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INDUSTRIAL PROJECT EVALUATION IN THE UNITED STATES, THE UNITED KINGDOM
AND FRANCE

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INTRODUCTION

i. Object of the Research

This report is a broad review covering all phases of project preparation and evaluation, and aims at highlighting and discussing the problems experienced by companies and agencies in the developed countries. It is hoped that the information it contains may be of use to the developing countries in enabling them to profit from the lessons learnt in the advanced countries, by appraising their projects in such a way as to achieve a more rational allocation of resources and a higher rate of economic growth.

ii. Method and Scope of the Research

The project was directed from London by Mr. C. B. Edwards, Industrial Research Consultant; interviews were conducted in New York, Washington, Brussels, Paris

and London. The interviews were arranged by the EIU's offices in New York and Paris; the Paris office also arranged for questionnaires to be sent to a number of French companies and financing agencies. Details of the methods of research used to discover the practices employed in the three countries are as follows:

United Kingdom

i. Postal Survey. The following questionnaire was sent to one hundred of the largest quoted public companies:

Questionnaire - "Project Evaluation" - For Projects Above £100,000

Note: The questions have been grouped together so as not to inhibit your answers by the size of the gaps between the questions. Please write all your answers below Q. 9.

1. When evaluating capital expenditure projects, do you distinguish between "expansion" and "replacement" projects and if so, why?
2. On average how far ahead do you forecast cost and revenue flows for (A) Expansion projects and (B) Replacement projects?
3. What methods of evaluation do you use for comparing expenditure proposals? (A) Qualitative? (B) Quantitative? State briefly the reasons for choosing the method you favour.
4. Do you allow for differences in risk and uncertainty between the various proposals? If yes, by what methods?
5. If you use a quantitative method of evaluation when assessing a project's worth, do you calculate the pay-back period or rate of return on an after-or before corporation tax basis?
6. Following on from question (5) do you take outlays in the form of working capital (stocks and debtors) into account?
7. What minimum pay-back period or rate of return, if any, do you look for before approving expenditure projects?
8. Do you generally carry out post-mortems on projects in order to compare the realised with estimated profitability?
9. Is there a company policy which limits the annual expenditure to internally generated funds (i. e. to depreciation and ploughed-back profits)?

The companies were selected from each of the manufacturing and service industries, as listed in the main Standard Industrial Classifications, 1958. Thirty-seven usable replies were received but the author places little reliance on the postal questionnaire as a medium of research since it is well-known that postal questionnaires have a number of disadvantages. Firstly, since those who do not respond may have different characteristics as a group from those who do, "there is no assurance that information obtained by mail is derived from an unbiased selection of respondents"¹. Secondly, as with certain forms of personal interviews, there is no assurance that the respondents understand the questions and, likewise, no guarantee that the researcher understands the answers. A considerable amount of double-checking should therefore be made to ensure that there is common understanding as to the terms used. Thirdly, even where the respondent understands the questions, there is a possibility that he may, for a number of reasons, give false or "prestige" answers. As was stated by a team of management consultants in the booklet - "Investment in Machine Tools"² - "it is our experience - again borne out by the present enquiry - that sometimes a company genuinely believes it is doing certain things which in fact it is not doing, or sometimes its answers may be coloured by what it knows it should be doing but is not doing".

For these reasons, and because the research has aimed at discovering not only which methods of project evaluation are used but also why they are used in preference to alternative methods, it was decided to place as much emphasis as possible in the time available on the results of personal interviews. The results of the questionnaire and of other published surveys were used to supplement the interviews.

ii. Personal Interviews. Interviews were held in London and at a Management Conference in Brussels with more than thirty-five people employed by:

1 G. Katona - "Psychological Analysis of Economic Behaviour" - McGraw-Hill.
2 National Economic Development Council - "Investment in Machine Tools" - H. M. S. O. - London, 1965.

- the Department of Economic Affairs
- the Treasury
- the Ministry of Power
- the Ministry of Transport
- one of the largest Merchant Banks in the UK
- eleven public companies, all with net assets in excess of twenty million pounds at the end of 1960.
- four of the nationalised industries, and
- a British overseas development bank

iii. Other Surveys. A number of surveys of investment appraisal procedures used in the UK were studied, and, where relevant, these are referred to in the text, with acknowledgements given in footnotes.

France

i. Postal Survey. Ninety questionnaires, translated from that shown on page ii, were sent to a selection of large companies, nationalised corporations, municipal undertakings, and four of the largest merchant banks.

Although the questionnaires were despatched at the same time as those in the UK, only eleven usable replies have been received. Eight were received from companies, one from a municipal undertaking, and two from nationalised corporations. It is difficult to account for the difference in the response rate between the UK, where it was over 35 per cent, and France where it was under 15 per cent. French businessmen, however, were generally more reluctant to be interviewed, and this may reflect a greater degree of secrecy on their part. On the other hand, once interviewed, they were as frank as their British counterparts, and generally as helpful.

ii. Personal Interviews. Personal interviews were held in Paris and Brussels with twenty-five people belonging to:

- five large French companies
- the Ministry of Transport
- the Société Nationale des Chemins de Fer Français (SNCF)
- Electricité de France (EDF)
- the Commission de l'Energie, one of the Vertical Commissions belonging to the Commissariat Général du Plan)
- CEGOS, a large management consultancy organisation.
- the Institut Européen d'Administration des Affaires (INSEAD), the European Business School at Fontainebleau, and
- a French development bank.

iii. Other Surveys. Only a few surveys of French investment appraisal procedures have been carried out in recent years; where relevant, references to these have been made in the text.

USA

i. Postal Survey. In accordance with the Terms of Reference, no postal survey was conducted in the United States. This was not thought necessary, because a large number of surveys have been carried out in the USA in recent years. These were studied.

ii. Personal Interviews. Interviews were held in New York and Washington with more than thirty executives in the following organisations:

- Touche, Ross, Bailey & Smart, the management consultancy firm.
- the Chase Manhattan Bank
- the First National City Bank
- the Irving Trust
- the New York Graduate School of Business
- the International Bank for Reconstruction and Development (IBRD)
- the Export-Import Bank (Ex-Im Bank)
- the International Finance Corporation (IFC)
- the Agency for International Development (AID) and the Pan-American Union (PAU)
- the Brookings Institution
- the Inter-American Development Bank (IDB) and
- three of the largest industrial companies.

iii. Other Surveys.

Where relevant, reference has been made to the many surveys published on this subject in the USA.

A number of companies and agencies interviewed and a number replying to the questionnaire were not willing to allow their names to be disclosed. In many cases it has not therefore been possible to give the name of the company or agency giving the information.

SUMMARY AND CONCLUSIONS

The main generalisations from the report are:

Chapter 1. Objectives and Planning

- i. The financial institutions (the British and French development banks, the IBRD, AID, IDB, IFC and the Ex-Im Bank) when concerned with the appraisal of industrial projects in developing countries stressed the importance of:
 - a. resource and demand analyses to reveal priorities within a developing country; and
 - b. pre-feasibility studies to reveal alternatives.
- ii. The financial institutions complained of a shortage of worthwhile projects.
- iii. It is rare for corporations (companies and nationalised industries) or financial institutions to compare alternative projects; the American companies are more selective than the British or French.
- iv. A capital rationing policy is followed by companies in the three countries.
- v. There is a presumption by companies that 'replacement' expenditure is more necessary.

Chapters 2 and 3. Evaluation

- i. Only about one-third of the largest companies, defined as those with net assets of above, say, fifty million pounds, in the UK and France use discounting techniques to measure the worth of industrial projects. The gap between theory and practice is large, as is the gap between the best and worst practices. The largest American companies use more sophisticated methods but the illogical use of data is widespread

in all three countries. In fact it seems that many companies are trying to use methods which they fail to understand.

ii. The French nationalised industries generally use theoretically correct methods of appraisal: those in the UK are less consistent.

iii. The financial institutions, especially the multilateral agencies, are aware of, and use, methods of appraisal closely approximating to theory, although some complained that too much emphasis is put on the technical appraisal.

iv. The financial institutions and the few companies that used them, stated that:

a. check-lists are helpful as an aid to more accurate forecasting and appraisal; and,

b. sensitivity analysis is useful in assessing the effects of selected variables.

v. Much importance was attached to:

- a. the acquisition of data, especially that relating to (i) the cost of non-manufacturing facilities; (ii) the cost of working capital; and, (iii) the gestation period; and

- b. the correct use of data once collected.

Chapter 4. The Control, Management and Post-audit of Projects

i. The place of simple management techniques, such as budgetary control and critical path scheduling, in the control of expenditure, was emphasised.

ii. The most progressive companies thought that project appraisal and control should be the specific responsibility of one person or department in the organisation.

iii. The financial institutions thought that:

- a. the minimum team for a feasibility study should consist of an engineer, an accountant, and an economist; and
- b. the supervision of projects is best left to the sponsors.

iv. Post mortems are not generally carried out. Few companies thought that the examination of individual projects was worth the cost of the investigation.

The lessons that can be drawn for the developing countries from this report are as follows:

- i. To take an objective look at all aspects and alternative ways of carrying out a project.
- ii. To relate individual projects to the economy of the country or region concerned.
- iii. Not to be sidetracked by esoteric discussions of the relative advantages of various discounting methods, but to make a correct use of whichever measure of appraisal is chosen.
- iv. To collect adequate data for an objective appraisal; the use of check lists will be helpful in this respect; and
- v. To discover the importance of variables by using sensitivity analysis and to concentrate attention on the critical variables.

CHAPTER I. OBJECTIVES AND PLANNING

Capital investment is an important determinant of economic growth (a) by raising the level of labour productivity and (b) through its income-generating characteristics. How important this contribution is, and to what extent different rates of growth in various countries can be accounted for by differences in the ratio of capital investment to gross national product, is a matter of controversy among economists.¹

However, it is accurate to say that, together with industrial organisation and technological change, capital investment is the main factor in economic growth. Moreover, because for the developing nations any sacrifices in present consumption entail greater hardships than the equivalent sacrifices by countries with advanced economies, every effort should be made to ensure that resources are directed towards the most productive ends.

Not only have the poorer countries a lower labour productivity in all sectors but they also have a concentration of employment in the sector in which labour productivity is lowest, that is, in the primary sector. One of the features of economic progress is the shifting of employment from the primary to the secondary and tertiary sectors. The object of planning the economy is to ensure that this shifting of employment is accompanied by steady and stable growth, and that any imperfections in the working of the economy are counterbalanced as far as possible by government action and direction. Due to the absence of the classical conditions for equilibrium, it is now generally agreed that the governments of poor countries

¹ Compare, for example Ankrust - Productivity Measurement Review - February 1965, and A. Shonfield - "Obstacles to Growth - Not Enough Capital?" - The Statist - London - 8th June 1962.

have a responsibility for guiding economic development by channelling investment in specific directions. The government begin by trying to create a climate which is favourable to private investment in both agriculture and industry (a) by making the necessary infrastructural investment; (b) by sponsoring or encouraging private investment wherever the latter offers the likelihood of favourable results; and (c) by undertaking projects itself in the absence of private initiative.

Planning at the national level helps the government to decide the directions in which it should guide investment: planning at the level of the firm similarly helps to define the objectives of the firm and to co-ordinate the means so as to achieve those objectives. In the questionnaires and personal interviews, companies and agencies placed considerable emphasis on the relationship between an individual project and the national or company plan and it is for this reason that the need for planning and the clear definition of objectives is stressed.

i. Objectives

For a nation as a whole, the main objective will be to maximise the gross national product per head of the population given the existing resources.

For the firm operating in the private sector and financed by risk or equity capital, the prime objective is, theoretically, to maximise the long-run earnings to the present ordinary or equity shareholders. "Theoretically", because the actual behaviour of companies (at least of companies in France and the UK but to a lesser extent in the USA) seems to approximate to what has been referred to by a number of writers as "satisficing" behaviour. For example, Carter and Williams¹ have stated that "a quiet life; the enjoyment of public esteem and power; a reluctance to experiment; a reluctance to change the organisation: these may all militate against profit maximisation". However, the divergence of objectives from profit maximisation is smaller:

¹ Carter and Williams - "Investment in Innovation" - Oxford U. P. 1958 - See also R. Wright - "The Investment Decision in Industry" - Chapman and Hall 1964.

- i. the greater the pressure on profits (through competition or countervailing power), and
- ii. the greater the importance in the company of a specialist function for creating and evaluating technical and market possibilities.

For other corporations (e. g. nationalised corporations or semi-public companies) or for the financing institutions, the objectives are usually set out in the Acts or Agreements which established them.

ii. Resource and Demand Analysis and National Planning

Once the nation, bank, company or other decision-making unit has decided on the objectives at which to aim, the next stage is to analyse the relationship between the resources available and the demand for those resources.¹ The demand will have been determined to some extent by the definition of the objectives. The importance of an initial resource and demand analysis lies in identifying priorities for two kinds of opportunities, namely:

- i. opportunities for quick and substantial gains, through, for example, multi-shift operation, seven day working and the more efficient use of existing resources and
- ii. opportunities which have a long lead time, that is, investment opportunities.

Time and again, the development agencies, especially those dealing with large industrial or infrastructure projects such as the AID or IBRD, stressed the economies that could be effected through the more efficient use of existing resources.

The AID and the Brookings Institution placed much importance on (a) planning by stages, (b) resource and demand analyses, and (c) pre-feasibility studies in indicating the general order of priorities and for pinpointing the opportunities and

¹ An excellent outline of a resource and demand analysis is given in "Manual of Industrial Development - with special application to Latin America" prepared by Stanford Research Institute, California, for the International Co-operation Administration - June 1958.

alternatives. They both stated that the high cost of a detailed feasibility study might, and almost certainly had sometimes biased the decision as to whether or not to go ahead with a project.

Once a government has prepared a general plan for the economy and carried out a resource and demand analysis, this will help it to allocate resources intelligently, since no project can be correctly evaluated in isolation. Even when put in the context of an economic plan, it is difficult to assess the economic worth of some projects, especially those coming under the general heading of infrastructure projects. A number of studies have been carried out, and models prepared, in the fields of transport¹, water resources² and others³, but the evaluation of non-industrial projects is still to a large extent a relatively new field of applied economics. It was, therefore, no surprise to hear from the U.K. Treasury, the French Energy Commission, the Brookings Institution and other organisations that the inter-sectoral allocation of investment resources was made largely on the basis of political judgments.

Once, however, this inter-sectoral allocation of funds has been made, it is important to ensure that as far as possible the net marginal social productivity of a project is equal to that of all other projects within the same sector. This means that all potential projects should be the subject of some form of feasibility study.

