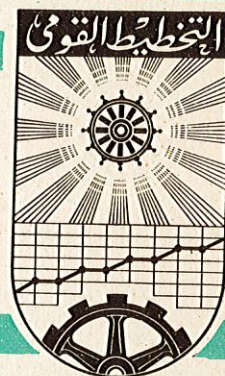


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SOME PROBLEMS OF CONSTRUCTING THE LONG-TERM PROJECTION IN CZECHOSLOVAKIA

by
Dr. Vojtech Spevacek

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CAIRO

3. MOHAMED MAZHAR - ZAMALEK

Introduction

The necessity of constructing the long-term projections and plans has been felt almost in all the countries of the world. It is quite understandable because successful solution of present economic problems can't be in many fields reached without at least rough ideas about the economic development in the next 10-20 years. Nevertheless the practical experiences in working out the long-term plans and projections are relatively small because of the great difficulties which must be overcome, in particular as regards the solid information basis. The mathematical methods and mathematico-economic models are promising in this field of observation, analysis and planning. The majority of models described in literature has the theoretico-study character and it is necessary to come to the working models which are to be elaborated on the basis of local conditions, needs, objectives which are given to these models, information basis etc. . From the view point of practical application of these models it is clear that they must be constructed as structural and dynamic models of the national economy.

The history of long-term planning in the socialist countries (centrally planned economies) is relatively short. It is due to the fact that the annual and perspective plans for 3-7 years were sufficient for solution of most economic problems at the present stage of economic development, when the problems of effective structure of the national economy, international division of labour and coordination of plans among the socialist countries are solved, the construction of long-term plans represents a necessity in most of the socialist countries. The significance of long-term planning is also greater in the socialist countries where the government decides about the future economic development of a country. Some experiences of Czechoslovakia must be therefore comprehended as the first and initial practical steps in this not fully explored field of planning.

1. Necessity of Drawing up the Long-Term Projection.

By the long-term projection we mean the projection of the future development of the national economy as a whole for the period longer than 10 years. The terminology in this field is not yet clear. Sometimes we speak about long-term plans, long-term prognosis, studies. I use in this paper the term long-term projection to differentiate a little between the character of long-term plans in comparison with the short-term and middle-term plans.

There are many reasons why the long-term projections are to be elaborated. Many economic processes themselves have the long-term character, namely:

Labour forces planning where the process of training qualified personnel lasts many years and the decision about the number and structure of students in secondary schools and universities at present needs certain knowledges about the future needs and demands for the amount and structure of labour forces. These future requirements for labour forces will be given by future structure of the national economy (both by the structure of productive and non-productive branches in the national economy) technical and scientific progress and other factors.

Planning of capacities, fixed capital and investments.

Gestation period of the majority of investments is from 3 to 8 years. The expected life of new capacities and fixed assets created by investments may be in the range from 10 to 30 years. It means that the decision about a new investment project needs certain ideas about required production on these new capacities in the next 10-30 years. Of course some calculations about the future demand for the commodities produced by new investments are always made in investment projects

in connection with separate investments. But this is not enough. Individual branches in the national economy are mutually connected with many interdependencies which must be respected to avoid significant imbalances in the national economy. For example decision making about a new motor-car plant with a certain capacity needs simultaneously a certain decision about the deliveries for motor-car production (from import or from domestic production) from metallurgical, chemical, oil, energy, engineering and other branches of the national economy. It means that simultaneously with the decision about the new motor-car factory we must decide about the necessary investments in delivering branches (if we don't want to increase imports). These delivering branches are also linked up with other branches, and so on.

From that follows that the long-term projection and plans are also to be constructed as comprehensive, over-all plans including all the spheres of reproduction (production, distribution, consumption and accumulation), the main proportions in the reproduction process (between production and consumption, accumulation and consumption, production of the means of production and consumer goods, proportions among the main branches in the national economy) and respecting the mutual relationships among the branches, between production, labour forces, investments and consumption. On the other hand in the process of constructing the long-term plans it is necessary to use all available detail information from investment projects, sectoral and other projections and plans.

It means that the approach to the elaboration of long-term plan, may be generally viewed upon from two main sides:

- a) from the view point of the national economy as a whole (from the national point)

b) from the sectoral point of view. These two approaches may of course differ and it is necessary in a iterative way to seek for an optimal solution simultaneously with the ensurance of a balance state in the national economy.

