BACKGROUND ECONOMIC GROWTH IN TRANSITION PERIOD

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ABSTRACT: *In this article were the patterns of growth for a country in transition, because Romania has came an intense process of transition. An attempt to identify factors which increase the supply of factors of production which is the connection between them and the GNP / capita or standard of living for a longer period.*

KEY WORDS: *economic growth, economic models, capital, investment, GNP/capita*

1. INTRODUCTION

Growth is a complex process to increase the size of the national economy based on the combination and use increasingly efficient factors of production, cast size by size of gross domestic product or national income per capita [2].

The economic growth is influenced by both direct factors (quantity, quality and structure of human potential, natural resources, capital) and indirect factors, factors acting through direct involvement and may enhance or diminish their action (scientific and technical progress, the investment capacity absorption of the internal market, international trade).

Study growth of a country involves the expression, using a system of equations, the functional dependence of all factors of economic growth and improved macroeconomic indicators used. The growth of a country during transition, as also in other historic step, explains the links between all the factors that determine economic growth linkages expressed by a system of economic and mathematical models [3].

The history of economic development has shown that with which the indicator is expressed as the best welfare of the people is real GNP / capita. Elements that increase the supply of factors of production and the link between them and the GNP / capita or standard of living for a longer period: economic growth that does not allow lowering the standard of living, constant growth, the influence of growth on savings, the influence of population growth on economic growth.

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2. ECONOMIC GROWTH THAT DOES NOT ALLOW LOWERING THE STANDARD OF LIVING

The output (income, production) in an economy can be expressed [4] using a production function as

$$Y = F(K, N) - A \tag{1}$$

where:
K represents capital inputs,
N inputs of labour;
A technical level (the technology).

Through equation (1) observed that increasing the output of the economy can be determined as growth factors and input improving the technical level of production.

Assuming that the output increases in proportion to the increase of factors that determine the relationship (2) becomes:

$$\Delta Y = F(K, N) \cdot \Delta A + MPK \cdot \Delta K + MPN \cdot \Delta N \tag{2}$$

where:
ΔA is the increase of technical level of production;
ΔK growth factor production capital
ΔN growth factor production work;
MPK marginal product of capital;
MPN marginal product of labour factor.

Substituting equation (2) in equation (1) and by a contrivance of calculation (multiplication factor and dividing the second and third in the equation of K and N) results:

$$\frac{\Delta Y}{Y} = \frac{F(K, N) \cdot \Delta A}{F(K, N) \cdot A} + \frac{K}{K} \frac{MPK \cdot \Delta K}{F(K, N) \cdot A} + \frac{N}{N} \frac{MPN \cdot \Delta N}{F(K, N) \cdot A} \Rightarrow$$
$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \frac{\Delta K}{K} \cdot \left(\frac{MPK}{Y} \cdot K \right) + \frac{\Delta N}{N} \cdot \left(\frac{MPN}{Y} \cdot N \right) \tag{3}$$

where:
$\frac{MPK}{Y} \cdot K$ is the percentage increase caused by capital income in total income,
$\frac{MPN}{Y} \cdot N$ a percentage increase is determined by working capital in total income.

If we consider that only these two factors would contribute to the income (the amount is equal to 1), noting $\frac{MPK}{Y} \cdot K =$ v and $\frac{MPN}{Y} \cdot N = (1 - v)$, equation (3) becomes:

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \frac{\Delta K}{K} \cdot v + \frac{\Delta N}{N}(1 - v) \tag{4}$$

where:

$\frac{\Delta Y}{Y}$ is the growth of output (production, income),

$\frac{\Delta A}{A}$ the technical evolution of production,

$\frac{\Delta K}{K}$ increased factor of production capital,

$\frac{\Delta N}{N}$ growth factor production work;

v share capital in total income,

$(1 - v)$ share of production factor labour in total income.

Equation (4) reflects the contribution of technical progress and other first term factors of production to increase output, the following:

- on the right shows the contribution to improve the technique and technology of production, which generates increased total factor productivity. In the modern age, the contribution of technological progress to output growth is crucial. Some of the calculations made by some economists have found that almost one third of the increase in GDP term, second and per hour-work is determined by technical progress.
- third on the right reflects the contribution of growth factors of production capital and labour. In the contribution factors to increase the output. Weight has a greater factor employment (estimated as representing about 75% of output growth in the economies of developed countries, this issue is highlighted and equation (4)). This does not mean that the stock of capital contribution to growth is minor (investments are absolutely necessary for the development of new technologies and techniques).