1 e.g. (a) "Estimating the Social Benefits of Constructing an Underground Railway in London" - C. Foster and M. Beesley - Journal of the Royal Statistical Society Series A Volume 126, 1963. (b) "Proposals for a Fixed Channel Link" - Cmnd. 2137, HMSO London, September 1963. (c) A study currently being conducted into the economic effects of a new subway (underground railway) in Lyons, France. (d) Numerous studies carried out in the USA - see e.g. Mohring and Harwitz "Highway Benefits - an Analytical Framework" - North Western University Press, 1962.

2 See e.g. R. N. McKean "Efficiency in Government Through Systems Analysis with Emphasis on Water Resource Development" Wiley 1958 and J. Hirschleifer and others - "Water Supply: Economic Technology and Policy" - University of Chicago - 1960.

3 See for example the study prepared by the Brookings Institution, entitled "Measuring Benefits of Government Investments" and edited by Robert Dorfman (1965).

As stated above it is essential to seek out and pinpoint opportunities by analysing the relationship between available resources and the demand for such resources.¹

Opportunities may be discovered as a result of (a) simple input-output matrices which set out the relationships in physical terms between the imports, consumption and exports of major product groups and (b) making outline studies of the comparative economies of various product groups and the relationship of cost to the production volume of such products.² Once a number of alternatives have been suggested, further, more detailed, feasibility studies can then be carried out on the lines suggested in Chapter 2.

iii. Planning at the Level of the Firm

a. The Search for Opportunities. The classical problem of economics is the allocation of scarce resources to competing ends, but in more than half the interviews with the companies in France and UK, it was stated that projects were rarely compared one with another.

The general pattern of capital planning by companies in France and the UK³ seemed to be on the following lines:

i. an estimate of the capital that would be available within the next financial year at reasonable cost: (i. e. the cash flow that the company expected to generate plus the capital that could be raised externally on "favourable" terms).

1 This analysis need not necessarily be limited to one country but can be prepared for a group of countries. E. g. the Brookings Institution is co-ordinating a study of the economic integration of major product groups for a number of South American countries. Basically there are 4 stages in such a study since it involves the analysis of demand trends and supply functions; relating supply and demand; and then taking into account various constraints such as exchange rates and inter-governmental agreements. To encourage integration, the IDB "seeks opportunities for lending to industries that will serve more than one country or the region as a whole and gives priority to such projects where they can be found". - see "The Application of Investment Criteria in a Development Bank" - Temas Del BID, April 1964.

2 Reference to other feasibility studies might be helpful in this respect e. g. see "Index to Investment Information and Opportunities" - AID Washington, 1965. Also see "A Pre-Investment Study of the Flat Glass Industry" - Professor L. C. Nehrt- IBRD, 1964.

3 This pattern would also seem to be applicable to a certain extent in the USA for H. M. Weingartner states in "Mathematical Programming and the Analysis of Capital Budgeting Problems" that "a majority of corporations tend to set a limit to the funds available before looking at demand". - Prentice-Hall, 1963.

ii. the allocation of the available capital between subsidiaries, divisions, and departments on the basis of past profitability and, to a lesser extent, future market prospects; and

iii. the allocation within a subsidiary, division or department of the budget as decided in (ii). This allocation between subsidiaries was, to a greater extent, decided on the basis of future profitability but even here the companies gave little impression of making choices amongst a number of competing alternatives.

For companies, there are a number of problems associated with the evaluation of projects, such as the criteria to use (see Chapter 2), the interdependence of projects (see Chapter 3), and the difficulty of quantifying the benefits arising from certain types of projects (e.g. research and development or welfare facility investments); by failing to compare alternative possibilities, however, the allocation of resources is hardly likely to be improved. An executive in a British chemical company suggested that there were three main reasons why British companies considered fewer alternatives than American companies. firstly, British companies spend proportionately less time and money on looking for opportunities and surveying markets; secondly, there is less inclination on the part of British managers to take risks¹ and thirdly American companies appraise and analyse their investment possibilities in a much more detailed and logical manner.

The executive of a French tyre manufacturer, who had worked in the USA for five years, thought that large American companies were more selective in their choice of projects than comparable French companies. He thought that this was partly due to:

- i. The predominance in American companies of specialist departments or committees whose sole responsibility was to seek out and evaluate new investment potential, and
- ii. the greater degree of competition in the American economy.

¹ This is in agreement with D. Granick's remarks at the beginning of Part III of his book "The European Executive" - Doubleday and Company, 1962.

b. Budgets. In an unpublished survey into the methods of capital budgeting used by companies in the UK, carried out by Mr C. B. Edwards in 1962/1963, the extent of planning was investigated among a sample of sixty-five companies. It was stated that "it seems fairly safe to assume that only a minority of companies plan their capital expenditure in broad outline for much more than two or three years ahead, and it seems likely that there is little detailed planning of capital expenditure, especially amongst the smaller companies, defined as those with net assets of less than £10 million as at the end of 1960. This analysis seems to accord with Tibor Barna's survey¹. Williams, however, in his study² states that "... the definiteness of planning was not ... a guide to the efficiency of investment."

In the Smith and Remmers study of the investment decisions of 19 companies in French industry³ it was stated that "about two-thirds of the firms visited spoke of a three to five year plan", but that "... the planning was indicative rather than detailed. A sales figure or segment of the market was ordinarily set as the objective. This was arrived at by such means as projections of current market and sales trends, economic studies, the 4th Plan's indications and management 'feel'".

The length of time the plan covers will of course depend on the gestation period and the ability of the firm to forecast. It may be a mistake, however, for a large company to think of five years as long term planning, for as Baker says "... it may take that long to acquire land"⁴. In the UK the Central Electricity Generating Board plans ahead for 10/15 years, the Coal Board attempts to forecast demand for up to 20 years, and therefore in very large scale organisations, "... twenty-year planning would seem to be generally necessary."⁴

1 T. Barna - "Investment and Growth Policies in British Industrial Firms" - Cambridge University Press, 1962.

2 Williams - "International Report on Factors in Investment Behaviour"- OECD, 1962.

3 "Investment Decisions in French Industry" - P. L. Smith and N. Remmers - INSEAD - the companies interviewed for this study ranged widely in size of total assets from about F 25 million to F 2,000 million (i. e. from just under £2 million to approximately £150 million).

4 Baker - "The Management of Capital Projects" - Bell & Sons 1963.

c. Stabilised Investment. In the UK, Barna found that each stage of expansion is usually regarded as a separate event, but it is preferable that planning be regarded as a continuous technique. This will facilitate the co-ordination of policy and ensure that fluctuations are minimised. It is likely that investment decisions are based to an undue extent on business "sentiment". (see Chapter 2), and that because of this, fluctuations are greater than they would be if project assessments were more rational. Dean¹, however, has shown that there are many defensible rational arguments for investing during booms, although the strength of these arguments vary with, (i) the amplitude of the business cycle, (ii) the rate of discount used, and (iii) the economic life of the asset. These arguments against spending during recessions emphasize the need for government inducements and action designed to reduce fluctuations in the business cycle². For even in the USA, where plans are generally longer³, forecasting more accurate, and evaluation of projects more 'scientific' (see chapter 2), "... quick and unpredictable changes in capital investment plans are the order of the day"⁴.

One of the most important causes of fluctuations in capital investment is the fairly widespread practice of rationing the investment to internally generated funds or a ratio thereof. For example, Dean states that fluctuations in private capital formation in the past can quite largely be accounted for empirically by changes in current corporate profits and in corporate profits one year earlier. It seemed from the interviews and questionnaire replies that a number of companies in the UK and France were making a less stringent examination of projects 'using' internal funds, than of those 'requiring'

1 Dean - "Capital Budgeting" - Columbia U. P. New York.

2 The investment reserve scheme currently in operation in Sweden might be one method of stabilising investment.

3 See e. g. (a) Mack "The Flow of Business Funds and Consumer Purchasing Power" Columbia U. P. 1941, (b) Istvan - "Capital Expenditure Decisions - How They are Made in Large Corporations" - Bureau of Business Reserach, Indiana University, 1961. and (e) Gort - "The Planning of Investment - A Study of Capital Budgeting in the Electric Power Industry" - Journal of Business - April and July 1951.

4 Solomon - "The Management of Corporate Capital" - Free Press of Glencoe, Illinois, 1959.

outside capital. Many companies both in France and the UK stated in their replies to the questionnaire that their expenditure on replacement was geared to their allowances for depreciation. This would imply that the replacement expenditure of some companies is not evaluated as carefully as the expenditure on expansion projects.

d. The Classification of Projects. Most companies, more than seventy-five per cent of those replying in Britain and the majority of those in France, stated that they use, as a minimum, a replacement/expansion classification of their expenditure. A variety of reasons were given for this classification, the often quoted ones being:

- i. "We would expect a higher return from an expansion investment due to the greater risks and uncertainties".
- ii. "There is a different market 'strategy' behind each type of investment."
- iii. "The classification gives a guide to the sort of information which management expects to see on the evaluation form."
- iv. "Replacement is a must if we are to stay in business."
- v. "The distinction enables us quickly to examine the lists of replacement projects and thereby to deal first with those which are essential."
- vi. "The power to authorise replacement expenditures is delegated to a greater extent.¹"

¹ See also R. Nield - "Replacement Policy" - National Institute Economic Review, November 1964 - "They (firms) often delegate replacement decisions to a greater extent than new investment decisions and set aside separate budgets for the two purposes."

The general attitude in France and the UK seems to be that replacement requires little or no economic appraisal because of the fewer uncertainties involved and because of the interdependence of the project with a larger production unit. This seems to be a dangerous attitude since the replacement/expansion distinction is largely arbitrary, as some companies hastened to point out. The attitude seems to imply that because replacement expenditure is easier to assess in economic terms, it is automatically more profitable, and therefore necessary.

CHAPTER 2. THE EVALUATION AND APPRAISAL OF PROJECTS

This chapter assumes that the necessary data for an evaluation is available and that there is no uncertainty attached to the data and no risk connected with the project. The problems of how to obtain the data, the misconceptions to avoid, and the methods of 'assessing' the effects of risk and uncertainty will be discussed in chapter 3.

This chapter is divided into 2 parts. The first part deals with the appraisal of projects in terms of their commercial profitability, the second part deals with the appraisal of projects in terms of their national profitability.

(i) Commercial Profitability

It is here assumed that the prime objective of the managers of a company is to maximise the long-run earnings to present equity shareholders. In order to maximise these earnings, the management must obviously aim at channelling expenditure into the most profitable outlets. It is clear from the interviews, questionnaire replies, and other surveys that the theoretically correct methods of appraising capital expenditure projects are rarely used.

a) The Theory

There are basically four 'methods' of appraising the worth of a project used by company managements in France, the U.K. and the U.S.A. Because definitions vary widely in this field of economics, they are briefly explained below:-

(1) Pay-Back This is defined as the length of time required for the stream of cash flows of an investment to equal the original cash outlay. Its principal advantage is its simplicity both in concept and calculation: it has two principal disadvantages in that (i) it does not measure the profitability of the project and (ii) it takes no account of the time pattern of earnings within the pay-back period.

(2) Book Rate of Return The rate of return on capital is defined as the ratio of profit, (net of depreciation) to capital, although the method has a host of variants.

G. Terborgh¹ reports attending a conference where 14 companies reported 14 different methods of calculating this type of return. The two most common methods are however:-

- the expected or 'normal' profit as a percentage of the average capital employed over the life of the project. This is often called the "book" method.
- the expected or 'normal' profit as a percentage of the initial capital employed. This is often called the "engineer's" method.

The main defects of this method² are:-

- the difficulty of defining the normal profit where the profit may not be constant over the years;
- the difficulty of defining 'capital outlay' where investment allowances are given and where working capital forms a large proportion of the capital invested; and
- that no allowance is made for the fact that £1 tomorrow is worth less than £1 today.

(3) "Postponability", "Necessity", and Other "Non-Documented" Evaluations

The inadequacies of "hunch" methods are obvious. Only rarely will these methods lead to an optimum allocation of resources, and yet they seem to be in widespread use in Britain, France and the U. S. A.

(4) Discounting Methods

The cash flows generated by an investment should be sufficient to repay the initial outlay and to pay an adequate rate of interest on the outstanding balance. The

1 G. Terborgh - "Business Investment Policy" - Machinery and Allied Products Institute, Washington, 1958. 2 See page 10 of "Discounted Cash Flow" - by A. M. Alfred and J. B. Evans - Chapman and Hall, London, 1965. "Discounted Cash Flow" is a manual prepared for use by those in Courtaulds who are concerned in making the financial appraisals which are required when investment decisions are being taken.

discounting methods measure the capacity of a project to do this, since they take account of the time value of money - that is they take account of the fact that a given sum of money now is worth more than an equal and certain sum at some future date, because it permits profitable investment or consumption in the meantime.

The discounting methods can be classified as follows:

(i) The Internal Rate of Return (I.R.R.). - otherwise referred to as the interest rate of return (Weaver and Reilly), the yield (Merrett and Sykes), the investors' method (Hill and Gregory), rate of return (Fisher), D.C.F. (Dean), and the marginal efficiency of capital (Keynes). The internal rate of return represents the highest rate of interest an investor could afford to pay without losing money, if all the funds to finance the investment were borrowed and the loan, principal, and accrued interest were repaid by application of the cash proceeds.

(ii) The Net Present Value (N.P.V.). - the N.P.V. of a project is found by discounting at an interest rate (e.g. the opportunity cost of capital) all future net cash flows arising from the project. In the example below the N.P.V. of the project at a 10 per cent discount rate would be calculated in the following way. It is assumed that the project requires an initial outlay of £1,000 and that it generates an income of £415 per annum for an assumed life of 3 years.

Year	Cash Flows Attributable to the Project (£)		10 Per Cent Discount Factors (See Appendix 1)	Present Value (£)	
	Outlay	Income			
0	(1,000)	-	1.00	(1,000)	-
1	-	415	0.91	-	378
2	-	415	0.83	-	344
3	-	415	0.75	-	311
				<u>(1,000)</u>	<u>1,033</u>

Therefore if the project were financed by a loan at an interest rate of 10 per cent £33 is the net gain attributable to the project after paying the interest and repaying the loan.

(iii) Annual Capital Charge (A.C.C.). - wherever a capital investment is made which gives rise to a constant, or approximately constant, net cash flow it is possible to make use of the annual capital charge method. Extensively used by Grant and Ireson¹, the A.C.C. method aims at charging depreciation on a sinking fund basis such that the full capital invested in a project will be recovered at the end of the project's life. This method will lead to a rational allocation of resources, as long as the cash flows are constant. Whenever there is any irregularity in the net cash flows, the A.C.C. method is forced into the difficulty of turning them into regular cash flows of the same present value.

(iv) Various other discounting methods have been developed but since they are even more rarely used than the I.R.R., N.P.V. or A.C.C. in the assessment of projects requiring an initial outlay of more than \$250,000, it will be sufficient here to just note them. They are: (1) various replacement formulae, such as those developed by Alchain² and Terborgh³ and (2) the "future value method"⁴.

