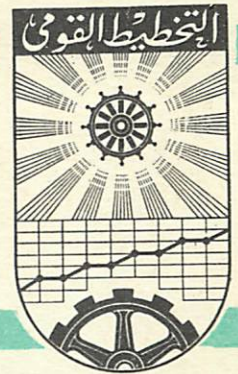


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Evaluation of Investment Efficiency
In Czechoslovakia

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Evaluation of Investment Efficiency in Czechoslovakia.

Evaluation of investment projects is one of the essential elements of investment planning. Criteria and methodology applied significantly influence the decision-making of all the institutions involved in investment activity: firms, industrial unions, financing banks, contractors and planning bodies at all the levels of management, up to the State Planning Commission.

Therefore, the methods of efficiency evaluation have been for a long time a topic of a series of theoretical studies as well as an object of vital interest of our planning authorities.

In order to unify the approaches to the evaluation, official methodologies are published by central planning bodies. Looking back from the late 50-es, when the first official "Rules" were published, to the present, a high correlation between the general system of planning and management and the principles of efficiency evaluation can be observed.

The first "Rules" were approved and published in 1959. Their main principles can be summarized in the subsequent points:

a/ Evaluation from the point of view of national economy

as a whole was the dominating one. The firm's point of view was almost neglected. The investment efficiency was evaluated at two levels:

- the evaluation of the entire plan of investment
- the evaluation of individual projects

b/ As for as the evaluation of the entire investment plan /i.e. the evaluation of investment programme embodied in the plan/, the criterion was identic with the efficiency of the national economy as a whole: the rate of satisfaction of final needs/ demand/, the rate of growth of national income /in the long-run/ and the rationality of utilization of all the growth factors/labour, natural resources, innovations/. Such an identity follows from the complexity of all the factors forming national economy: it is difficult to separate, e.g. the impact of, say, foreign trade policy from the impact of investment on the economic growth and its efficiency and impossible to quantify their shares.

c/ The evaluation of individual projects was based on comparisons of substituting /alternative/ solutions, by means of which the final effect /externally given by the economic plan/ can be achieved. The main criterion defining the most efficient alternative was the minimation of the cost of production. The coefficient of efficiency of additional invest-

ment served as an instrument for the comparisons and finding the most suitable alternative if the investment and operating cost of the substituting alternatives lead to contradicting results.

The time factor /compound interest rate of 10%/ was applied for the calculation of "shadow" investment cost in order to reflect the different construction periods /and, consequently, different period of frozen investment/.

Emphasis was laid on the calculation of social cost of investment as well as of operation in the project. The social cost was to be calculated by means of:

- determining the direct, induced and indirect investment
- re-calculation of the material inputs if the profitability of materials /and their substitutes/differed significantly- as a rule by means of deduction of profit margins.
- re-calculation of imported materials on the basis of their export equivalents.

d/ Emphasis was laid on the efficiency of foreign trade as an substantial criterion of any investment project, where exports of the products were expected.

e/ Profitability and other efficiency indicators significant from the enterprise's point of view, were almost neglected.

The macroeconomic approach, which prevailed in the "Rules" was a success. Unfortunately, the neglect of firm's points of view and interests made the Rules almost impractical. The firms were not stimulated to behave according to the Rules when preparing their own project-drafts and pushing them forward vis-a-vis their supervising authorities. Profit played already a significant role as an economic instrument- consequently, a deep gap arose between the good and justified ideas of the Rules and the practical decision procedures of the firms.

The second "Rules" were approved in 1967. In many aspects, they represent the other extreme approach. As a reaction on the drawbacks of the first Rules, where the firm's point of view was almost neglected, the second Rules emphasized profitability, rate of return and other typically firm's and financial indicators as an decisive criterion of efficiency of investment.

As compared with the first Rules, the evaluation of the entire investment programme was fully omitted.

The general concept of the second Rules was a reflection of the so called "economic reform". The main ideas of the reform lay in the rejection of the leading and decisive role of the central economic plan, emphasizing the role of market

and financial instruments. We are not going to deal with this specific question in details /this would be a topic of a special lecture/ - let us only mention, that the experience of the development in 1967-69 gave a very convincing proof of the suitability of the reform: inflationary pressures, disequilibrium and a rapid fall of efficiency of investment were its fruits.

Main features of the Rules are summarized in the following points:

a/ The profitability of individual projects was the dominating criterion of efficiency. The subsequent indicators were used:

- internal rate of return of investment
- the pay-back period of the investment credit
- net profitability of investment /net profit = profit after taxes and other compulsory payments/
- the "reproduction pay-back period", where the stream of payment = gross profit + depreciation

b/ The foreign trade efficiency measured by appropriate indicators was taken as important criterion of investment efficiency, too.

c/ Re-calculation of projected value of output, investment and operating cost in the world-trade prices was envisaged /for most important projects/ as an instrument checking the reliability of the profitability calculation made in domestic prices.

