we can present, as follows:

$$\Delta Y = L \cdot e + L_0 \cdot e_0$$

where: Y - denotes the increment of the national income

L - denotes the increment of employment in the sphere of material production,

e - denotes the increment of productivity of work in the sphere of material production;

L - denotes the basic employment at the starting point,

e - denotes the basic level of the productivity of work at the starting point.

After it's transposition the formula assumes the following form:

$$\frac{\Delta Y}{Y} = \frac{L}{L_0} + \frac{e}{e_0} + \left(-\frac{L}{L_0} \cdot -\frac{e}{e_0} \right)$$

The magnitude of the last part of the formula presented above, i.e. $\frac{L}{L} \cdot \frac{e}{e}$, is so small, that we can cut it out. So we will see:

$$\frac{Y}{Y} = \frac{L}{L} + \frac{e}{e}$$

Where: $\frac{Y}{Y}$ - denotes the rate of growth of the national income (we can denote it as),

$\frac{L}{L}$ - denotes the rate of growth of the employment (we denote it as),

$\frac{e}{e}$ - denotes the rate of growth of the productivity of work, (we denote it as),.

The following formula:

$$r = +$$

presents the rate of growth of the national income conditioned by direct factors of growth, i.e. the rate of growth of productivity of work plus the rate of growth of employment.

Besides the formula presented above, there is another formula, of great importance, very useful for exposition of the factors to economic growth.

It is, so called, investment, formula of economic growth, conditioned by indirect factors of growth:

productive investments, efficiency of investments and other factors.

This formula is very well known in world's economic literature as the "Kalecki's Formula" ¹⁾.

In the next paragraph of this paper we will present the model-formula very useful for explanation the relation between the rate of growth and the indirect factors of growth.

The possibilities to activate direct factors of economic growth are conditioned by the indirect factors in fact, because by the new investment objects it is possible to increase the increment of employment, and by the technical progress introduced into new into new investment objects, as a result of it, growth of the productivity of work may be achieved.

2. ASSUMPTIONS OF THE "KALECKIS FORMULA".

The analysis based on the "Kalecki's Formula" is highly simplified and includes the assumptions which are inherently linked with the exposition of the fundamental factors.

1) Professor Michael Kalecki was an world famous Polish Economist, author of many books and other works, among them very important is "The Outline of the Theory of Growth in Socialist Economy" published in 1963.

These assumptions we may present as follows:

1. In the material composition of the national income only two kinds of final products are taken into account: investment goods and consumption goods.

The gross national income is, thus, the sum of these goods:

$$Y = I + C.$$

2. The investment fund (I) covers exclusively the elements of gross productive accumulation comprised of gross productive investment and increase in the working assets in operation, indispensable to start production in new investment projects.
3. Non-productive investment, which contribute directly to the satisfaction of consumption needs, are considered on a par with other means of consumption and constitute a component of the total fund of consumption.
4. It is assumed that the level of capital intensity in sectors producing means of consumption and means of production is the same and, consequently, changes in the composition of investment do not affect the capital-output ratio.
5. It is assumed that the gestation period of investment projects,

by which we mean the period between the first outlay for the project and its first output in the form of increment of production, equals one year.

This means that the investments made in a given year will yield productive effects next year. An increase of employment in new investment projects takes place simultaneously with their putting into operations.

The rise of employment resulting from investment outlays is reckoned as a component element of these outlays.

The main assumptions of the formula presented above let us to analyse the main relations between the investment factors of growth, and their influence on the activity of the direct factors of growth. In this place of our analysis we did not assume the factors limited the possibilities to economic growth.

3. THE PRESENTATION OF THE "KALECKIS FORMULA".

The basic form of the formula written by M.Kalecki expresses a functional relationship between the growth rate of the national income on the one hand, and the rate of investment, the level of capital intensity and non-investment factors on the other.

The formula assumes the following form;

$$r = i \cdot \frac{1}{k} - a + u$$

Where: r - denotes the rate of growth of the national income in percent;

i - denotes the rate of gross productive investments together with the increase in the working assets in operation, in other words the share of productive investments in the national income ($i = \frac{I}{Y}$);

k - denotes the capital-output ratio, determining the inputs of investments per one unit of increase of the national income in the new investment projects (so, $k = \frac{I}{\Delta Y}$);

a - symbolizes the decrease of production (of the national income) in percent, as a result of negative effects of disinvestments (i.e. the decapitalization of existing productive capacities);