The internal rate of return (I.R.R.) is subject to two disadvantages, namely: (1) in certain cases it is possible to find more than one solution rate. Soper⁵ has shown that this cannot happen provided the capital outstanding is non-negative during each year of the project's life; and (2) where a choice must be made between two mutually exclusive projects, the project giving the highest internal rate of return will not necessarily be the one that will maximise profits.

1 Grant and Ireson - "Principles of Engineering Economy" - Ronald Press, New York, 1960. 4th Edition. 2 Alchain - "Economic Replacement Policy" - The Rand Corporation, California, 1952. 3 Terborgh - "Business Investment Policy" - an excellent description of this method (often called the MAPI method after the Machinery and Allied Products Institute) is contained in "The Economics of Capital Expenditure" - K.A. Middleton, Australian Society of Accountants, July 1964. 4 See Robert H. Baldwin's article in the Harvard Business Review of May-June, 1959 - "How to assess Investment Proposals": - and "The Proposed Plant - A Profit-Maker or not" - R. Beyer and D.J. Trawicki - The Controller November, 1960. 5 C.S. Soper - "The Marginal Efficiency of Capital - a Further Note" Economic Journal Volume 69 P. 174/177 - 1959.

It can therefore be proved that under the classical conditions of a perfect capital market the N. P. V. approach is the most suitable measure of a project's worth, since the cost of capital¹ will then represent the alternative use of the funds to the economy after adjustments for risk. But under realistic conditions of capital rationing and uncertainty, the internal rate of return will be a more useful measure. There is, however, no reason why both methods should not be used together since once one has been calculated, the additional calculation required to arrive at the other is negligible.

(b) The Practice

(1) In the U. K. The replies to question 3 of the questionnaire were analysed as follows:

<u>Method of Appraisal</u>	<u>No. of Companies Using Method</u>	<u>No. of Companies Using the Method as a Primary Measure</u>
(1) Pay-back	13	1
(2) Book rate of return	18	16
(3) Discounting methods	<u>14</u>	<u>11</u>
	<u>45</u>	<u>28²</u>
No. of companies analysed:-	32	-
Non-classifiable replies	<u>5</u>	<u>9</u>
	<u>37</u>	<u>37</u>

In the author's 1962/1963 postal survey the methods of investment appraisal stated by the companies to be used were as follows:

1 Defined by John F. Childs as; "the over-all composite per cent net cost rate (after allowing for underwriters' compensation and expenses of financing), which investors require to induce them to provide all forms of long-term capital in a competitive market, on an average over a period of years" - see The Controller - February, 1964. 2 In 4 replies, no primary measure was indicated.

Method of Investment Appraisal	No. of Companies			Total
	Large ^a	Medium ^a	Small ^a	
Pay-back	9	2	2	13
Book rate of return	22	16	11	49
Discounting methods	9	2	-	11
Others	-	4	11	15
Total	40	24	24	88
No. of companies	24	19	22	65

a The size of companies was defined as follows:-

	Net Assets as at the End of 1960
Large	more than £50 million
Medium	" " £10 million but less than £50 million
Small	" " £ 5 million but less than £10 million

12 companies were common to both surveys and 9 of these gave essentially the same answers in both surveys.

Other surveys¹ into the methods of investment appraisal used in the U.K. seem to come to roughly the same conclusion, namely that managers of companies in the U.K. use methods of investment appraisal which are only likely to lead to the optimal choice of projects by coincidence. For example one of the principal findings of the "Investment in Machine Tools" study is that "the methods of investment appraisal in use by most of the companies in the engineering industry are either non-existent or inaccurate and misleading. Twenty-two per cent of our sample used no established method, while of the remaining seventy-eight per cent all employed the 'pay-back' method for appraising normal investments but only five per cent took tax allowances into account".

¹ see e.g. (a) "Thrusters and Sleepers" - PEP, Allen and Unwin, 1965. - a survey of 47 small firms in 6 industries. (b) 'Replacement Policy' - R. Nield - NIER November, 1964 - a survey conducted amongst participants in a conference held by the Production Engineering Research Association. (c) "A Survey of Management Techniques in the Sth.Hants Coastal Region". - H. Hart and D. Prussman - Department of Commerce and Accountancy, University of Southampton December 1963 - ("The Southampton Survey"). (d) "Investment in Machine Tools" - National Economic Development Council - HMSO London 1965 - an interview survey of companies in the machine tool industry. (e) "Criteria to be Observed in Judging a Capital Project" - G.H. Lawson - The Accountants Journal - May 1964 and June 1964 - a postal survey of 120 public quoted companies. (f) "The Sensitivity of Businesses to Initial and Investment Allowances" - D. Corner and A. Williams - *Economica*, February 1965 - ("The Exeter Survey"). (g) "Management Accounting and Industrial Management" - J.B. Goodlad - *Management Accounting* - June 1965 - a postal survey of twenty-five companies in the Nottingham area. (h) "Information and Criteria in Capital Expenditure Decisions" - B.R. Williams - Centre for Business Research, University of Manchester, 1964 - a study of the investment procedures in 13 companies.

In the two postal surveys conducted by the author, the extent to which sophisticated methods are used is probably overstated. This is because, in two of the personal interviews, it was discovered that although the companies used some sort of discounting method, the way in which they arrived at their data, was, to put it mildly, illogical. After working through one project which had been rejected by a large engineering company, the internal rate of return, calculated on the basis of correct economic principles, was double that calculated by the company's method. Indeed the controller admitted that if the economic worth of the project had been calculated correctly, the company might have approved the project instead of rejecting it.

It is therefore likely that a number of companies who stated in their replies to the questionnaires that they were using discounting methods did not in fact use such methods correctly (also see chapter 3). Even assuming that they are, it is probable that over $\frac{2}{3}$ of the annual gross fixed capital formation by the private sector in the U.K. is evaluated by methods which will only lead to an optimum allocation of resources by chance.

Bruce Williams¹ has listed 3 possible reasons why discounting methods are not used. They are: -

- (i) that competitive pressure is so weak as to leave ample room for non-profit goals
- (ii) that the firms concerned are just plain inefficient, and
- (iii) that the factors involved are too complex to be summarised numerically

It is probable that each one of these is valid to a greater or lesser extent depending on:-

(1) the size of the firm, since large companies tend to use documented, sophisticated analyses;

¹ B. R. Williams - "Information and Criteria in Capital Expenditure Decisions" - op. cit.

(2) the nature of the industry since the oil, chemical and vehicle-producing companies tend to use theoretically correct methods of appraisal whereas the food, drink, tobacco, non-electrical engineering, and distributive companies tend not to use discounting methods: and

(3) the nature or type of project to be evaluated

The objectives of the nationalised industries have, in the past few years, been increasingly defined in terms of financial targets¹. Indeed in the Select Committee's Report on the British Overseas Airways Corporation² it was stated that "Your Committee found the financial direction by the Board of B.O.A.C. had been defective in a crucial respect, namely, they had not consistently enforced the test of what was the Corporation's strict commercial and financial advantage". The Boards managing the industries are appointed by the responsible Minister and since 1956 all external finance, apart from advances from the banks, has been provided by Exchequer advances.

Merrett and Sykes³ state that the annual capital charge method is commonly used in the British nationalised industries. From the interviews and other sources, however, it seems that there is a great variety of methods used. The Post Office, for example, stated that discounting methods have been employed for the past forty years whereas other nationalised industries seemed to use unsophisticated methods of evaluation. In fact, there seemed to be a wide gulf between the best and worst practices in the nationalised industries and an executive in one of the Ministries stated that "the biggest problem is that of improving the practices of the worst". There currently seems to be a lot of thought being applied to the subject and the Treasury have been holding meetings with representatives of the various industries

1 See "The Financial and Economic Obligations of the Nationalised Industries" (cmd 1337) issued in April 1961 in which it was stated that, "although the industries have obligations of a national and non-commercial kind, they are not, and ought not to be regarded as social services - absolved from economic and commercial justification". 2 Page 103, Volume 1, June 1964. 3 "The Finance and Analysis of Capital Projects" - A. J. Merrett and Allen Sykes - Longman, 1963.

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to attempt to achieve some improvement and standardisation of appraisal procedures¹
From the interviews, muddled thinking, similar to that in the private sector, was
evident (see chapter 3 (i) B).

Once having arrived at some index of the economic worth of a project, companies
and nationalised industries seemed to use a variety of cut-off rates as a guide in
deciding whether to accept or reject a project. Since the capital market is an imperfect
market, the theoretically correct cut-off rate to use is the marginal efficiency of capital,
that is, the rate of return which can be earned from the best alternative use of the
resources. However because of the difficulty of measuring the return from certain
types of projects and because of other factors, such as the timing of investments,
there is a large amount of guesswork involved in arriving at the opportunity cost of
capital. Nevertheless there seemed to be a general consensus among experts interviewed
in France, the U.K. and the U.S.A. that a figure of between 7 and 10 per cent² reflects
the opportunity cost in these countries.

All the British companies using the internal rate of return used a cut-off rate of 7 to
10 per cent as a guide. They emphasised (a) that this might alter with the change to
a Corporation Tax and (b) that "because, in the last resort, any investment decision
is made on the basis of business judgment, the part played by analysis and technique
may be small, however sophisticated the procedures that are laid down" (quote from
an employee of an oil company). The other companies used guidelines varying from
twenty-five per cent before tax (expressed as the ratio of "expected" profit to initial
outlay) to "the rate earned by the company at present".

One or two of the nationalised industries stated that they generally take their financial
objective³ as a guide. The objectives differ according to the circumstances and
prospects of the different industries, but in general they are equivalent to between

1. The Treasury have written an excellent booklet to provoke some further thought
on the subject. "Appraisal of Nationalised Industry Investment Projects" (unpublished).

2. Calculated on an Internal Rate of Return basis. 3. To Implement the policy set
out in the White Paper (cmd 1337), five year financial objectives were agreed with
most of the industries concerned.

6 and 8 per cent¹. Since the nationalised industries obtain their capital from the Exchequer and are subject to capital rationing, the money cost of capital will usually differ markedly from the opportunity cost of capital. Given the risk associated with the investments of the nationalised industries, 6 to 8 per cent probably reflects the opportunity cost of capital but here again, there is a certain amount of muddled thinking, since the objectives were not established in order to reflect the opportunity cost of capital². In order to avoid misconceptions of this sort, it would be better to restate the financial objectives year-by-year in terms of a cash surplus to be earned by the various industries.

The concept of opportunity cost of capital is an important one for the developing countries to bear in mind, since the difference between the money cost of a loan from a financing agency and the opportunity cost of capital in a developing country will usually be considerable. The developing country should be aware that the money cost of capital is largely irrelevant to the investment decision.

(ii) France Approximately half of the French companies replying to the questionnaire used some sort of discounting method for evaluating the worth of a project. Again however there seemed to be misuse of the methods. One company claiming to use the net present value method stated that it deducted depreciation from the cash flows before calculating the N. P. V. at a discount rate of 8 per cent. Another company, using the future value method, calculated it on a different basis to that established by theory. After deducting these two companies, it seemed that four of the eleven companies replying to the questionnaire were using discounting methods correctly. The general impression gained from interviews was that the largest French companies were beginning to use advanced methods, the impetus coming from the Common Market. An executive of a large company manufacturing heavy

1 8 per cent is the rate stated by the Treasury as the rate corresponding "broadly to the prospective opportunity cost of capital for large economic undertakings" - a quote from "The Appraisal of Nationalised Industry Investment Projects" op. cit.

2 See "Investment Choice in the Electricity Supply Industry - Some Recent Developments" - R. L. Meek - District Bank Review, March 1965 and "The Treasury Under the Tories, 1951-1964" - Samuel Brittain - Penguin Books 1964.

engineering products spoke of a conference in January 1965 at which 90 per cent of the companies attending stated that they used discounting methods. This statement is difficult to reconcile with the findings of Smith and Remmers¹. In their survey they state that "qualitative classifications such as 'very important', 'important', 'less important', continue to be the operative categories into which the majority of businesses sort their possible capital expenditures" and they go on to say that, "the basic difficulty was the lack of adequate cost data. . . . as a consequence the factor considered to be of the greatest practical importance was the ranking given to an item by the department manager concerned. . . . the managers were engineers and they seemed reluctant to admit that there could be a need for any justification beyond the promptings of their good sense".

The impression gained from the interviews was that projects are generally given a very complete technical study. Discounting methods seem to be more widely used than in British companies of similar size. This is supported by the experience of a French management consultant who stated that discounting methods are generally used in French companies with an annual sales turnover exceeding F100 million (approximately £7.5 million). French companies are generally engineering-oriented whereas British companies tend to be more influenced by accounting considerations, and this may explain the French use of discounting methods as opposed to traditional accounting methods.

Large French companies generally placed much emphasis on "the influence of government action on their investment decisions". By 'government action' they seemed to mean the direct influence which the government exercised through incentives and purchasing power. As was stated by Political and Economic Planning in the booklet "French Planning - Some Lessons for Britain"² - "they (the incentives) have introduced into the planning system, the notion of a contract between individual firms and the state which requires a much greater degree of intervention in the internal affairs of firms than has up to now been accepted by

1 "Investment Decisions in French Industry" op. cit. 2 PEP - September 1963, page 388.

British industry". On the other hand, little importance was attached to French planning as an influence on investment policy.

The proportion of national investment directly controlled by the State in France is equal to approximately fifty per cent. Gaz de France, Electricité de France, and S.N.C.F. (French railways) use discounting methods and Charbonnages de France stated that they use the N. P.V. method - "la comparaison de la valeur actualisée des resultats avec l'investissement initial".

Companies in France, as in Britain, use a wide variety of cut-off rates as guidelines for the approval or rejection of projects. The nationalised industries, on the other hand, generally use, as a guide, the rate set out in the French plan. For the 4th plan this was set at 7 per cent, but it was thought that this would be raised to 8 or 10 per cent for the 5th plan.

The appraisal practices used by the French nationalised industries probably correspond closely to the theory because "a majority of French economic theorists are associated in one capacity or another with the nationalised industries, some in the highest managerial posts".¹

(iii) The U.S.A. In "Topics of Cost Accounting and Decisions"² Bierman states that "... in fact, this (cash pay back) is the most common method in use at the time this book is being written". In "Management of Corporate Capital"³ Hill says "The Committee found that a surprising number of companies had no system of evaluating or justifying capital expenditures but depended entirely on the judgement of their executives".