The second Rules, despite the changes in the general system of planning and management after 1970, retained their formal validity until 1975. Of course, the set of indicators used was gradually reduced. After 1972, only the internal rate of return, credit pay-back period and foreign trade efficiency indicators were officially required as a proof of efficiency of the projects.

The third Rules were published in 1975. In certain sense, they represent a wise compromise between both preceding documents; rejecting their extremities and adopting everything what proved its reliability and rationality.

One specific feature- common for all the three Rules - making them distinct from the Rules adopted in some other Comecon countries/Poland, Hungary and USSR, e.g./should be emphasized: the rejection of one aggregate efficiency indicator standing as a top of the pyramide of partial indicators. Every project renders a set of effects which cannot be mutually substituted: increased output, labour savings, imports.

reduction, export expansion, enrichment of the product mix, solution of urgent social problems and needs et cet. These effects, as a rule, are not additive. Because of a "vector" character of the effects, the efficiency indicators must be taken as a vector, too. Their reduction into one "scalare" indicator is, sometimes, possible -but at the expense of the clarity of efficiency analysis, concrete priorities are neglected. Moreover- any efficiency indicator is one-sided. To avoid onesidedness in the decisionmaking, the idea of one decisive indicator must be rejected.

Most important principles of the Rules:

a/ Any project can be evaluated from several points of view, in particular:

- firm's point of view
- industrial branche point of view
- national economy's point of view
- financial point of view
- regional point of view

Depending on the size of the project and its role, the supervizing and evaluating authority has to decide, which points are to be applied in every particular case.

If the higher point of view comes in to a conflict with the firm's interest, the higher point of view is decisive. Simultaneously, additional measures must be taken /changing the conditions of financing et cet./ to make the firm's interests consistent with the "higher" point of view.

b/ Special attention is paid to the determination of the induced and indirect investment outlays and effect of the project analysed.

c/ Two approaches to the evaluation of investment are distinguished:

- absolute efficiency,
- relative efficiency.

In case of relative efficiency, the project analysed is compared either with other substituting alternatives, or with some kind of fixed standard /defined by means of target technoeconomic indicators/, foreign projects of peak standard or with the similar project already established in the country. Coefficient of efficiency of additional investment is the main indicator used in this case as an aggregate indicator.

d/ The Rules offer a wide set of indicators by means of which the efficiency of a project can be recognized. There about 200 indicators, if multiplied by the span of calculation

/within the project or adding induced a indirect effect and cost in more circles/their number increases substintially. The choice of relevant indicators to be applied in a project analysis depends on the character of the project, its role and complexity.

e/ However, there is a limited set of indicators whose values must be calculated in every case and submitted to the supervising organ. The span of compulsory indicators differs according to the stages of project preparation.

Compulsory efficiency indicators of the feasibilty study:

1/ Net export efficiency

$$NEE = \frac{EXP /fe/ - RMimp /fe/}{CP/hp/ - RMimp /HP/}$$

EXP - volume of exports

RM imp - raw materials imported/used for the production of the exported commodity/

CP - cost of production

/hp/ - home price

/fe/ - foreign trade price in foreign exchange

2/ Convertible rouble reproduction cost

$$RC/roub = \frac{EXP /hp/}{EXP./fe - roub/}$$

3/ Dollar reproduction cost

$$RC/dol/= \frac{EXP /hp/}{EXP /fe- dol/}$$

4/ Fixed assets and inventories profitability

5/ Fixed assets profitability

6/ Cost profitability

$$CP = \frac{\text{profit}}{\text{cost of production}}$$

7/ Output/capital ratio -in value terms

8/ Labour productivity /per employee/

9/ Investment cost per capacity unit.

10/ Reproduction pay-back period of investment cost

$$\frac{\text{Investment cost}}{\text{gross profit} + \text{depreciation}}$$

11/ per unit of output operating cost.

Compulsory indicators at the level of preparatory documents:

Apart of the 11 indicators, other indicators are added, specifying the criteria following from the abovementioned criteria, e.g.: productivity per worker, shifts coefficient, output per unit of equipment.

The set of priorities are reflected by the indicators reviewed: foreign trade efficiency and labour productivity /parallely with economy of the cost/are the focus of Czechoslovak five year plan. A deeper look at the indicators also explains, more deeply why the Czechoslovak Rules oppose the idea of one aggregate efficiency indicator.