EVALUATION OF A SHORT-TERM DEVELOPMENT PLAN

Introduction

An optimal short-term plan can <u>logically</u> be only determined within the framework of a long-term plan. When a long-term plan has not been completed, <u>practical</u> sets of rules can be devised for a short-run plan (of, say, two years); they provide a guide towards a best possible ("second-best" but not "tenth-best") solution. In a short-run plan many bottlenecks must be accepted as unavoidable. In a more flexible long-term plan they can be changed. If the economic (rate of growth) and social (equality of opportunity) objectives are given and the situation at the starting point is known, short-term aspects of a long-run plan can be worked out. Standards for presentation of such programs are indicated below.

I. Diagnosis

1. National income, gross and net investment, average and marginal savings rates, foreign capital inflow, balance of payments.
2. Inventory of existing public investment and the absorptive capacity of the public sector.
3. Rough estimate of existing excess capacity.
4. Occupational structure. Open and disguised, long- and short-term unemployment; its sectoral and regional distribution.
5. Over-all judgment on bottlenecks to growth:
a) short-term bottlenecks (e.g., social overhead capital, shortage of skilled workers, balance of payments, regional problems, social unrest);
b) longer term bottlenecks.

II. Categories of Priorities

1. Investment for a fuller utilization of existing capacity (including projects in advanced process of construction). Such projects have obvious high priority. They provide a

"once for all" increase in income—essential in a short term—but are not sufficient to generate sustained growth.

2. Projects of "obvious" high priority (which would have a high priority in any long-term plan).

3. Projects ready for execution which are well prepared and meet strict criteria (including shadow pricing, see III.1):
   a) removing existing bottlenecks, b) short gestation period, c) export gaining or import saving, d) near an optimum technological dimension which would stand up in a common market.

4. Labor-intensive projects designed for a rapid increase in employment (rural public works). See III.1.c and III.3.

5. Social development projects:

a) Criteria: The relative importance of economic (rate of growth) and social objectives has to be evaluated. If too high a proportion of total investment were channeled into "social" sectors the rate of growth would be low. Social investments must be viewed, therefore, within the framework of total investment of which they should not form so high a proportion as to reduce the rate of growth below an agreed minimum.

b) Distinction between projects with short- (vocational training, selective education projects) and long- (abolition of illiteracy) gestation periods. The productive efforts of a project determined by discounting the flow of future benefits to present value, taking account of the gestation period. The social objective of equality of opportunity may justify a somewhat higher priority. On the whole, however, the amount allocated for social investment should be determined residually.

III. Methods of Evaluation

Besides familiar cost-benefit calculations, three special problems deserve consideration:

1. Shadow-pricing (of general importance for project-evaluation)

2. Adequacy of national effort (how to increase savings)

/3. Employment (how

3. Employment (how to reduce unemployment without undue sacrifice
of income.)

1. Shadow-pricing (Precios de cuenta)

Market prices under perfect competition are a signalling device
steering economic resources into their optimum allocation. Prices of
factors of production reflect then their opportunity costs and should
be equal to their marginal value productivity. Competition, however,
and the investment market are imperfect in reality. Shadow prices of
three factors of production must be used in the evaluation of an investment
program instead of market prices. This is not the place to expound
the full theory of the subject. An excellent and succinct presentation
is available.[1] Three operational points only may be mentioned:
i) Shadow prices are equal to the opportunity costs. If there were
only two goods in existence, the cost of one good is equal to that of
the second good foregone. ii) If there are more than two goods it is
not so simple to identify the opportunity costs. The shadow prices
enable us in this case to measure them. In the terminology of
programming they are the Lagrange multipliers of a constrained
optimization problem. iii) To solve a constrained optimization
problem for many sectors is a very complex task. A good approximation
can be obtained, however, by calculating the shadow prices of factors of
production for a simple two sector model and to apply them then for
each of the many sectors. Shadow prices can be used, therefore, as a
computational short-hand method for each project without having to solve
each time the optimization problem for the investment program as a whole,
of which the project is a part.

While an exact determination of the shadow prices is not always
possible, operationally useful approximations (within a lower and an

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1. S. Chakravarty, The Use of Shadow Prices in Programme
Evaluation (CENIS, M.I.T., Cambridge, 1961, India Project C/61-28).

/upper limit)

upper limit) can be calculated.   They are indispensable for the
elaboration of an investment program in underdeveloped countries.