In a survey of 127 American companies reported in the N.A.A. Bulletin of June 1960⁴, 116 used some sort of return. 66 companies used pay back, 59 the book R. R. , and 38 one of the discounting techniques. Professors Brockie and Grey in a survey

¹ "Capital Budgeting and Pricing in the French Nationalised Industries" T. Marschak - J. of Business Volume 33, 1960. ² McGraw-Hill, 1963. ³ Free Press of Glencoe, Illinois, 1959. ⁴ "A Glimpse at Practice in Calculating And Using Return on Investment" - N.A.A. Bulletin, June 1960.

of 57 large American manufacturers' investment¹ found that 85 per cent of the respondents used some form of P. B. method. An informal survey² of about 30 manufacturing companies made by a Vice-President of Thomas Edison Industries found that "the most universal standard employed by enlightened management is the return on investment the particular product will provide". Eisner³ found that the average return on initial cost was commonly used for major as well as minor investment and he expressed distress that the élite of American businessmen use this "crude" formulation of the rate of return.

In Istvan's more recent survey of 48 companies⁴ all but 7 stated that some minor proportion of their capital expenditure is treated as being 'absolutely necessary'. 16 of the companies used discounted cash flow (D. C. F.) for at least some of the projects (see below).

Method of Investment Appraisal

	Used as a :-	
	<u>Primary Measure</u>	<u>Secondary Measure</u>
D. C. F. (including the MAPI formula)	7	9
Book R. R.	24	8
P. B.	13	21
Others	<u>4</u>	44
Total	<u>48</u>	

Istvan stated that 'there is apparently a direct correlation between the use of this measure of acceptability (D. C. F.) and a generally superior capital expenditure programme'. In the Minneapolis Project⁵ Heller discovered considerable use of pay-off formulae but diversity and irrationality 'in the method of calculation and in the treatment of income taxes and interest'. De Chazeau⁶ also finds 'stubborn resistance of businessmen to scientific economic formulae for the timing of capital

1 Economic Journal, December 1956. pp. 662-676. 2 Dun's Review, January 1957 page 39. 3 Eisner - "Determinants of Capital Expenditure" - Merrill Research Foundation Project, 1951-1952. Published in Studies in Business Expectations and Planning No. 2, University of Illinois, 1956. 4 Istvan - "Capital Expenditure Decisions - How They Are Made in Large Corporations". Bureau of Business Research, Indiana University, 1961. 5 Heller - See Harvard Business Review - March, 1951-P.101. 6 De Chazeau - "Regularisation of Business Investment" in "Problems of Capital Formation" Vol. 19 - Conference on Research in Income and Wealth - National Bureau of Economic Research, Princeton U. P.

outlays', and Gort¹ found the use of illogical methods (for example, deduction of depreciation from income but not from capital) which may not reduce the level of investment because of the adjustment of the cut-off rate, but which almost certainly will lead to the wrong choice of investments.

On the basis of a number of surveys, Solomon concludes that "most large firms do not use refined capital rationing techniques though there may be a correlation between systematic capital budgeting, size, and separation"². Separation here means the divorce of ownership from control.

Norman E. Pflomm in a more recent study³ of the experiences of 346 manufacturing companies states that - "the pay-back period is the most commonly used financial measure of capital projects among operating companies".

On the basis of the above surveys and the interviews, companies in the U.S.A. tend to use more formalised techniques than French or British companies, but less than half of the large companies (those with net assets exceeding, say, \$30 million) use discounting techniques. The largest companies and particularly those in the capital intensive industries, such as oil and chemicals, tend to use the most advanced techniques and here the pattern is similar to that of the U.K. and France. An executive in an American chemical company stated that the gestation period for projects in these two industries was generally longer than that for projects in most other industries and he thought that this made these companies time-conscious, thereby inducing them to use a method of appraisal which takes account of the time value of money.

1 Gort - "The Planning of Investment - a Study of Capital Budgeting in the Electrical Power Industry" - Journal of Business April/July 1951. 2 M. Solomon - "Investment Decisions in Small Businesses". Kentucky U.P. 1963. 3 Norman E. Pflomm - "Managing Capital Expenditures" - Study No. 107: National Industrial Conference Board, N.Y. 1963.

(ii) National Economic Profitability

(a) The Theory

Tinbergen¹ has pointed out three respects in which the appraisal of a project's worth to the community differs from the appraisal from the viewpoint of the individual firm². Firstly, whereas the firm will calculate the economic worth of a project using the market prices of production factors, the evaluation from the community's viewpoint should use prices which reflect the scarcity of these production factors. Market prices may not measure the marginal productivity of production factors because of imperfections in the market, and "Shadow" prices may therefore have to be imputed. Secondly the "community evaluation" should take into account such factors as the indirect or secondary benefits or costs which are attributable to the project. Thirdly the evaluation will measure the net return to the economy, by relating benefits to total costs³, rather than to any particular factor. The evaluation is therefore calculated in terms of the social rate of return⁴.

The relationships between projects, industries, and sectors of the economy may be assessed by means of input-output models. Work is in progress, for example, on the preparation of an input-output table for five to six hundred sectors of the American economy based on the census of manufacturers for 1963⁵. A social accounting matrix (S.A.M.) of the British economy has been prepared by Richard Stone and his colleagues at the University of Cambridge, England⁶. Statistics for these sorts of models are obviously not available in the developing countries but even very elementary

1 "Investment Criteria and Economic Growth" - Centre for International Studies - M.I.T., 1961. 2 For a study showing the adjustments required to reflect macro-economic rather than micro-economic values, see Bryce, Murray D. - "Industrial Development" New York - McGraw-Hill, 1960; also see page 100 seq of "Transport Planning in Developing Countries" - Harral and Kuhn - Brookings - Unpublished 1965. 3 See "Economics for Development" - S. Enke - Prentice-Hall 1964. 4 For a discussion of social marginal productivity see Kahn A. E. - "Investment Criteria in Development" - Quarterly Journal of Economics - February 1951. 5 See "The Structure of the U.S. Economy" - Wassily W. Leontief - Scientific American - April 1965. 6 See the series published under the general title of "A Programme for Growth" by Chapman and Hall.

Some of the particular factors that should be considered when the economic soundness of a project is being assessed are as follows:-

(1) "Shadow" Prices (a) Attention has already been drawn to the difference between the money cost and the opportunity cost of capital for a developing country. If, therefore, an evaluation is made using the N. P. V. technique, costs and benefits should be discounted at a rate which reflects the alternative use of the capital. (b) The price attached to labour inputs should again reflect the alternative use of the resources. If the market price does not reflect the marginal productivity of labour, the labour cost should be adjusted. (c) For various reasons, such as exchange controls or temporary loans, the official exchange rate may not be an equilibrium rate and it may therefore be helpful to evaluate the project at various 'penalty' rates of exchange.

(2) Secondary Benefits (a) Projects which have significant backward and forward linkage¹ effects may have a greater attraction for developing countries than projects without the same effects. The benefits arising from this sort of effect will usually be impossible to quantify, and it will only be possible to note the effects of the project on other sectors of the economy². (b) "A significant consideration in appraising a project is the extent to which it will result in the introduction into a country of new and advanced techniques..... When new techniques are introduced there often arises a problem of the existing industry which will be rendered obsolete, with the consequent loss in value of existing investment, cost of training new workers, dislocations, possible immediate decrease in total employment, increasing economic concentration, and so forth".² Again these factors are difficult to quantify and the emphasis is diverted to considering the project in relation to the economy as a whole. (c) Another non-quantifiable factor which may be worthy of consideration is the extent to which the project gives rise to "external economies". These may be defined as arising "wherever the output of a firm depends not only on the factors of production directly employed by it

1 See "The Economics of Take-Off Into Sustained Growth" - W. W. Rostow International Economic Association - 1964. 2 For a further discussion of this point see James A. Lynn "Temas del BID" op. cit.

but also on the output and factor use of other firms"¹. Such external economies arising from common service functions can only be evaluated by considering the project in relation to the economy or particular sectors or regions of the economy.

(b) The Practice

What are the factors that are in fact taken into account by financing agencies when a project proposal is being considered?

As is to be expected, the criteria differ according to the nature and objectives of the agencies.

(i) The U.K. (a) A director of an organisation established to provide investment finance to firms in the U.K. stated that the main criterion is the creditworthiness of the project, although for the more risky type of projects, a few of the industrial staff of the organisation spend two or three days with the sponsor checking on cost and market estimates. Some weight is also given to the promotion of exports but no formal study is made of the effects on the balance of payments. (b) A merchant bank stated that it, too, assesses projects on primarily qualitative grounds. For example, the quality of management, the degree of risk in the industry or country, and the business background are all factors which might be considered. (c) A government-sponsored development bank stated that the main criteria employed were:-

- does the project fit in with the government's plans?
- is the project commercially profitable?
- is the project technically feasible? and
- are the sponsors "politically acceptable" in their own country?

¹ See J.E. Meade - "External Economies and Diseconomies in a Competitive Situation" - Economic Journal Vol. 62 No. 1. March 1952.

No discounting analysis is carried out by the bank and the main economic criterion again seems to be the repayment of the loan, though the quality of management is an important consideration. The bank operates through a number of "development companies" in various territories and for the guidance of such companies, a check-list has been prepared with fifty-two points raised under the headings of 'sponsor's status', 'suitability', 'stake in the project', 'general' (place in the bank's policy and development of the country), - 'process', 'management', 'marketing', 'finance', and 'terms of agreement'. The check-list is shown in Appendix 2.

A policy which has been used by one of the bank's development companies is to work up "Agreed Proposals" with the sponsor which contain full details of the project and the basis on which the development bank is prepared to invest. It appears that this scheme has been working well, because the "Agreed Proposals" are in a form which both the development bank and sponsors are prepared to sign as representing full details of the project as agreed by all parties - but subject to the approval of the respective Boards.

(ii) France Interviews were held with three employees of a government-supervised French development bank. It was stated that loans are generally given for industrial rather than infrastructural or agricultural projects and are often channelled through development banks in the particular countries.

The prime consideration is the creditworthiness of the borrower, although it is thought that the bank pays more attention than commercial banks to the secondary economic effects of the project.

It was stated that an assessment of the market is carried out and even though the market analysis is limited to one or two years ahead it enables the bank to avoid favourite 'prestige' projects, such as cement works and airlines. Cost-benefit analyses are not usually carried out, but consultants are occasionally employed to carry out technical appraisals. It was stated that only rarely are projects compared one with another. The bank had prepared a check list for the use of the sponsor and this asked for the sponsor's economic and financial background

and position, and details of the project's finances extending over the period of the loan. This is shown in Appendix 3.

(iii) The U.S.A. (a) The main criterion used by the commercial banks when investing in overseas development banks or projects again seems to be the ability of the sponsor to repay the loan. However when an equity investment is made, the banks calculate some sort of return. One bank stated that the ratio of the average annual return to the initial outlay is calculated. When comparing one project with another, the same bank stated that risk and 'social worth' were the chief factors to be considered if the profitability of each project was more or less equal. Again no detailed cost benefit or profitability analyses are made, but the bank has prepared a "check-list for project investments" for the guidance of applicants. The check-list asks for details of the applicant company's background; an outline of the project to be financed and its contribution to economic growth; details of the quality of the management, materials and labour supplies; markets; operations and financial results ("for at least the first three years of operations"); the investment climate; taxation; the sources of capital requirements; and, finally details of any feasibility studies carried out in connection with the project. The check-list is reproduced in Appendix 4. (b) The other financial institutions interviewed, that is, the Ex-Im Bank, the I. B. R. D., the A. I. D., the Inter-American Development Bank and the International Finance Corporation generally make detailed studies of projects.

The A. I. D. for example has prepared a Capital Assistance manual covering all phases of project preparation, evaluation and control: this consists of a few hundred pages of small type. A shorter booklet entitled, "Feasibility Studies, Economic and Technical Soundness Analysis - Capital Projects",¹ sets out the requirements of S. 611 of the Foreign Assistance Act of 1961², and S. 101 of the Foreign Aid and Related Agencies Appropriation Act of 1963 and then goes on to detail the steps to be taken when assessing the economic and technical soundness of various types of projects. The analysis for industrial projects is shown in

1 Agency for International Development, Washington, D. C. , October, 1964.

2 This requires that sufficient engineering, financial and other plans necessary to carry out the proposed capital activity together with a reasonably firm estimate of the cost of activity to the U. S. Government shall be completed before any funds are obligated.

Appendix 5. It was stated that discounting methods are sometimes used and that the screening mainly depends on the personal assessment of the head of the particular Capital Development Office dealing with the project. The importance of pre-feasibility studies and two stage analyses was stressed, and it was thought that too much emphasis had, in the past, been put on technical appraisals to the detriment of the economic appraisal. More stress should also be put on the comparison of alternatives,¹ although formalised procedures could not be established due to the diversity of projects. A.I.D. stated that it works closely with the multilateral agencies such as the I.B.R.D., the International Development Association (I.D.A.), the Inter-American Development Bank (I.D.B.), and the European Development Fund (E.D.F.)². The Capital Assistance Manual states that "... the role of A.I.D. should be viewed as that of a catalyst and supplement to other alternative sources of financing" and that "... absent overriding considerations, A.I.D. will not substitute its financing for financing available from the Export-Import Bank of Washington".

The techniques of development lending which have been evolved by the I.B.R.D. are set out in a booklet published in 1960³. The booklet consists of five chapters entitled Introduction, Creditworthiness, the Selection of Projects, the Appraisal of Projects, and the Supervision of Projects. "In general", the booklet states,

1 After studying a number of transport feasibility studies commissioned by A.I.D., Tillo E. Kuhn comes to the conclusion that - "many of the transport studies sponsored by A.I.D. in effect seek justifications of pre-determined decisions as opposed to 'evaluations' of meaningful alternatives," see page 190 of "Transport Planning in Developing Countries" by Clell G. Harral and Tillo E. Kuhn of The Brookings Institution (1965 unpublished); see pages 191-193 for other criticisms. 2 The impression gained from the interviews with the financial agencies was that very rarely does conflict between agencies occur. This is usually because either (i) the agencies finance different types of projects or (ii) their efforts are co-ordinated by the Development Assistance Committee of the O.E.C.D., or through more 'ad hoc' organisations such as financial consortia and consultative and co-ordinating groups. For example consultative groups organised by the I.B.R.D. (for Colombia and Nigeria) aim at bringing actual and potential donors together to consider the development efforts and external assistance needs of a specific recipient country. For details of other co-ordinating arrangements among aid donors see the 1964 review of "Development Assistance Efforts and Policies" published by the O.E.C.D. 3 See "Some Techniques of Development Lending" - the I.B.R.D. - Washington - September 1960.

.....the project appraisal has to answer three main questions which involve the investigation of the project from six different points of view.

The first of these questions is: are the goods or services to be produced by the project needed by the economy for consumption or for export? In order to answer this question, the project must be investigated from the economic point of view.

The second question is: is the project properly designed and planned? To answer this question, the project must be examined from four different points of view, namely, the technical, the managerial, the organisational, and the commercial.