If it is assumed that there is no technical progress ($\Delta A / A = 0$) and that growth rate employment is constant ($\Delta N / N = m$), equation (4) becomes:

$$\frac{\Delta Y}{Y} = \frac{\Delta K}{K} \cdot v + m(1 - v) \tag{5}$$

In conclusion, economic growth depends on the rate of increase of capital.

Capital stock (K) determines income (Y), part of which is consumed, the other being saved. Part savings will determine the possibility of capital growth ($\Delta K / K$), which will in turn influence the growth of income ($\Delta Y / Y$) and finally, the stock of capital.

It notes that the economy there is an interdependence of the capital increase depends - through savings and income - the stock of capital.

Because GNP / capita remains unchanged during the transition, it is income and to record the same population growth rate (in circumstances where there is a technological level and a given capital per person).

$$\frac{\Delta Y}{Y} = \frac{\Delta N}{N} = m \tag{6}$$

In this case equation (4) becomes:

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \left(\frac{\Delta K}{K} - \frac{\Delta N}{N}\right) \cdot v + \frac{\Delta N}{N} \Rightarrow \frac{\Delta Y}{Y} - \frac{\Delta N}{N} = \frac{\Delta A}{A} + \left(\frac{\Delta K}{K} - \frac{\Delta N}{N}\right) \cdot v \Rightarrow$$

$$\text{m} - \text{m} = \left(\frac{\Delta K}{K} - m\right) \cdot v \Rightarrow \frac{\Delta K}{K} = m \tag{7}$$

Because: $\Delta K = sY - dK \Rightarrow (sY - dK)/K = m$

$\Rightarrow sY = mK + dK$

$\Rightarrow sY = K(m+d)$

It is noted that during the transition period is intended to maintain steady economic growth, savings sY is sufficient to achieve a volume of investment to ensure the coverage of capital depreciation (dK) and for endowment capital surplus labour again entered into business. If the savings would be greater than sY, then net investment would be higher, so there will be an increase in capital stock per person, and as a consequence, there will be an increase in income per person. If the savings would be less than sY, capital stock per person would decrease and, as such, will decrease and income per person.

3. CONSTANT GROWTH

It will examine the possibility of a steady economic growth, from an initial size of the capital-labour and achieving a growth rate constant, i.e., will determine the rate of savings and the investment rate which exceeds the rate depreciation of capital and the population growth.

Changing capital-labour ratio will be given growth rate of capital-labour ratio. Use the following notations:

a = K / N where size is a capital-labour ratio,

b = Y / N where b is the size-capita income ratio (output / capita)

s - saving

d - capital depreciation.

Rate to increase the capital-labour ratio can be determined as the difference between the rate of growth of capital and growth rate of labour.

$$\frac{\Delta a}{a} = \frac{\Delta K}{K} - m \tag{8}$$

Because: ΔK= sY- dK şi ΔK/K = m, resulting:

$$\frac{\Delta a}{a} = \frac{sY - dK}{K} - m \Rightarrow \frac{\Delta a}{a} = s \cdot \frac{Y}{K} - d - m \tag{9}$$

Replacing Y and K with their value on a person, resulting:

$$\frac{\Delta a}{a} = s\frac{b}{a} - (d + m) \Rightarrow b = \frac{a(d + m) + \Delta a}{a} \tag{10}$$

Savings function is the product s • for each capital-labour relation. Capital-labour ratio is lower than the gross accumulation because:

- the depreciation of capital reduce the capital-labour, so that part of gross investment will be used to cover this loss;
- increase employment in a given stock of capital, makes the capital-labour ratio to decrease. Because this report is kept constant it is necessary that the stock of capital would be increased enough to offset population growth, i.e. the rate (ma). Investments necessary to maintain a constant capital ratio - work will be expressed as (m + d) (expressing the size of investment required to maintain constant stock of capital per person, i.e. per capita income). When gross investment, and hence savings are less than (m + d), the stock of capital per person will decrease, they can not compensate for any depreciation of capital or the growth of population. The only way that leads to increased capital stock per person is savings, and hence gross investment to grow by more than one size (m + d) a. This investment can be represented graphically as a straight slope with positive, indicating the need to invest to maintain constant the capital-labour.