It is of course not an easy matter to reach this objective and we shall later on discuss some possible methods which may be used in the solution of that target.

Continuity in planning is another significant reason for constructing the long-term projections. As it is difficult to construct annual plan without perspective plan, in the same way it is difficult to work out perspective plan without long-term projection.

2. Specific Features of Long-Term Plans and their Relationship with the Short and Middle-Term Plans.

The long-term plans and projections are characterized by some specific features in relation to the short and middle-term plans. Among these features we can mention the following:

a) The data and figures comprised in long-term plans are not obligatory for ministries, enterprises, trade and other economic units in the national economy, are not given as directives, but they have only an orientation character and are given for information about the future possible long-term economic development of a country. This follows from the hypothetical character of long-term projections -- they are practically prognoses and their accuracy becomes less with the length of the given period.

b) The data and figures in long-term projections are in more aggregative form than in annual and perspective plans. In many cases the quantitative figures can't be even given and only some directions, tendencies of future development may be foreseen (for example the living style after 20 years, the character of urban and rural areas, transportation, recreation, culture, education etc.). Very often the long-term projections are constructed as macro-economic models and only some aggregative economic figures are derived from these or outside these models (national income, labour forces, fixed capital, investments, consumption, savings). In the case of structural breakdown of the national economy only the major branches (sectors) in an aggregative form are taken into account. When the long-term projections are based on the input-output tables, the number of branches may be somewhere between 10 to 30 branches.

c) As regards the applied classifications of production and other economic activities, the pure commodity or branch approach in contradistinction to organizational or institutional

approach is only recommendable. It is due to the fact that the organizational structure is changeable especially during a long period. It means that the data are collected and foreseen for pure commodity or service branches irrespective of organizational structure.

Nevertheless, the time series of statistical data are necessary for deriving some parameters, for analyses, extrapolations, comparisons of past development with the anticipated economic development. Very often these time series are available according to the organizational structure of the national economy. In this case the compromise is necessary and the structural breakdown of the national economy within the long-term projection must be consistent with these time series.

Very important principle which is to be applied in constructing the long-term projections is the principle of connection between the long-term projection and the middle-term plans. Practically the main purpose of the long-term projection is to give the necessary framework for constructing the five-year plans, to outline the main targets and tendencies of the long-term economic development of a country, which are to be respected and concretized within the framework of five year plans. On the other hand the long-term projections must respect the planned targets determined by the five year or annual plans. It means that mutual exchange of information between the five year plans and long-term projection takes place. In this way the continuity of planning is safeguarded.

3. Methodology of Working Out the Long-Term Projection.

The approach to the elaboration of long-term plans and projections may be different in different countries. It depends inter alia on the targets and objectives which are given to the long-term planning, on the possibilities, information basis and so forth. In the socialist countries the role and significance of the long-term planning has been increasing since the problems of efficiency, structural changes, international division of labour, construction of middle-term plans e.c. can't be successfully solved without the ideas and conceptions about long-term economic and social development of a country. One from the main targets of the State Planning Commission according to the new system of management and planning in Czechoslovakia is therefore to organize, co-ordinate and elaborate the long-term plan up to the year 1980. On the following pages I shall try to describe the approach to long-term planning which is applied at present in Czechoslovakia.

Generally we can say that the works on the long-term plan are organized according to the two basic lines:

- a) elaboration of economic and technico-economic studies and projects according to the main branches of the national economy and according to the fundamental problems of the economic development.
- b) construction of a comprehensive over-all macro-economic projection in the form of a dynamic structural model of the national economy.

In an iterative way by means of mutual exchange of information between the detailed economic and technico-economic studies on the one hand and global macro-economic projection on the other hand we want to reach:

- a) balanced
- b) realistic
- c) relatively efficient

long-term plan.

Now we can describe in greater detail the individual components of long-term plan. We shall begin with the economic and technico-economic studies (or conceptions).

The main objectives of economic and technico-economic studies are:

- to clear and qualify the main technical and economic problems of future long-term development of the appropriate branch or field of national economy.