The third question is: is the proposed method of financing the project appropriate and (where relevant) are the earnings prospects satisfactory? This requires an examination of the project from the financial point of view".

A form outlining the information required by the I. B. R. D. on light industrial projects is reproduced in Appendix 6. Again it was thought that there has, in the past, been an over-emphasis on technical appraisals. The Economic Development Institute of the I. B. R. D. have, however, been holding a series of Industrial Project Evaluation Courses which attempt to explain the principles, and give some examples, of the preparation, evaluation and control of capital projects¹

The other financing agencies interviewed, that is the International Finance Corporation, the Inter-American Development Bank, and the Ex-Im Bank seem to carry out detailed studies of industrial projects². Some of the points stressed by these institutions are as follows.

1 CEGOS, the French management consultancy firm, will be holding a conference in the last quarter of 1965 with the general title of "Techniques d'Etude Economique du Proje t Industriel", and a number of banks and companies are attempting to close the gap between theory and practice in the field of project appraisal by holding courses.

2 See e.g. "The Application of Investment Criteria in a Development Bank" - James A Lynn - Temas del BID ., April 1964. The minimum information required by the Ex-Im Bank from proposers is listed in Appendix 1 of "Industrial Development" - Bryce - op. cit. The International Finance Corporation also has a detailed check-list setting out the information required under eleven main headings

- [REDACTED]
1. "More importance is attached to the institutional framework than to theoretical concepts. Development banks are viewed as a particularly useful part of the institutional framework".
 2. "The effect on the Balance of Payments is usually quantified since foreign exchange is almost always a constraint".
 3. "New industries are generally preferred due to their linkage effects".
 4. "It is essential to study the economics of the country as a whole so as to reveal bottlenecks and the general stability of the economy. Every study shows the relationship of the project to the economy, although 'shadow' prices as such are generally not used".
 5. "The Du Pont formula¹ is generally used in the appraisal of a project, although discounting techniques are used for irrigation projects".²
 6. "There is usually an incentive to invest in infrastructure projects because of the greater ease of getting a government guarantee for these projects".
 7. "Cost-benefit analyses are not usually documented but we do try to take account of such factors as:
 - the effect on the Balance of Payments, both directly and indirectly through the action of the multiplier;
 - the labour intensity of the project;
 - the linkage effects;
 - the diversification effects on production and exports;
 - the impact on income distribution;
 - the promotion of technical skills.....

1 This was originally defined as the average income or benefit divided by the average capital employed. 2 Following the memorandum of President Kennedy dated May 15, 1962 and S.101 of the 1963 Foreign Aid Appropriations Act, cost-benefit studies are required for water or related land use projects.

....very seldom do we use shadow prices as such, but comparisons are made with a similar type of project in another country or with a simulated 'challenger'".

8. "Most projects are suggested on grounds of 'political expedience'. The problem is to find alternatives, and introduce objectivity into the analysis - that is, we act as an educational pressure-group".

There seems, among the international agencies, to be a rapidly growing concern that assistance funds be used more effectively but it was stated many times that three formidable obstacles are barring the way to such an improvement. Firstly the application of political prejudice to investment decisions; secondly, the difficulty of collecting data on which to base a detailed appraisal; and thirdly the shortage of projects¹.

1 See Chapter 1 and pages 210/211 of "Transport Planning in Developing Countries" op. cit.

CHAPTER 3. THE COLLECTION OF DATA; SOME
COMMON MISCONCEPTIONS; AND A DISCUSSION OF RISK AND UNCERTAINTY

(i) The Collection of data for the Assessment of Commercial
Profitability and Some Common Misconceptions

(a) The Collection of Data

(1) The U. K. "Few would complain that the British manufacturer has neglected the use of market research in home markets: membership of the British Market Research Society is approximately 1,500 and total expenditure on all forms of domestic research - consumer and industrial markets, trade, media and advertising and sales - must now be in the neighbourhood of £15 million a year"¹. So states Mark Abrams. An expenditure of £15 million a year², however, represents less than 0.5 per cent of the turnover of these manufacturers. Moreover Carter and Williams have said" in our case studies we found relatively few firms with efficient arrangements for market research"³.

On the basis of a survey conducted among members of the British Market Research Society in March 1965, reported in the Financial Times (F. T.) Review of British Industry (July 1965), it is stated that "... it is highly unlikely that British industry spent as much as £1 million on overseas market research in 1964: more probably the figure was barely £500,000". The report also says that a majority had used "desk research", which did not involve interviewing. The respondents were drawn mainly from large and middle-sized firms with some interest in overseas markets.

1 The Financial Times Review of British Industry - "The Role of Market Research" - M. Abrams - July 1965. This article also contains a model or check list for overseas market research.

2 In a survey carried out in 1960 by the British Institute of Management total expenditure on market research, that is, both domestic and foreign, was estimated at £18 million.

3 "Investment in Innovation" - Oxford U. P. 1958.

[REDACTED]

If Jacques Lesourne's¹ division of marketing studies into (i) predictions and (ii) structure analysis is used, it would seem, on the basis of the F.T. Survey, the questionnaire replies, and the personal interviews that the majority of U.K. companies rarely use structure analysis when making market forecasts.

The fact that companies pay little attention to market research in general is reflected in the lack of market research applied to individual projects. For expansion projects, for example, companies in the F.T.U. survey generally forecast for five to ten years ahead, whereas replacement projects are generally appraised on their first year's savings. Quite extensive technical data are collected but rarely are these translated into detailed costs. In some cases the profitabilities of projects are not assessed at all (see Chapter 2), subsidiary measures are often used. This is particularly true of replacement projects, where comparisons in terms of labour productivity are often made. Three of the companies interviewed make extensive use of check-lists² to try to ensure that a reasonably accurate estimate of the capital outlay is obtained.

Many of the organisations in the survey, in fact more than one-third of those questioned, made "errors of principle" when collecting data. Some of the more common pitfalls are listed below in (i) (b) of this chapter. When these 'errors' (e.g. the allocation of existing overheads to a new plant) were pointed out, some of the executives could not understand that they were, in fact, "errors". They assumed that they were using the methods correctly.

All the thirty-seven companies giving replies to the questionnaire stated that outlays for working capital are included in an estimate of the capital outlay.

However a number of the companies interviewed merely apply the present ratio of current-to-fixed assets to project estimates and one company stated that credit received from suppliers is ignored³.

1 J. Lesourne - "Economic Analysis and Industrial Management" - Prentice Hall - 1963. 2 Examples of check-lists are given in "Perry's Chemical Engineer's Handbook" 4th Edition, Section 26-16.; in the July 1958 edition of "Petroleum Refiner"; and in "The Cost Engineer" of January, 1963.

3 Even though, in the balance sheet of this company for the year ending 31st December 1964, the figure for creditors was greater than that for debtors.

Rarely, it seems, are detailed estimates made of the build-up of inventories or credit given to customers in relation to individual projects.

Fourteen companies in the postal survey stated that they looked at the worth of a project after deducting company tax; sixteen stated that the return was usually calculated before tax. Other replies were vague and could not be classified: the vagueness arose from the introduction of Corporation Tax. One reason commonly given for estimating rates of return on a pre-tax basis was "..... because rates of taxation and of tax allowances are constantly changing," (the reply of a non-electrical engineering company). Seven of the sixteen "before tax companies" did, however, state that they "... would have regard to the benefit of capital allowances and in particular the "subsidy" which can arise from investment allowances" (reply of a holding company). In fact, comparing the various surveys¹ on this point, it is difficult to come to any definite conclusion as to whether or not the investment allowances have their designed effect. It can, however, safely be said that the effect of tax allowances on a project's worth is rarely examined by discounting techniques: and it is probable that the allowances do not have their intended effect.

Four of the organisations interviewed have attempted to assess explicitly the effects of a project on the total profitability of the enterprise. For example one oil company is attempting to set up models which would show more clearly the effects of a project on the other operations of the company. Another company, a large chemical company, requires that the pre-extension price and cost structure of a division of the company be compared with the post extension structure of the division on the project proposal form. The Electricity industry is also accustomed to studying the effect of an individual project on the existing activities of the industry because a new

¹ Cf para 316 of the Richardson report on Turnover Taxation Cmnd 2300 H.M.S.O. March 1964; the "Exeter Survey" by D. Corner and A. Williams reported in *Economica* February 1965; the "Southampton Survey" op. cit.; the information presented to the Radcliffe Committee by the Federation of British Industries (see *Principal Memoranda of Evidence to the Committee on the Working of the Monetary System* Vol. 2. pp 118-121); and "Replacement Policy", *National Institute Economic Review*, November, 1964.

generating station affects the merit order of all other stations¹. Some investments may, of course, have their own demand curve due not only to (i) the size of the investment; but also to (ii) the uniqueness of the product or service produced. The effect of large projects on the demand curve for existing products is however rarely assessed, with the notable exceptions of the organisations listed above.

(2) France. Of the organisations surveyed in France, the majority forecasts between five and ten years ahead for expansion projects above \$250,000, whilst for replacement projects a shorter period is generally considered. Only two of the organisations specified that forecasts are made for the economic life of the project. The impression gained from the interviews was that the market study is generally made in more detail than the marginal cost study; yet the market study is generally limited to desk research. French organisations are even less market oriented than their British counterparts. The cost structure of existing plants within the organisation is all too often assumed to apply to new expansion projects. Where the project involves the replacement² of existing assets, the comparison between the 'defender' and 'challenger' is usually conducted in terms of technical data.

The desk market research, for the companies interviewed usually involves a mere extrapolation of price and volume trends. Only rarely are analyses made of price elasticities and future trends of imports, or of the effects of competitors' likely reactions. Indeed the prime motive for a study of an expansion project seems to be a lengthening order book or the need to maintain a certain rate of growth or share of the market. A few companies use

1 "The Replacement of Obsolescent Plant" - F. Brown and R. Edwards - *Economica* - August 1961. If, however, the amount of capital to be invested is greater than the amount required to meet demand, the difference is known as "optional capital" and "it would normally be sanctioned only, if it could show a return of about 10 per cent net (about 16 per cent gross)" - see the "Report from the Select Committee on Nationalised Industries" - House of Commons Paper 236 - 1 - May 1963.

2 The distinction between replacement and expansion projects is an arbitrary one, but as stated in Chapter 1, it is a distinction which is commonly made by companies in the three countries.

standard forms for the presentation of projects but only rarely do these ask for detailed cost or market breakdowns. Only one of the companies interviewed uses an information check-list, although the majority said that they were "about to introduce them".

The Smith and Remmers study sheds little light on the forecasting techniques used by French companies, but it states that "it was almost always the technical considerations that were at the forefront of any choice".¹ The study also states that "expansion (in some cases) was intended to ensure that the firm could maintain its share of a developing market".

Very few of the executives interviewed had a grasp of the economic principles involved in the appraisal of a project and some of the more common misconceptions are detailed below.

Eight of the organisations stated, in reply to the questionnaire, that they take working capital requirements into account, but on further investigation, it seemed that, in many cases, the existing ratio of current to fixed assets is applied to the new project.

Approximately one half of the companies in the survey look at the return on a project before tax. One of these companies stated that "incitations" (incentives channelled through the Fonds de Développement Economique et Social) are always considered.

The companies interviewed seem to assess the effect of the project on the total organisation but this was not usually documented, and the assessment was usually made subjectively at the level of the Board of Directors.

The nationalised industries seem to make more detailed forecasts and analyses of projects. The Commission de l'Energie made forecasts for the 4th plan of the demand for energy in coal equivalent up to 1985 assuming certain price

1 "Investment Decisions in French Industry" op. cit.

levels. After making certain adjustments for other factors such as the cost of retraining coal workers and the security of supply, forecasts were then made of the investment required to meet the forecast demand at the lowest possible cost¹. When attempting to forecast the total demand for fuel, the elasticities of price and income were assumed to be constant as between fuel and other sectors of the economy. However, when the total fuel demand was apportioned between the various types of fuel, a number of forecasts were made for various price levels².

When appraising large projects, the French nationalised industries, especially those operating in the energy sector, generally study the effect of the project on the total organisation. This is especially necessary for Electricité de France since a new power station will affect the merit order of other stations³.

For some very large projects, detailed studies have been made by the Gas and Electricity industries and for some problems, linear programming and operational research techniques have been used⁴.

3. The U.S.A. Since American companies generally use more sophisticated measures in project appraisal and their planning horizon is

1. See "Le Rapport Général de la Commission de l'Energie" - L. Gouni - Revue Française de l'Energie, no. 139 - April 1962.

2. For details of the models used by the Commission de l'Energie for the 3rd Plan, see Chapter 7 of "Economic Analysis and Industrial Management" - J. Lesourne - op. cit.

3. For example, the EDF stated that "on évalue effectivement l'effet de tel ou tel projet sur l'ensemble déjà existant . . . la méthode utilisée est celle des bilans actualisés et le taux d'actualisation est de 7 pour cent."

4. See - P. Masse and R. Gibrat - "The application of Linear Programming to Investments in the Electric Power Industry" - Management Science - January 1957; - Etude de la Structure Optimale de l'Industrie du Raffinage et des Transports de Produits Pétroliers". Annales des Mines - November 1958; and "Les Choix des Investissements - Critères et Méthodes" - P. Massé - Dunod - Paris 1959.

longer, there is a presumption that their forecasting is more refined than that of French or British companies. This, however, can only be a presumption since the number of companies interviewed was too small to give good grounds for generalisations and the published surveys generally ignore the methods used to arrive at the data which form the basis for the project appraisal.

However, the three companies interviewed stated that, when collecting information for appraising projects involving an outlay of more than \$250,000, very detailed analyses are usually made. Such analyses involve a study of market structure rather than trends, and a build-up of costs from technical data. Two of the companies use detailed check-lists but no copies were made available¹. All three companies (one petroleum, one chemical, and one paper company) stated that they often employed consultants to carry out market and technical studies, especially for overseas projects.

A management consultant in New York thought that large American companies, (defined as those with sales turnovers above \$100 million a year) are very conscious of the need to check on sources of information, and he knew of "at least a dozen companies which had special project teams whose responsibilities included not merely the appraisal of projects but the complete phasing of projects from the initiation to the post-mortem"... When the interviewer pointed out that, compared to British and French companies, there seems to be a greater awareness amongst the three large American companies of the need to check on the accuracy of information behind a project appraisal, the consultant said that he thought that this was due to the greater use of probability techniques and sensitivity analyses by American companies.