Since conditions change in the course of development a time path
of shadow prices has to be assumed for a long-run plan.   This does
not apply in the case of a short-term (two years) plan.

a) The shadow rate of interest

Capital should not be invested in a project if thereby the
oopportunity is foregone of investing in another more profitable project.
Since capital markets are notoriously imperfect the market rate of
interest does not reflect those more profitable investment opportunities
foregone.   An approximate shadow rate of interest should therefore, be
used as a computational shorthand in order to rank projects.   The lower
limit of shadow rates of interest in Latin America is around 8 - 12
per cent, say, 10 per cent. [2/]   No project should be included in the
investment program which would not cover interest costs of, say, 10
per cent.

Private investors follow this rule in practice.   No investment
project is undertaken, if it does not promise a return of 15 - 20
per cent.   Public investment projects, however, neglect in general

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2/ Using R.M. Solow's formula (as an approximation) the shadow rate of
interest ρ is:

$$= \frac{g}{\sigma_R + \frac{1 - D}{D} \sigma_W}$$

where   is the rate of interest, g is the rate of growth, σ_R is the
savings rate of the profit receivers, σ_W is the savings rate of the
wage earners, and D is the share of profit income in total income.
We guess that in a "typical" Latin American country ρ varies between
55 - 75%, $_R$ between 15 - 30%, W between 3 - 6%.
Assuming a rate of growth (g) of 4.5%, ρ = 65%, R = 20%, σ_W = 6%
the rate of interest ρ = $\frac{4.5}{0.20 + \frac{1 - 0.65}{0.65}}$ = $\frac{4.5}{0.523}$ = 8.6% (rounded)

If the rate of growth were 5%, the rate of interest under these
conditions would be 9.6%.

shadow-pricing—with grave consequences of waste of capital. Faulty
allocation leads to the selection of wrong projects, wrong
technologies, wrong location, wrong pricing of the product—and to
insufficient savings of public enterprises, which should contribute
to the national capital formation.

Electric power may be used instead of numerous other examples.
A shadow rate of interest of 10 per cent will in many cases lead to
the substitution of thermal for hydro-electric projects, to a location
of thermal projects nearer to the market than the often distant
hydro-electric projects, and to higher tariffs for electric power.
Where specific subsidies are justified, they should be granted from
the general budget.   It is wasteful and too costly to give them
indiscriminately to those who need it and to those who do not need it
through lower prices of electric power.   Prices which do not reflect
costs cause a direct waste of resources (via lost profits) and an
indirect increased and continued waste by inducing the location of
power-intensive industries in high-cost areas.

In general, shadow rates of interest will give a lower ranking to
capital-intensive and long-gestation period projects.

b) The Shadow Rate of Exchange

Foreign exchange must be considered as a specific factor of
production in underdeveloped countries.   Low price elasticities of
exports and imports are the cause of a foreign exchange market which
either works imperfectly or works at an excessive expense of income
growth.   The scarcity of foreign exchange should be reflected in a
shadow rate of exchange which is higher than the market rate of exchange.[3]
In various Latin American countries shadow price of exhange can be
estimated at 10 - 50 per cent above the market rate.   They give a
measuring rod for the need of import-savings and export-gaining.
While it is still uneconomical to produce bananas on the North Pole,
shadow rates of exchange indicate to what extent projects, which

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3/ The use of an accounting price of foreign exchange is not
necessarily a substitute for devaluation; it does not imply that
devaluation is necessary.

produce goods at costs higher than prices of equivalent imported goods,
should be included in the national investment program.

c) The Shadow Rate of Wages

Where there is open and disguised unemployment shadow rates of
wages are markedly lower than the market rates. [4] Theoretically the
shadow rates of wages (Lagrange multiplier) is zero in such cases.
Operationally, however, an "incentive shadow rate of wages" is
necessary in order to induce the unemployed to work and to take account
of the fact that the families of the unemployed will not save all they
gave their family members as support, once those found an occupation,
but will increase their consumption. Many projects which would not
meet the criteria of priority if market rates of wages are assumed,
should nonetheless be included in the development program on the basis
of shadow rates of wages which are 20 - 50 per cent lower than the
market rates. These should be primarily labor-intensive projects
which use little or no capital. An important example are Rural Public
Works (II.4) (fencing, bunding, terracing, digging for minor irrigation)
which use little capital and increase the productivity of the land,
although at first they do not produce an increase in agricultural
goods. If the workers live in villages and work nearby a wage rate
lower than the market rate may induce them to work. If they work
away from their homes a market rate of wages might be paid and subsidies
would be justified. (For other examples and a fuller discussion, see
III.3.).