- to elaborate alternative solutions of future economic development and recommend the most efficient one according to the chosen criterium

- to give necessary information for constructing the global macro-economic dynamic and structural model of the national economy.

The technico-economic studies will be elaborated for about 25 branches of the national economy.

The economic studies are to be carried out for the following fields:

- Living standards
- Foreign economic relations
- Productivity of labour and distribution of labour forces
- Development of the structure of qualified personnel
- Reproduction of fixed capital and investments

- Regional aspects of economic development.
- Economic problems of defence
- Reserves.

The technico-economic conceptions (studies) will contain the following main sections:

- A. Major directions of scientific and economic development.
- B. Research and evolution.
- C. Foreign relations.
- D. Productivity of labour and qualification of labourers.
- E. Reproduction of fixed capital.
- F. Regional aspects of long-term economic development of a branch.

A. Major directions of scientific and economic development.

Within the framework of this section of technico-economic conception the realization of significant technical arrangements will be observed and quantified as:

- Acquisition of new capacities with higher parameters and equipments with new production principles.
- Realization of progressive technological production processes.
- Significant directions of developing automation and computation technique.
- Structural changes in the raw material basis of production.
- Significant investments.
- Significant arrangements in replacement, modernization and reconstruction of production basis of a branch.

B. Research and evolution

In the draft of this section of the technico-economic conceptions the following problems will be observed:

- Fundamental directions and objectives of research works which are to be primarily secured.
- Directions of technical development which are to be secured by international scientific and technical cooperation or by import.
- Directions of research which will be gradually limited
- Fundamental research problems.

Together with the above mentioned problems of research works the analysis of past development and international comparisons of research basis in a branch are to be prepared. In a special table the envisaged number of labourers, investments and an amount of foreign currency for purchase of licences will be calculated.

C. Foreign relations.

In this section of the technico-economic conception the following problems will be studied:

- Technical and economic development in the world, prognosis of trends of production and consumption in the world and the possibilities of sales of our products on the world markets.

- International division of labour and optimal inclusion of our economy into the world economy, in particular as regards the integration with the economies of socialist countries.

- Calculations of the effectiveness of commodity and territorial structure of the foreign trade.

- Prognosis of price trends.

D. Productivity of labour and qualification of labourers.

Analysis of the increase of productivity of labour must take-into account all the decisive factors effecting the growth of productivity of labour. The close connection of this section of the technical-economic conception with the other sections is apparent.

In the conception of employment the number of workers, specialists with secondary and university education (according to the study specializations) will be determined.

E. Reproduction of fixed capital.

The following questions are to be answered in this section:

- Necessary investments for further development of a branch.
- Influence of these investments on the fixed capital
- Repercussions in ratios: fixed capital-output, capital to labour ratio, productivity of labour, costs of production.
- Possibilities of development by means of non-investment factors.

F. Regional aspects are to be elaborated in the form of regional requirements for capacities, labour forces, energy and water supply, housing and other facilities necessary for labourers. The unified methodological guidelines for constructing the technico-economic conceptions were elaborated by the State Planning Commission. According to these methodical instructions every organization responsible for preparation of the technico-economic conception must give the required data in the form of prescribed system of indicators, forms and tables to the State Planning Commission. On the basis of the above mentioned and other information the global conception about the social and economic development of a country will be built up.

Macro-economic long-term projection of the national economy.

The construction of the macro-economic projection represents the second main line of works on the long-term plan. It is apparent that this macro-economic projection must be worked out by the central planning authority.

We may distinguish up to now two main stages in connection with the elaboration of macro-economic projection:

Research stage where some production functions were investigated in relation to the Czechoslovak national economy. In particular the application of the Cobb-Douglas production function was provided according to which the national income is the function of fixed capital and employment in the productive sphere of the national economy. Four sector model was elaborated and in relation to agriculture there was applied a specific production function. Two sets of variants were calculated with different effectiveness of production factors.

The results of this research stage can be summed up into the following conclusions:

a) It is not sufficient to provide analyses and projections by means of one function including aggregative magnitudes of the national economy. Diversification of production functions must be made,

b) It is necessary to construct a structural model which will include about 20-30 branches of the national economy.

c) It is necessary to distinguish production (output) and capacities and introduce the coefficient of utilization of capacities (output to capacity ratio).