The three companies interviewed stated that working capital and start-up

1. For some examples of check-lists used by American companies see pages 117-124 of "Managing Capital Expenditures" - Norman E. Pflomm - op. cit.

costs are always estimated, though how precise such estimates are depended on the relative importance of such elements in the total project cost; they also stated that tax implications are included on the proposal forms. When investing overseas, there seem to be five stages in the appraisal of a project which the paper and petroleum companies follow, once the potential for a project has been revealed¹. These five stages are:-

- i. a study of the overall investment "climate"² and an economic forecast for the next five to ten years.
- ii. A study of the incentives or disincentives to investment, such as exchange control; restrictions on the expatriation of dividends; tax allowances; grants; subsidies; tariff protection; etc.
- iii. A study of the size of the market; its relationship to the economic size of plant; the estimated percentage utilization of capacity; and the effect on the existing and forecast exports of the company to the country.
- iv. a broad evaluation and general analysis of the project and, then, if this is promising:-
- v. a detailed feasibility study.

1. The French, British and American companies and banks, revealed a variety of sources from which the initiative for a study of an overseas project might come; e.g. a preliminary market study revealing high levels of imports for particular products; information from the branches of the organisation; approaches from other companies with a view to starting a joint venture; approaches from development banks or government agencies; articles in trade journals; consultants; machinery manufacturers; these are the principal sources.

2. The importance of the investment "climate" is stressed by Bryce in "Industrial Development" (p. 34) op. cit. A study is currently being conducted into the investment 'climate' in a number of developing countries by the Business and Industry Advisory Committee of the O. E. C. D.

The interdependence of projects is taken into account by these companies by requiring that the corporate effect of a project be included on the proposal. The petroleum company gave an example of how a marketing and distribution expansion programme might necessitate an expansion of the refining facilities. Related investment is in fact estimated and included as a cash flow in the year in which it is expected to be incurred.

(B) Common Misconceptions

Some of the more common "errors of principle" besides those already mentioned which companies make when collecting data and appraising projects were found in the survey to be as follows.

- (i) Profit after depreciation is used for calculating the internal rate of return on a project by a large non-electrical engineering company in the U. K. and by a metal-manufacturing company in France.
- (ii) Book values of plant to be replaced are often taken into account when in fact they are irrelevant, unless of course they happen to coincide with the value of the assets in the best alternative use. (Many examples of this mistake were discovered in the U. K.⁽¹⁾ and France).
- (iii) Current overhead ratios are allocated to the new project by a machine tool manufacturer in France. Clearly only the marginal benefits or costs are relevant to the appraisal.
- (iv) Studies are often carried out on a "before-after basis" rather than on a "with-without basis". If it is estimated that without the project, profits

(1) See e. g. the "Special Report of the Select Committee on the Nationalised Industries - the Gas Industry" - House of Commons Paper number 218, 1962 para. 42; and "the Report from the Select Committee on Nationalised Industries - British Railways" - para. 210-225 - July 1960. House of Commons Paper 254.

will increase, this increase in profits should not be attributed to the project. The comparison should be conducted in terms of what will happen with and without the project.

(v) Development expenses, already paid, were included in the appraisal by a British engineering company. Clearly past costs are irrelevant, except in so far as they are a guide to the future.

(vi) interest payments are deducted from the cash inflow in the analysis and are also expected to be covered by the cut-off rate by a French tyre manufacturer.

(vii) forecast sales prices included an allowance for inflation, whereas factor costs did not, or vice-versa⁽¹⁾.

(viii) the gestation period is ignored by a French chemical company when discounting the cash flows.

(ix) the company's own labour used in construction is not charged to the project by a British textile manufacturer, even though such labour could profitably be used for other purposes.

(ii) The Collection of Data for the Assessment of National Economic Profitability and Some Common Misconceptions

(A) The Collection of Data. The development banks in France and the UK and the international agencies in Washington, stressed the need for careful forecasting of the market. It is important to study the market for the

(1) Very few of the companies interviewed made any explicit allowance for inflation, although two companies (one British and one American) stated that they assume a rise in real wage costs. This assessment was implicit, however, the companies stating that, other things being equal, more capital intensive methods would be preferred.

particular product which is going to be produced by the project rather than the market for the group within which the product is classified⁽¹⁾.

The agencies stated that they used check-lists so that (i) information was received in the form in which it was required and (ii) common pitfalls were avoided. Some of these check-lists have been referred to in Chapter 2 and examples are given in the Appendices. The institutions stressed the importance of pre-investment studies and comparisons with similar projects to check on the information given. In answer to the question - "Which, in your opinion, are the variables for which estimates are most commonly incorrect?", the IBRD, AID, and IFC gave the following:-

- (i) capital costs, and, in particular, costs of non-manufacturing facilities⁽²⁾;
 - (ii) estimates of working capital and pre-production expenses;
- and (iii) gestation periods.

It was thought that the use of check-lists, feasibility teams and comparisons with pre-investment surveys would improve the accuracy of these forecasts.

(B) Common Misconceptions. The following are some of the mistakes which were said to have been made in the past by sponsors and feasibility teams:

- (i) Taxes, duties, and subsidies had been included as economic benefits or losses to the community, whereas they are transfer payments and therefore irrelevant to the economic worth of the project. This does not, of course,

(1) For an illustration of a project failing in Puerto Rico because of an imprecise market study, see page 112 of "Industrial Development". op. cit.

(2) For details of non-manufacturing facilities commonly required for chemical projects see "Critical elements in reducing the risks of chemical ventures"- Arthur D. Little Inc., Cambridge, Mass.

mean that the fiscal effects of a project should be ignored. Taxes, especially in developing countries, may perform a very useful function as "forced savings". Nevertheless they should not be considered as a direct economic benefit attributable to the project.

(ii) Increases or decreases in the price of land as a result of the implementation of the project had often been included in assessments. If the factors leading to the increase or decrease in the price of the land have already been included in the project appraisal, there is of course an element of double-counting. Land had on the other hand often been assumed to be a free factor, and yet it should be valued at its alternative cost, that is, the next best use the community could make of it.

(iii) Capital was often valued at its money cost, whereas, as was emphasised in Chapter 2, it should be valued at its social opportunity cost.

(iv) Sometimes when foreign exchange had been scarce, it had been rationed to projects to the possible detriment of them all. A better course would have been to abandon some of the least worthwhile projects.

(v) A "fault" which was mentioned by the IBRD was the emergence of excess capacity through "copying". With the lack of innovatory ability and the attraction of high profits, there had been a tendency in some developing countries to imitate the successful enterprises. Reference was made to Saudi Arabia in this respect⁽¹⁾.

(iii) The Impact of Risk and Uncertainty

Up till now in this report, a high degree of certainty has been assumed when discussing the methods used for appraising projects. In fact, however,

(1) See the "General Survey Report on the Development of Industries in Saudi Arabia" prepared by Lackmeyer and Co., Frankfurt, Germany, 1961.

there is a considerable element of uncertainty in any forecast and a certain amount of risk attached to any project. Economists generally distinguish between risk and uncertainty but, since few organisations made this distinction, the two will be treated together under the collective title of "uncertainty"

In 1957, Roberts stated that "the most serious deficiency in the present state of knowledge about capital budgeting is the absence of a satisfactory framework for incorporating uncertainty into the analysis"⁽¹⁾ Since 1957 much has been written on the subject⁽²⁾, although few definite conclusions have been drawn from the analyses.

Basically, there seem to be five main methods of measuring the impact of uncertainty on a project. These are:-

- (i) Subjectively - that is, the degree of risk is "assessed" by the Board of the Company.
- (ii) Classification into risk-types - projects are classified according to their risk characteristics. A higher or lower financial return is required for each risk-grouping.
- (iii) Minimax - this 'method' was developed by Wald ("Statistical decision-

(1) H. V. Roberts - "Current problems in the Economics of Capital Budgeting" - Journal of Business - January 1957.

(2) See for example. S. W. Hess and H. A. Quigley - "Analysis of Risk in Investments using Monte Carlo techniques" - Chemical Engineering Symposium Series 42 - N. Y. - American Institute of Chemical Engineering 1963; Frederick S. Hillier - "The Derivation of Probabilistic Information for the Evaluation of Risky Investments" - Management Science, April 1963; and David B. Hertz - "Risk analysis in Capital Investment" - Harvard Business Review - January-February, 1964. There are, of course, discussions about the treatment of risk and uncertainty in the recently-published text-books on capital budgeting and investment appraisal.

functions" - Wiley); and Savage ("Foundations of Statistics" - Wiley). The minimax analysis merely sets out the maximum gain or loss that can result from a given project. The analysis then permits the decision-taker to choose that project which will lead to the minimum loss in the event of adverse circumstances.

(iv) Probability theories - Various methods attempt to attach probabilities to ranges of variables, thereby presenting the decision-taker with a range of profits and losses and the probability of achieving them.

(v) Sensitivity analysis - this is a method which attempts to calculate the sensitivity of the worth of a project to fluctuations in the data; its use enables decision-takers to see the effect on the project's worth of variations in sales levels, price levels, input-output ratios, capital cost, etc.

H. Aubrey questions whether a probability approach is suitable for investment decisions in developing countries since "instead of large numbers turning ignorance into knowledge, we are faced with a kind of uncertainty that is another form of ignorance"(1).

The most suitable form of analysis will probably be two-fold. In order to show the loss resulting from the total failure of the project

a capital recovery analysis, showing the percentage recovery of capital through time, will be appropriate. On the other hand, in order to show the effects of fluctuations in sales or costs, or to pinpoint the variables for which more information is required, a sensitivity analysis will generally be most useful(2). For example if, as a result of such an analysis, it is discovered that the price of a material is crucial to the worth of a project, it may be worthwhile trying to negotiate a contract

(1) H. G. Aubrey - "Investment Decisions in Underdeveloped Countries" in "Capital Formation and Economic Growth" NBER 1955.

(2) This is the method favoured by Jacques Lesourne ("Economic Analysis and Industrial Management" op. cit.) and the Economic Development Institute of the World Bank.

or guarantee for the price of that material in order to reduce the risk of the project. Similarly a sensitivity analysis can be useful for calculating the minimum tax allowance or grant required from the government to make the project worthwhile.

Sensitivity analysis is, however, rarely used by organisations in France and the UK. In the UK and France, for example, the various "methods" stated as used were:-

Risk 'assessed'	Organisations in:-	
	<u>the UK</u>	<u>France</u>
(i) subjectively	36	9
(ii) by classifying and requiring different rates of return or pay-back periods for various "types" of investment	6	2
(iii) by measuring the return on the capital at risk or by means of explicit probability or sensitivity analysis.	<u>10</u>	<u>4</u>
Total of companies and nationalised industries interviewed and surveyed	<u>52</u>	<u>15</u>

A number of those companies and organisations using sensitivity analysis have prepared computer programmes for calculating the worth of an investment and it involves a mere few seconds of the computer's time to calculate the effect of a change in one or more of the variables⁽¹⁾. However, as the Courtauld's Manual⁽²⁾ points out on page 28 - "variations on the main underlying assumptions made for the project often do not necessitate complete re-calculations of the DCF return". The effect of the change is merely calculated in cash terms; the net present value of these cash flows calculated; the net present values for the project are then discovered; and a new discounted rate of return is then found by interpolation.

(1) See The Times, London - April 29th, 1965 - "Estimating Profits by Computer" - for a reference to the use of analogue computers in DCF analysis.

(2) Discounted Cash Flow" - A. M. Alfred and J. B. Evans. op. cit.

Sensitivity analysis seems to have been only recently applied by the companies using it. For example the manager of planning operations in a British computer company stated that "we are taking the first steps towards allowing for differences in risk. This is done by ascribing quantitative percentages to major factors and by evaluating the results with the upper and lower confidence limit used. We have a company model expressed in the form of a computer programme. This enables many possibilities to be evaluated rapidly. It also means that all factors can be changed by set amounts to establish those factors which have the greatest effect on the final result. The factors so determined receive special attention."

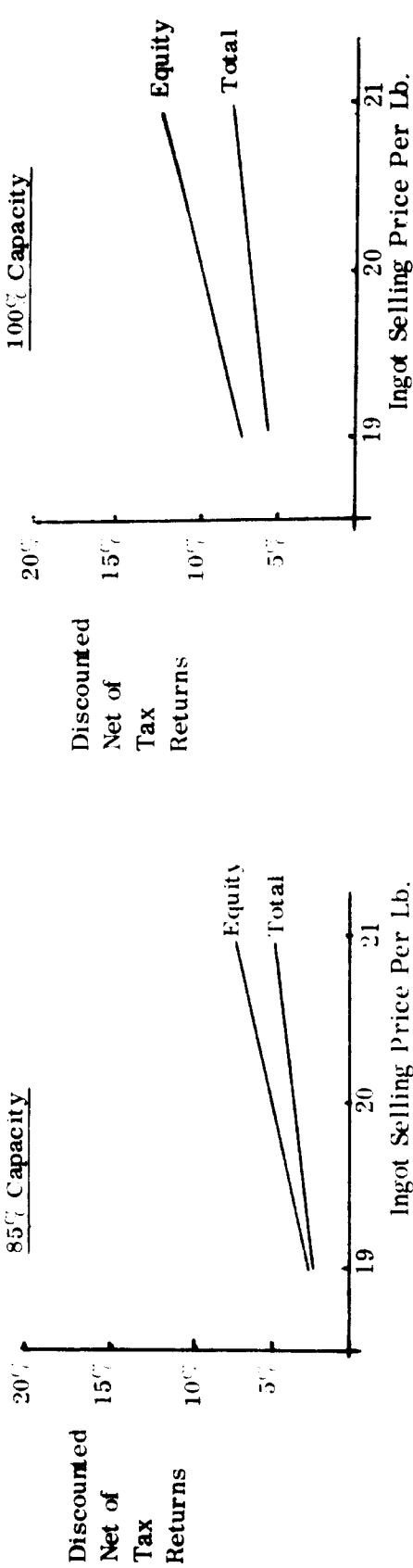
The Commission de l'Energie has used sensitivity analysis for the 4th plan to assess the effects on the energy programme of changes in prices, costs, imports, and exports of various types of fuel. Companies stated that they had used it in connection with overseas investments to determine the minimum price for a contract, or tax allowance from a government, that could be accepted, whilst still leaving the project economically viable.