The timing of such projects and good diagnosis of the unemployment
situation is important here. Disguised unemployment is not ample in
most South American countries and is mostly concentrated in a few regions.
It may not be very important in five years' time— but it is a vital
problem for any short-term program at present.

4. P.N. Rosenstein-Rodan, Disguised Unemployment and Under-Employment
in Agriculture (CENIS, M.I.T., Cambridge, 1956, Italy Project C/56-25).

2. Adequacy of National Effort

a) Foreign aid should only add a proportion to the national capital formation. If the national effort is inadequate only a small amount or no aid should be forthcoming. The better the national effort and the nation's absorptive capacity the higher will be the amount of foreign aid. An important task of the Development Plan is, therefore, to evaluate the national effort and to propose measures apt to increase it.

The best symptom and measure of national effort is the average and marginal rate of savings—and notably the deviation between the two rates. An underdeveloped country with a low income per head may not be able to save a high proportion of her income; her average rate of savings may vary from 5 - 8 per cent. It can save, however, a very much higher proportion out of her increase in income; her marginal rate of savings can be twice or more than twice as high (15 - 20 per cent) as her average rate of savings.

The mobilization of national effort must therefore be directed to raise savings. Three sources of savings had best be considered:

i) Private savings. They can be increased by prospects of currency stability, by housing cooperatives savings associations, and in the long run by fiscal reforms exempting savings from taxation (expenditure tax). While the average rate of savings in this sector is 4 - 7 per cent, the marginal rate can be 8 - 12 per cent.

ii) Corporate savings of the business sector are usually high already since the "ploughing back" of undistributed profits reinvests 20 - 35 per cent of profits. As development proceeds the proportion in the GNP of income originating in this sector will rise, leading to an increase in the national savings rate.

iii) Savings in the public sector can be vastly increased even in the short run by making profits in public enterprises (see III.1.a on shadow pricing in the public sector) and by budget

surpluses. This is an essential part of raising the national
effort; its adequacy or inadequacy in the short run will
largely have to be assessed on realizations in this sector.

b) While foreign aid can only form a part of national investment,
a higher proportion may be justified in the initial period if proper
measures are taken to achieve high marginal rates of savings.

3. Employment and Unemployment

Full employment is undoubtedly the first step for providing a
minimum of equality of opportunity and for realizing the objectives
of the Alliance for Progress. Full employment in an underdeveloped
country is a structural problem quite different from that in developed
countries. The conflict between productive efficiency and greater
equality in income distribution makes it impossible to realize all social
objectives overnight. Fortunately most South American (unlike Central
American) countries are not heavily overpopulated. To reach full
employment need not take as long a time as it must take, for instance,
in South East Asia. In the shorter interval, however, social growing
pains of an underdeveloped economy are unavoidable. What matters
primarily is not to lose sight of the final goal and to see to it that
vested interests and inertia should neither delay nor prevent its
achievement. Some alleviating measures can make the path less painful
even though they may well prolong it. Economic development planning
can both accelerate growth, i.e., shorten the interval before a
satisfactory standard of living for all is reached, and indicate the
selection of some welfare measures which do not widen the interval
excessively. The economic development operation is unavoidably painful,
but progress in economic knowledge in the twentieth century can make it
shorter and can provide anesthetics which did not exist in the
nineteenth century.

A higher rate of growth will in the long run lead to more employment.
In the short run, however, there is a conflict between "maximum
output" and "maximum employment". More labour-intensive but less

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efficient methods of production can increase employment today at the expense of producing a lower-value output, and notably less surplus which provides investible funds for more output and employment tomorrow. A choice has to be made: more employment in the 1960's may mean less employment than would otherwise have been possible in the 1970's.