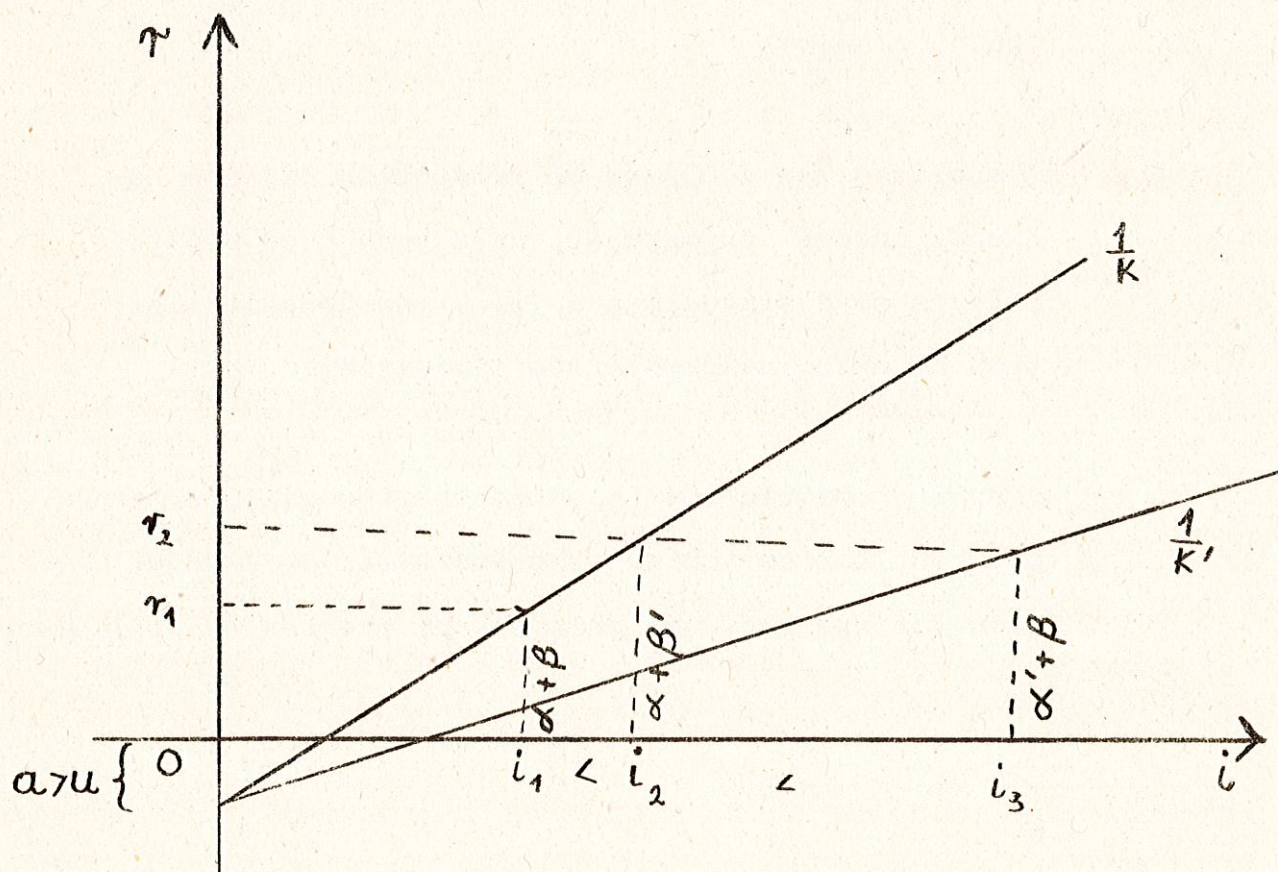
u - denotes possible non-investments improvements, in per cent let to achieve the increment of production (of the national income), by the better utilization

tion of the existing productive capacities.

In fact, this formula is a first degree linear function so we may present it in a graphical form.

Diagram 1.

The relationship between the rate of growth of the national income and indirect factors of growth.



On the axis of co-ordinates we present the rate of growth of the national income (r) and on the axis of abscissae we present the rate of gross productive investments (i).

We assume that the influence of disinvestments on the rate of growth is higher than the influence of non-investment improvements, so a u , and therefore the point in which the function begun is lower than 0. We assume, that this state that a u is constant to simplify our analysis and to limit it to the investment factors of growth only.

In the assumed conditions of the Kalecki's model-formula the changes in the rate of growth of the national income are determined by the changes of the rate of investments, as well as, by the changes of the capital-output ratio.¹⁾

-
- 1) The changes of the capital-output ratio are conditioned by the general decisions of the choice of techniques and by the characteristics of the technical progress. The relations between the rate of growth of the technical equipment of labor (S) and the rate of growth of the productivity of work (e) result different possibilities of changes of the capital-output ratio (k). See: A. Muller, "The Theoretical Aspects of the Choice of Techniques Problem in Developing Countries". The Institute of National Planning . Cairo 1977.

On the diagram 1 we can see three different situations.

At first, the Basic Situation, when the rate of productive investments is equal to i_1 , and the capital-output ratio is equal to k (so, the efficiency of the investments is equal to $\frac{I}{k}$).

In presented conditions the rate of economic growth is r_1 and it should not change during the period when investment factors of growth would be not change, too.

The Second situation shown on the diagram presented the acceleration of the rate of growth. As a result of the decisions of the state, the rate of investments increases, and brings to effect the higher rate of growth. So, we can see that investments rate increased from i_1 to i_2 and as a result of it - the rate of growth increased from r_1 to r_2 . The capital-output ratio did not change so it is possible to assume that the techniques of production did not change too, and that the acceleration of growth was achieved by the acceleration of growth of the employment's rate. So, we can formulate in conclusion that the rate of growth r_2 is conditioned by higher rate of investments i_2 .

So, we compare this second situation to the basic one!

$$r_1 = i_1 \cdot \frac{1}{k} - a + u$$