Companies made extensive use of charts to show the effect of various assumptions on the profitability of a project. In the example on page 50 a company has shown the rates of return earned on equity and total investment for a project depending on the level of -

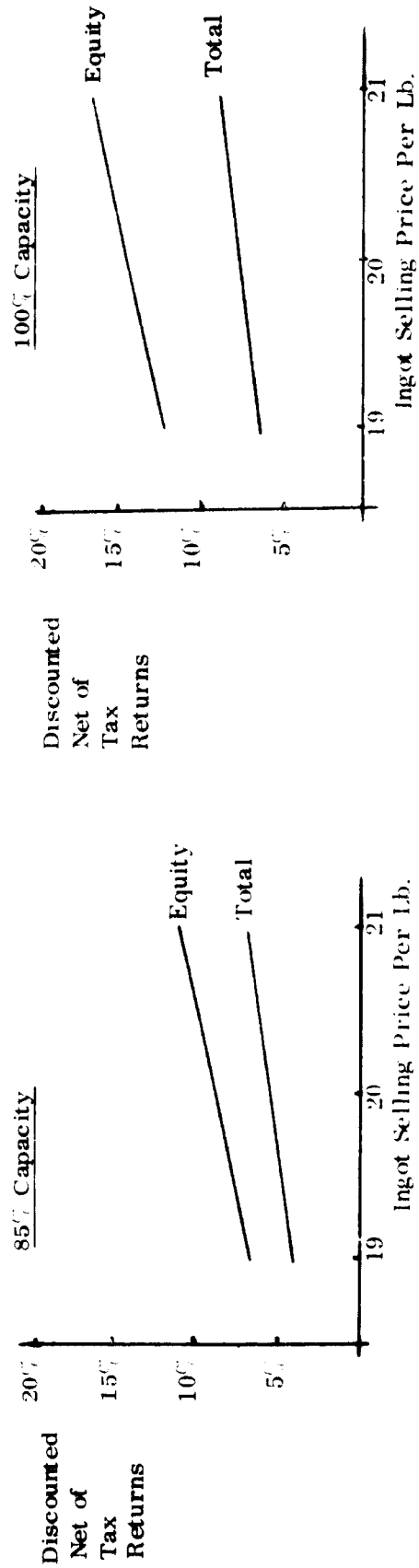
- (i) the selling price.
- (ii) the tax payable and
- (iii) the utilisation of capacity.

The company emphasised that the use of charts could save time in negotiations with customers, suppliers or the government, and would reveal the 'critical' variables to be further investigated. Attention could then be directed towards unearthing more information, or towards discovering methods of reducing risk arising from fluctuations in such variables. Some of the

PESIMISTIC TAX CASE



MOST FAVOURABLE TAX CASE



methods stated to have been used by companies for reducing the risk of a project, especially an overseas one, are:-

- (1) Contracts with suppliers or customers - turnkey contracts for the construction of plant were said to be especially useful for reducing uncertainty.
- (2) Joint ventures with other companies for part or the whole of the project.
- (3) Government tax, tariff or subsidy guarantees: or compensation guarantees in the event of a devaluation.
- (4) Government-backed capital loans or, better still, local equity investments.
- (5) Flexible commitments - e. g. designing a plant so that it can use more than one type of raw material.

Where some of the capital 'tied up' in the project has a high value in alternative uses (for example, if resold), the project will obviously be less risky than one which utilises capital specific to itself, since if the project fails to be profitable, "losses can be cut" by using the assets in the alternative use. For example most of the capital sunk in oil exploration is 'at risk' whereas a retail shop will usually have a high alternative value relative to its cost, and therefore only a small proportion is at risk. One company stated that it did not use the pay-back method in the assessment of risk because of its failure to measure the return on the capital at risk⁽¹⁾.

(1) For the description of a method which tries to measure the return on the capital "at risk" see page 190 of "The Finance and Analysis of Capital Projects" - Merrett and Sykes - Longmans, Green and Co. Ltd, London, 1963.

The American companies interviewed all used some form of probability or minimax analysis in conjunction with sensitivity analysis.

The international agencies generally favoured sensitivity analyses for the appraisal of projects; they did however differentiate between the risk and uncertainty attributable to a project. For example, some risks could be insured against⁽¹⁾, whereas by definition the range of uncertainty was unknown. It was emphasised however that sensitivity analysis could be very useful in revealing the effects of various ranges of shadow prices on the economic profitability of the project.

(1) One agency stated that it sometimes insured against the erosion of its loan through local currency inflation, by requiring that repayments be made in dollars.

CHAPTER 4. THE CONTROL, MANAGEMENT AND POST-MORTEM APPRAISAL OF PROJECTS

The appraisal of an industrial project can be split into four parts. Assuming that a plan has been worked out for the company or country, a plan in the context of which the individual project can be appraised, the stages in the appraisal of a project will be:-

- (1) The initiation and pre-feasibility study of the project.
- (2) The evaluation of the benefits arising from a project; comparison with the alternatives; and its authorisation or rejection.
- (3) The scheduling and control of the project and
- (4) The post-mortem of the project.

In the previous three chapters, the discussion has ranged from the initiation of potential opportunities to the evaluation of a project. This chapter discusses the methods used by companies, nationalised industries and financial institutions to control, manage and post-audit projects.

(i) Control of Projects

In its reply to the questionnaire a large British pharmaceutical manufacturer wrote - "The questionnaire makes no reference to one of our biggest difficulties - that of controlling costs once a project has been approved". Another company, a paper manufacturer, stated that "once a project is commenced, it is a question of strict control of expenditure and one of the fundamentals is detailed specifications to ensure that quotations are on a comprehensive basis; this requires to be accompanied by close contractual arrangements - preferably of a recognised character. The United Nations General Conditions for the Supply of Plant and Machinery for Export could probably be adapted.

To keep expenditure under close surveillance we make a practice of having a formal monthly review with the production of a Cost Control Sheet showing the various items as in the estimate and an up-to-date revised "anticipated final cost". In our experience projects tend to get out of control from a cost point of view when work commences on site and we recommend if at all possible the avoidance of "time and material" contracts. There must also be a strict control of the delegation of authority to place orders on site".

Two of the companies interviewed in Paris emphasised the importance of project cost control, and the benefits to be derived from using simple management techniques (such as budgeting and critical path scheduling⁽¹⁾) to control the cost. All three companies in the USA stated that they used network analysis (another name for Critical Path Scheduling) to plan and control project construction time and expenditure. Two stated that they were developing network-based cost analyses to facilitate decision-making in the event of the project cost exceeding the estimate.

It was emphasised that project planning not only helped in controlling expenditure but also in improving cash forecasts. One British company stated that "we find basing requirements on the knowledge of due dates from quotations, etc., results in forecasting requirements before actually required". Cash forecasting was pointed out as being particularly beneficial when capital was scarce, or expensive.

(1) The critical path method (CPM) was devised by the Central Electricity Generating Board research section in 1957. In 1958 a similar system was adopted in the United States where it has been notably successful in planning the design and manufacture of Polaris missiles. The use of these techniques is said to have shortened the Polaris project by more than two years. Variants of CPM, such as Programme and Evaluation Review Technique (PERT) and Resource Allocation and Multi-Product Scheduling (RAMPS) have been developed and in its various forms it is used by a number of companies in the UK, USA and France (for examples of applications in Britain see "Critical Path Analysis - 18 case histories" - British Productivity Council - 1964).

Since project construction costs are difficult to control, especially in overseas territories, companies generally favour turnkey contracts. If it were not possible to arrange such contracts, companies emphasised that strict control was essential with proper use being made of material requisitions, works orders and other control procedures.

(ii) Management

"The commonest type of capital budgeting organisation "say Merrett and Sykes⁽¹⁾" is that where the capital budgeting decision is largely taken or at least almost all the investigation and analysis is performed by that department primarily interested in the project". This would seem to be confirmed by the Smith and Remmers Study and it is almost certainly true of the small and medium-sized companies. Large projects (those above £100,000) in the larger companies (those with net assets above £50 million) are usually appraised by specialist committees or departments.

If the appraisal and presentation of a project proposal is assigned to the originating department, the job of project evaluation is almost certain to be made more difficult, especially if there is no standard form of presentation and analysis. It is probably because so few firms have formalised capital budgeting procedures that there are few in which the analysis and evaluation of projects is a special management function.

Those companies which had assigned the comparison, analysis and evaluation of projects to one person or department thought that this meant that a more objective analysis of the project would be made than if the job were assigned to a person or department with other responsibilities.

Most of the large organisations in the UK and France, that is the nationalised industries and the largest, say, 10 companies, have departments the sole responsibility of which is to plan, analyse, and recommend control procedures

(1) "The Finance and Analysis of Capital Projects" op cit.

for capital expenditure. The three American companies had similar departments which were called planning departments.

The international agencies and the English and French development banks generally differentiate between the management required (i) for a feasibility study and (ii) for the supervision of a project.

The agencies found it difficult to generalise on the ideal team for a feasibility study but thought that the minimum team should consist of an accountant, an economist and an engineer. The IBRD and AID stated that it was difficult to eliminate bias from reports and studies, but it was thought that with the use of check lists and pre-investment studies, the risk of bias on the part of the feasibility team or member of the team could be reduced.

The IBRD stated that the number and quality of applications would be improved if there were some standardisation of arrangements for financial and technical assistance.

As far as the supervision of projects is concerned the IBRD state in their booklet - "Some Techniques of Development Lending⁽¹⁾" - "Experience shows that, at least for a lender, there are strong arguments against the method, at first sight attractive, of supervising a project by means of a resident representative. The main disadvantage of this type of supervision is the risk that the leader will unintentionally but inevitably become involved in management decisions which should be the responsibility of those running the project. On the other hand, there are risks involved in depending exclusively on written reports submitted by the borrower. Such written reports are certainly necessary for the efficient management of the project, and should therefore be readily available without the need for special procedures".

(1) "Some Techniques of Development Lending" - IBRD - September 1960.

The agencies were generally against their own staff supervising the project or interfering with the project in any way; and this emphasised the importance of the project appraisal. There were usually objections by developing countries to the employment of foreigners in positions of management responsibility. Industrial development banks were therefore often used by agencies to provide services that would otherwise have been provided by expatriates.

(iii) Post-Mortems

The answers to question 8 in the questionnaire were analysed as follows:-

	<u>Number of Companies in</u>	
	<u>the UK</u>	<u>France</u>
- No post-mortems on individual projects:-	14	4
- Post-mortems on "most large projects"	10	4
- Other answers - "post-mortems in the early days of production; on samples of projects; on "very large projects", etc.	8	2
Non-classifiable	<u>5</u>	<u>1</u>
	<u>37</u>	<u>11</u>

The classification of answers was, to a large extent, arbitrary.

Most companies seem to have a follow-up procedure on expenditure but it is not clear how thorough are the investigations of differences between the actual and estimated expenditures. It is likely that few companies check the actual date of expenditure with the scheduled date. This would seem to be true of American as well as British and French companies, for, of the forty-eight firms studied by Istvan⁽¹⁾, only twenty-one included an audit of the time dimension in their capital expenditure programmes.

(1) D. Istvan - "Capital Expenditure Decisions - how they are made in large corporations" - op. cit.

Since capital will generally be committed to a project from the time of the decision to go ahead with that project, any delay in the construction will cost the firm money. For example if \$500,000 is "tied up" for only six months by a company with an opportunity cost of capital of 10 per cent, the cost to the company in terms of the alternative forgone will be \$25,000.

In the Smith and Remniers study of French companies it was stated that "most firms did not attempt any subsequent review of capital expenditures once they had been made the largest firm in our sample had a department whose main function was to calculate 'a posteriori' the profitability of the most important projects, and find out the reasons for any deviations from the original estimates. In a few other cases certain investments selected at random were followed up. But in all the instances in which some kind of review was being carried out, considerable leeway was allowed before any explanation was demanded from those responsible".

It seemed from the postal survey and interviews⁽¹⁾ that few companies or nationalised industries in France or the UK had any systematic procedure for examining the results of individual projects. A variety of reasons were given for not examining projects individually. The main reason given was that - "it is often impossible to isolate the results of individual projects due to their interdependence with other activities". In this respect one reply from a British fertiliser manufacturer was fairly typical - "once a new process has become embedded within a works total, redistribution of overheads makes a strict comparison of profitability hardly worthwhile. An overall measure of profit before tax to assets at replacement value is preferred". Most companies seemed to review and 'control' the

(1) Tibor Barna found in his survey that "... one firm in four in the sample conducted occasional inquests into the success of projects . . ." and that "... regular scrutini es of the results of investments are few and cursory".

"Investment and Growth Policies in British Industrial Firms" op. cit.

profitability of projects by building the project estimates into the total budget "thus a cycle of plan, budget, achievement, plan is maintained" - quote from a British confectionery manufacturer.

Other reasons given for not following-up projects individually were:- changing circumstances; cost inaccuracies; conflict of personalities; and lack of managerial time. Indeed the post-mortem of individual projects is rarely a specific responsibility and the task is usually carried out when management has some spare time.

Some companies however, notably two American companies, had made the post-mortems of projects a specific responsibility. Post-mortems in these companies seemed to be detailed but limited to a sample of projects or those above a certain value. Even in these companies, however, comparisons in terms of profitability were rare, and were usually made by looking at certain 'critical' variables.

Post-mortems were stated to be useful by a few companies, among whom one French producer of natural gas observed - "des leçons peuvent en être tirées pour les projets nouveaux".

Generally, however, little importance was attached to the post-mortems of individual projects although the majority of organisations emphasised the importance of budgetary control and "management by exceptions" i. e. the method of control whereby the management of an organisation directs its attention to deviations from pre-determined targets.

An executive in the AID stated that "rarely are detailed post-audits carried out" in the territories for which he is responsible. The IBRD, Ex-Im Bank and IDB stated that detailed post-mortems are carried out where projects 'go off the rails' but not as a matter of course.

[REDACTED]

The general absence of, and difficulty of carrying out, post-mortems on individual projects emphasises the importance of:-

(1) the close control of the assets of the organisation as a whole:-

and (2) the careful appraisal and planning of projects before any capital is committed.

APPENDIX 1.

Present Value of £1.

$Vn/r = (1 + r)^{-n}$ - to determine the present value of future cash flows.

<u>Year</u>	<u>Percentage</u>							
	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>	<u>14</u>	<u>16</u>	<u>18</u>
1	.96	.94	.93	.91	.89	.88	.86	.85
2	.92	.89	.86	.83	.80	.77	.74	.72
3	.89	.84	.79	.75	.71	.67	.64	.61
4	.85	.79	.74	.68	.64	.59	.55	.52
5	.82	.75	.68	.62	.57	.52	.48	.44
6	.79	.70	.63	.56	.51	.46	.41	.37
7	.76	.67	.58	.51	.45	.40	.35	.31
8	.73	.63	.54	.47	.40	.35	.31	.27
9	.70	.59	.50	.42	.36	.31	.26	.23
10	.68	.56	.46	.39	.32	.27	.23	.19

APPENDIX 2.

Project Appraisal : A Suggested Check-List

It is clearly impossible for any list such as this to be exhaustive since the possible variety of candidates for appraisal is infinite and the key to a project's viability may be a factor not here mentioned. Similarly the emphasis to be placed on the various factors will vary from project to project and the presence of one or more undesirable but inevitable features does not necessarily preclude a project's viability.

Check-List

Part I - Sponsors

1. Status

- 1) General business standing - bankers' references, Dun & Bradstreet report, local trade opinions, etc.
- 2) Are any political objections to the sponsors likely (either from Government, governing party, trade union, devco investors)?
- 3) If sponsors are a Company or Partnership:
 - a) What is paid up capital?
 - b) Do Memorandum and Articles contain any undesirable features?
 - c) Have legal requirements been complied with as regards registration, returns, etc. ?

d) Who are the Directors, Auditors, Bankers?

e) Is an audited balance sheet available?