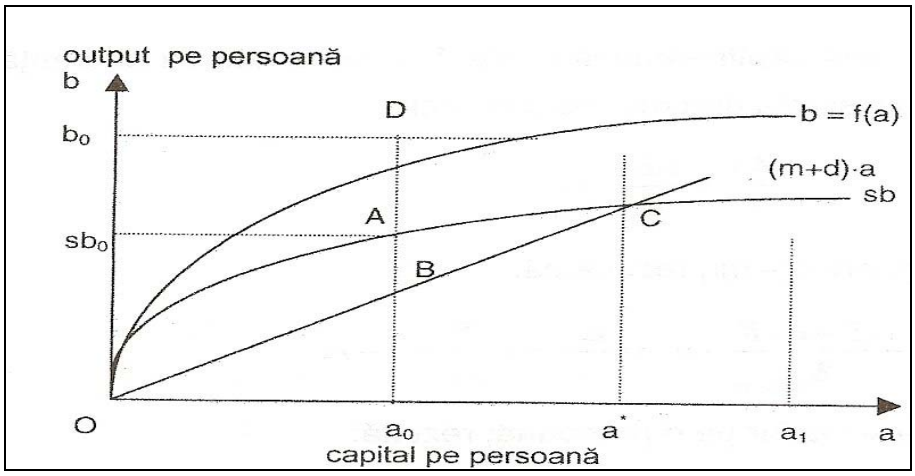

Figure 1. The ratio of savings, investment and capital accumulation [4]

Increased capital-labour ratio will be equal to the current economy or minus actual investment and the investment required is the segment, it is suggested on the horizontal axis of the arrows indicating the direction of the a_0 to a'. The a_0 moving to a', the gap between savings and investment required (AB) is becoming smaller at the point C being equal to 0. Point C is when the capital-labour ratio becomes equal to a', when the economy and investment are equal to the investment required (no longer record any growth since capital-labour ratio does not increase nor decrease).

If it starts from an initial capital-labour (a_1) greater than a', required investment will be higher than actual savings and investment. In this case the capital-labour ratio may increase with a size sufficient to enable the constant population growth and capital depreciation. Capital-labour ratio will fall to the a_1 a', and as indicated by arrows.

In conclusion, be assured a convergence towards a constant level of a' the capital-labour ratio because:

- low levels of capital-labour ratio, savings and investments go beyond the level of investment required to maintain capital per person, which will increase the report;
- the high levels of capital-labour ratio, savings and investments can not exceed the level of investment required to maintain capital per person, which will sink this report.

Such a steady growth during the transition period can be ensured only if the income, capital and labour grow at the same rate and with increasing population.

4. THE INFLUENCE OF GROWTH ON SAVINGS

Assume that growth rate increases savings (increase represented in Fig. 1 by a movement up the curve of the savings to sb sb'). sb curve suggests that the savings increases with increasing capital-labour ratio and increased income. In point C, where there is an initial state of equilibrium, savings have increased compared to the investment required to maintain a constant working capital ratio, which allow growth of this report. As such, the stock of capital per person will increase to reach the level of C' point where the greatest savings is enough to keep a larger stock of capital. But in C' and increased capital per person (from a' to a'_1) and the output per person (from b_0 to b_1'). The savings have grown as the investments required, but an increase in the savings rate will rise long term, only the income and capital per capita, not growth rate in the future.

Increased savings rate raises the rate of growth of income, since capital-labour ratio increases from a' to a'_1. Because the capital-labour necessary to increase the capital stock to grow faster than labour and capital depreciation. This takes place during the transition from a' to a'_1, which increased savings per person, due to high saving, increasing investment and capital from the investment required, thereby increasing the capital-labour.

Increased savings rates and investment during the transition period, triggering the growth of capital stock per person and the income per person, but with a decreasing rate over time. If however the rate of growth of income and growth rate of the population are equal, growth rate raises the savings rate of income growth, because

growing rapidly and capital K, which exceeds the rate over time until the accumulation of capital below the rate of growth of population.