A well thought-out development program can nonetheless substantially reduce the area of conflict between "maximum output" and "maximum employment" through a series of measures:

a) A high shadow rate of interest will encourage more labour-intensive methods of production. With the exception of construction and road building, however, the effective variability of coefficients of production in modern industry is not great, although it is not negligible in those parts of industrial activities which deal with "handling and bringing" of raw materials and products. The practical effects are, however, small in the short run.

b) Construction and road building offer a considerable range of choice between labour-and capital-intensive methods of production. Secondary roads can be built with a minimum of fixed capital (bulldozers, earth moving equipment, etc.) and with plentiful labour. They may not cost appreciably less per km. since the savings on fixed capital are eaten up by very much higher maintenance costs—such roads may have to be repaired every year—but they provide plentiful employment. The same may apply to the construction of hydro-electric barrages. It is important to overcome two obstacles to the realization of such a program which can have a considerable impact on employment in the short run:

i) Secondary labour-intensive roads take a very much longer time for their construction. A long-run road-building plan must exist if "hand-to-mouth" decisions of roads to be quickly built are to be eliminated.

ii) Contractors prefer capital-intensive methods of production

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since they reduce problems of labour-handling and labour
supervision.   If they are offered "cost plus profit"
contracts, they will choose labour-extensive methods of
production.   Contracts for secondary road building must
therefore specify a labour-intensive method of production.

c) While 90 per cent or more of total investment will be channeled
into efficient agricultural and industrial sectors, which are the
foundation for a high rate of growth—they may be insufficient in the
short run to establish full employment.   A special effort in drive
and organization as well as a small part of investible funds (5 - 10
per cent) should be diverted into Rural Public Works (see II.4 and III.
1.c) which contribute to agricultural capital formation without at first
producing more agricultural products.   Such activities absorb very
little capital goods or foreign exchange but they can usefully employ
many of the disguised unemployed in rural areas.   Out of the wages
paid to the additionally employed in Rural Public Works—up to one-half
will be spent on food (which can be obtained if needed by P.L. 480
surplus products) and another 25 - 30 per cent on home produced wage
goods (textiles and household goods).   There is no doubt that resources
for this form of useful employment-creating activities can be found.
The real problem here is organization rather than capital.   To create
it is an urgent task of the short-run plan.

d) Timing of modernization projects is finally a part of the short-
run plan.   If unemployment exists in an area then employment-reducing
and efficiency-increasing projects may have to be postponed unless
additional employment-creating projects are sufficient to absorb more
than the numbers of displaced workers.   Thus super-markets may have
to be delayed even though they may reduce the cost of living and thereby
stimulate in the longer run an expansion in other industries.   The
same may apply to modern factories displacing handicrafts.

/IV. Economic Policy

IV. Economic Policy as an Instrument of Short-Term Growth

Any purposeful development program consists of two main parts:

A. "What is to be done?" (often outlined sketchily in a "Framework for Development")

B. "How is it to be done?"

Objectives, priority criteria and evaluation methods for project selection, and program composition do not suffice for a successful implementation of the Plan (Part B). A coherent well coordinated economic policy must be used throughout as a purposeful instrument of growth. A functional economic policy for growth is only another word for development programming. It will have to determine what part of investment is to be undertaken in the public sector, but an even more important part of it should consist in a system of incentives and disincentives apt to encourage or discourage private investment in certain sectors, regions or technologists— as well as providing effective stimuli for over-all savings and investment. Three main instruments may be considered:

1. Monetary Policy

   a) Is a selective credit policy possible in certain countries? Can it secure, for instance, a sufficient supply of credit for a fuller utilization of existing capacity (see II.1) or to discriminate successfully between credit for productive investment and for consumption? Can it provide good agricultural credit supply as well as credit for small enterprises and handicrafts?

   b) Methods of avoiding either inflationary or deflationary pressure.

   c) Methods to reduce an undue balance of payments deficit, etc. etc.

2. Fiscal Policy

   a) Tax measures to stimulate savings (see III.2) including a budget surplus.

b) Tax measures as incentives and disincentives for investments in different sectors (for instance, a "discriminatory" high tax on luxury buildings, and a low tax on cheap building).

c) Over-all fiscal policy to achieve stability, etc. etc.

3. Wage Policy

Monetary and fiscal policy alone may not suffice to achieve growth and stability. A social consensus must be built up on principles of a wage policy. This is, however, only possible in the long run.

4. Commercial Policy

The degree of a selective infant-industry protection must be determined, taking the shadow rate of exhange into account (see III.1.b.).

5. Incentives for Small Enterprise

Construction of industrial estates or zones, besides credit and fiscal incentives. Industrial extension service.

6. Form of Desirable Cooperation with Private Foreign Investment

V. Organization and Planning

1. For short-term

2. For long-term

The institutional organization of planning may have to be different in various countries. Experience from inside and outside Latin American should be examined.

VI. Form and Amount of Technical Assistance

What measures can be taken to improve and accelerate the preparation of projects.

VII. Action during the Short-Run for the Preparation of the Long-Run Development Program

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