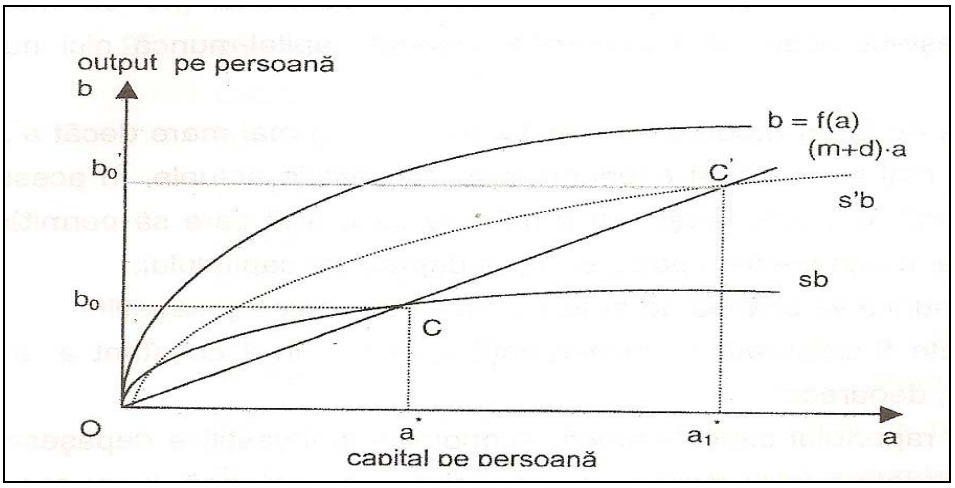

Figure 2. The influence of growth on savings and investment capital accumulation [4].

5. THE INFLUENCE OF POPULATION GROWTH ON ECONOMIC GROWTH

If the population growth rate rises from m to m' (fig. 3), then at each level of the capital - labour will require a larger amount of investment to maintain this report at constant.

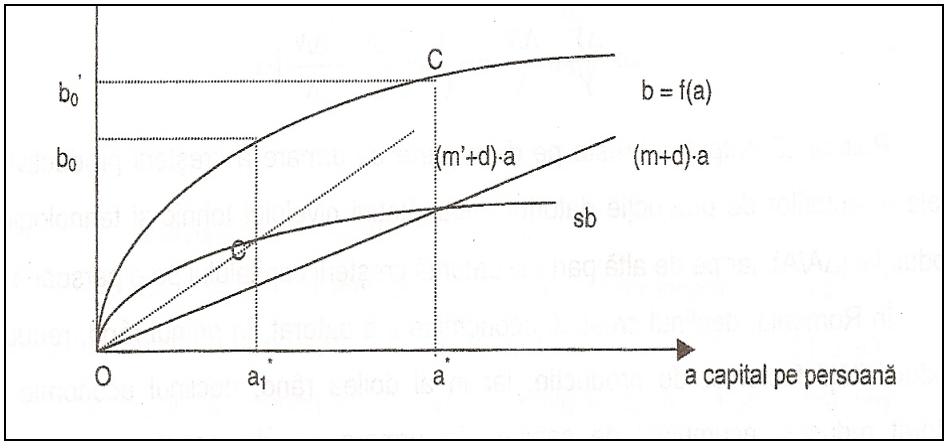

Figure 3. The influence of population growth on investment and capital first accumulation [4]

If the rate of population growth is changing, then C is not a state of equilibrium because the initial investment can not keep constant the capital-saving work and initial investment capital per person will decrease until it reaches a new equilibrium point C'. In C' fell to the level at which savings equal investment demand, the decrease will generate a decrease in income per person from a' to a'_1. Demonstrated that in those countries in transition which has a high rate of population growth, saving is too low to allow an increase in capital-labour ratio to ensure an increase in income per person. Therefore, in these countries, the reduction in the growth of population would be one of solutions to increase the income per capita. For Romania, the solution would increase savings, so investments, which allows growth of the capital-labour at least in population growth rate to maintain the current standard of living.

6. CONCLUSION

Output in the economy increased:

- due to increased total factor productivity of production due to technical improvements and technological level of production ($\Delta A / A$);
- while on the other hand due to increased capital per person.

In Romania, the decline in growth was due, first, reducing the productivity of factors of production, and secondly because the reduction of capital accumulation. Hence began a process of declining growth, the decline in GNP / capita. Economic growth was negative and the conditions under which a portion of GDP instead of being invested in factors of production and technical progress has been invested in areas that do not have a direct bearing on production material. Another factor which played an important role in triggering the state of economic decline was the economic legislation and often incoherent. Another problem rather delicate was her conscience and market economic thinking.

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