2. Suitability

1) Past or present experience with the type of project proposed.

Other experience.

2) General business ability.

3) Enthusiasm and drive.

3. Stake in the Project

1) How much will the sponsors have at risk?

2) Are the sponsors involved in the management of the project?

3) Could the sponsors have an ulterior motive in promoting the project? What are their other business interests?

Part II. - The Project

1. General

1) Would investment in the project conflict with the stated policy of the devco? (Other policy objections, if any, will come to light through the clearance in principle procedure).

- 2) Does the project show promise of aiding the economic development of the country?
- 3) Does the project conflict with Government policy as stated so far? Are there any indications that Government policy might change in this respect?
- 4) Does the project provide for the comprehensive training of local citizens to all levels?

2. Process

- 1) Are there any legal restrictions on the proposed manufacture/construction/cultivation?
- 2) Are the topographical/ ecological/climatic conditions of the site suitable?
- 3) Has appropriate land tenure been secured?
- 4) Has the necessary infra-structure been established? Communications, power, water supply, etc. ?
- 5) Is adequate labour available? Are proposed conditions of work in accordance with employment regulations?
- 6) Is the supply of raw material assured? Are they subject to import controls or duty? Are supply arrangements 'at arms length'?
- 7) Is an outside technical appraisal necessary?
- 8) Is a pilot scheme desirable?

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3. Management

- 1) Is there proof of the ability of the proposed management?
- 2) Is there adequate provision for the supervision of technical aspects at all levels?
- 3) Is accounting staff adequate?
- 4) Is management's remuneration appropriate?

4. Marketing

- 1) What statistics are available for local and overseas products? Are any local or world trends observable? Is an outside analysis desirable?
 - 2) What competition can be expected?
 - 3) What is extent of management's knowledge of proposed markets?
 - 4) What are details of selling arrangements?
 - 5) Have any significant contracts already been secured? Can any Government business be expected?
 - 6) Can any tariff protection be obtained in the local market?
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5. Finance

- 1) Is capital gearing suited to the project?
- 2) Are estimates of development and running costs reasonable? Could devco investment be serviced?
- 3) What contingency provisions have been made?
- 4) Is adequate working capital provided?
- 5) Is devco asked to provide a disproportionate amount of the total financial requirement?
- 6) Have any other development institutions been approached? What were their reactions?
- 7) Has short-term bank finance been considered?

6. Terms of Agreement

- 1) Finance to be provided by sponsors.
- 2) Finance to be provided by devco: rate, repayment, security, limitation of right to create other charges.
- 3) Drawings: against schedule or certificates of work done.
- 4) Investigation/negotiation/commitment fees.

- 5) Provision of end finance.
- 6) Early repayment.
- 7) Pre-emption rights.
- 8) Insurance.
- 9) Appointment of auditors.
- 10) Inspection of books.
- 11) Right to receive accounts, progress reports.
- 12) Board representation.
- 13) Legal fees.

APPENDIX 3.

Dossier à Constituer par les Entreprises Privées qui Sollicitent un Pret Direct

A - Situation Economique

- 1^o - Historique de l'affaire.
- 2^o - Emplacement des centres de production et description des moyens de production (installations et matériel existant) avec indication de leur capacité de production, de leur état et de leur ancienneté.
- 3^o - Personnel employé (effectif et décomposition).
- 4^o - Evolution de l'activité au cours des dernières années: volume de la production ou des travaux exécutés et chiffre d'affaires des 5 derniers exercices - Débouchés et organisation commerciale.
- 5^o - Indication des filiales ou des sociétés appartenant au même groupe.

B - Situation Financière

- 1^o - Evolution du capital:
 - modalités de réalisation des dernières augmentations de capital,
 - liste des principaux actionnaires avec indication de la part qu'ils détiennent dans le capital
- 2^o - Bilans, comptes d'exploitation, comptes de profits et pertes, répartition des bénéfices, certifiés conformes (5 derniers exercices).
- 3^o - Situation financière récente et aperçu des résultats de l'exercice en cours.
- 4^o - Commentaire détaillé du dernier bilan approuvé et de la dernière situation financière:
 - Explication et décomposition des principaux postes,
 - Explication des variations de ces postes,
 - Crédits a court, moyen et long terme déjà obtenus par l'Entreprise et conditions de ces crédits (taux, modalités d'amortissement, garanties).
- 5^o - Indication de la valeur vénale des immobilisations, du matériel et du stock.
- 6^o - Créances privilégiées sur la Société et engagements pris par elle, notamment sous forme de caution.
- 7^o - Contentieux de l'entreprise: litiges en cours pour ou contre elle (objet et importance).

C - Note sur la Demande de Crédit

- 1^o - Programme dont la réalisation est actuellement envisagée (objectifs de production à atteindre et perspectives d'avenir en ce qui concerne l'approvisionnement de l'entreprise et ses débouchés).
- 2^o - Explications détaillées sur le programme d'équipement prévu. Décomposition et coût des investissements nécessaires.
- 3^o - Moyens de financement envisagés pour la partie du programme d'investissements que l'entreprise garde à sa charge.
- 4^o - Plan d'amortissement du crédit.
- 5^o - Prévisions des moyens d'amortissement.
Compte d'exploitation prévisionnel:
 - pendant l'exécution du programme d'investissements
 - après la réalisation de ce programme.
- 6^o - Garanties offertes: hypothèques, caution

D - Documents & Renseignements Annexes

- 1^o - Statuts à jour certifiés conformes.
- 2^o - Composition du Conseil d'Administration
- 3^o - Références sur les animateurs et les personnes qui assurent la Direction de l'entreprise.
- 4^o - Extrait de la délibération du Conseil d'Administration décidant de recourir au crédit et donnant les pouvoirs nécessaires aux mandataires désignés à cet effet.

APPENDIX 4.

Checklist for Project Investments

1. The Company to be Financed

- (a) Describe the (proposed) company, its capital structure, location and nature of major activities. Give biographical notes of promoters, principal stockholders, directors, management and bank references. If going concern, submit current balance sheets, earnings statements, financial history.

2. The Project to be Financed

- (a) Describe the project: Is it an expansion, modernization or a new undertaking? State and describe costs of plant and equipment. Describe products, their economic justification and contributions to the host country, i. e. , what will make it welcome in the host country? (Will it generate dollar income, save foreign exchange, utilize local raw materials or local labour?)

3. Management

- (a) State what experienced corporate entity will construct and operate the plant, its competence and foreign experience.
- (b) What local independent professional services will be used (lawyers, accountants, engineers, marketing experts, etc.)?

4. Raw Materials and Labour

- (a) List raw materials, source and cost. May they be freely imported?

- (b) What are labour requirements: Local and expatriate, skilled and unskilled? What provision for training and advancing local labour?

5. Markets

- (a) State projected demand and sales for next five years. What is the statistical basis of the projections? Where imports or exports are part of the market show quantities and value by country.
- (b) What is the competition, domestic and foreign?
- (c) Are there import restrictions, duties, or other government regulations which may affect sales either in the host country or export markets? Does the company have long-term sales contracts?

6. Operations and Financial Results

- (a) Submit:

1. Projections of output, costs, revenues, taxes and profits for at least the first three years of operations or for the period foreign debt will be outstanding. State construction and start-up time. (Cost items should include raw materials, labour, power, administrative expense, sales expense, depreciation and taxes).
2. Cash flow statement, showing source and disposition of funds during construction and for period corresponding with (1) above.

- (b) What provision is made for overruns in construction and start-up costs?

7. Government Environment

- (a) What role will government have in the project?

- (b) What incentives will it offer? What is government policy regarding repatriation of profits, dividends, interest and capital, entrance and residence of foreign technicians and other factors which may effect the project?

8. Taxation

State the effective rate of taxation, giving details of each tax, its rate and any tax preferences.

9. Capital Requirements and Financial Plan

Show in detail by source and currency how minimum capital needs will be met; include working capital and interest during construction. State efforts, if any, made to raise the required capital and approaches made to potential lenders or investors.

10. Independent Studies

If independent technical, cost, market or other studies have been made, submit these; if none made state what such arrangements will be made.

PROJECTED CASH FLOW

	Construction and Start-up Period <u>1 - X Months</u>	1st year <u>Operations</u>	2nd year <u>Operations</u>
<u>Cash Receipts</u>			
Paid in Equity			
Suppliers' Credits			
Long Term Debt			
Short Term Loans			
Increase in Accounts Payable			
Increase in Sundry Current Liabilities			
Net Profit After Taxes			
 Add Back:			
Non-Cash Charges Occurring Before:			
Net Profit After Taxes			
Depreciation			
Reserve for Bad Debts			
<u>Total Cash Receipts</u>			
 <u>Cash Disbursements</u>			
Capital Expenditures			
Replacements			
 Debt Repayment			
Short Term Loans			
Long Term Debt			
Suppliers' Credits			
 Inventory Increases			
Increase in Accounts Receivable			
Increase in Sundry Current Assets			
 Dividends			
<u>Total Cash Disbursements</u>			
 Net Cash Generated During Period			
 Accumulated Cash Position			

PROFIT AND LOSS PROJECTION

	Construction and Start-up Period <u>1 - X Months</u>	1st year <u>Operations</u>	2nd year <u>Operations</u>
<u>Net Sales</u>			
Less: Cost of Goods Sold			
Depreciation of Plant and Equipment			
<u>Gross Profit</u>			
Less: Selling General and Administrative Expenses			
<u>Net Operating Profit</u>			
Less: Interest			
Miscellaneous Charges			
Royalties			
Management Fees			
Sundry Taxes			
Reserve for Bad Debts			
<u>Net Profit Before Taxes</u>			
Less: Income Taxes			
<u>Net Profit After Taxes</u>			
 Legal and Other Reserves			
 Net Available to Stockholders			
 Dividends			
<u>To Earned Surplus</u>			

APPENDIX 5

Economic and Technical Soundness Analysis in Industrial Projects

(Plants for production or processing of commodities or manufacture of products such as cement, steel, fertilizer, food, textiles, wearing apparel, chemicals, etc., including expansion of existing plants).

(All topics in this outline should be considered in the Analysis, in so far as they are applicable to the project. Others should be included as necessary to complete the demonstration of the economic and technical soundness of the particular undertaking).

(For a detailed discussion of a step-by-step procedure for developing an industrial type project, analysing its technical and economic feasibility, and estimating both its commercial and national economic profitability the reader is referred to "INDUSTRIAL DEVELOPMENT - A Guide for Accelerating Economic Growth", by Murray D. Bryce (McGraw-Hill, 1960). Copies of this book will be available to all United States AID Missions, for the use of Applicants for A. I. D. financing.)

I Summary

Type of plant and kind and quantities of commodities to be produced.

Location, illustrated by map showing surroundings and tie-in with transportation facilities and existing utilities.

Distances to sources of supplies and raw materials, and to markets.

Relation of project to Applicant's present operations, if any. Benefits, cost and profitability.

Reference to any applicable reports (attached or readily available elsewhere).

II Commercial Economic Aspects

a Markets. Local or regional market trends during past five years for each major product and any closely related products, tabulated to show:

Domestic production.

Imports and exports.

Net local consumption, and anticipated development of the local market.

Present per capita consumption in country, and comparison with other countries.

Local laws, regulations or customs affecting marketing of proposed products, including import and export duties, tariffs, quotas, restrictions and subsidies.

If part of proposed production is intended for export, show for each major product:

Number of units expected to be exported.

Proposed markets and costs of transport and import duties.

b Applicant's Present Operations, If Any. Description of present operations, including those of subsidiaries or parent companies.

Complete financial statements including balance sheets, profit and loss statements and dividends paid for past five years (see Annexes C, D, and E Annual reports are usually acceptable in place of Annex C if reasonably equivalent information is given).

Present production capacity for each product.

Sales volume and value of each product for past five years showing separate figures for domestic and export sales.

Domestic and export prices, f. o. b. plant for past five years.

Estimated production of each major product in present plant for next five years.

Estimated additional production required to meet overall demand for next five years, including intended exports.

c Competitors. Names, location, present and future output, production costs, and selling prices of present local competitors in the same field of production.

Information as to any anticipated changes in competition, such as expansions, modernization, new plants, new competing products, etc.

Information as to foreign competition and any anticipated changes in laws or regulations which might affect volume of imports.

d Competitive Position. Selling prices to be met in domestic and export markets.
Estimated transportation costs and export expenses.
Maximum competitive selling prices f.o.b. plant.
Competitive advantages of proposed project:

Relative availability and cost of labour.
Availability and quality of raw materials.
Efficiency of modern production equipment and processes.
Quality of products.
Dependability of supply to consumers.

e Summary of Commercial Prospects. Schedule showing forecast of sales volume for the domestic market and each export market, and the percentage of the total market claimed in each case, with full explanation and justification.
Justification of the proposed capacity of the plant to be constructed.

III Engineering Aspects and Technical Soundness

a Design. Plant layout including storage for raw materials and finished products and provision for possible expansion.

Tie-in with transportation systems.

Types and size of major installed equipment items and structures, and justification of the selection of units and processes. (Avoid both obsolescent and experimental technology).

Function performed by each major unit.

Process flow sheet.

Auxiliary capital equipment (standby, spare parts, transport, materials handling, etc.).

Patents and licenses involved.

Planned capacity and build-up of output after start-up.

Estimated output as percentage of plant capacity for each of first five years of operation.

Anticipated use of consultants on special phases of final project design.

b Utilities Available or to be Provided. Requirements, source, availability, cost and reliability of all utilities. Pertinent data on each system, and reason for selection of source in each case, including comparison of advantage of purchasing against in-plant production.

Power requirement in peak KW demand and annual KWH consumption, initial and future.

Electrical system shown by single line diagram covering major power uses.

Fuel for heat, steam and plant processes.

Water balance of the plant where applicable. Problems relative to water treatment, disposal of effluents (liquid and gaseous), including any which may be noxious or dangerous.

Transportation facilities for raw materials and finished products.

c Materials for Use in Manufacturing Processes. Quantity, specifications, source and availability of raw and semifinished materials.

Proven reserves in case of minerals.

If semiprocessed materials are to be obtained from another plant, evaluate the technical and economic soundness of such plant.

Estimated costs, possible cost variations, custom duties, any preliminary agreements on price and delivery and details of any contracts entered into for supplies and major raw materials.

Available facilities for handling and storing.

d Plans and Specifications. Preliminary plans for all construction work in sufficient detail to permit calculation of work quantities.

Outline specifications for equipment and construction defining particularly those standards of quality which will have a significant effect on the cost of construction, with specific justification for any unusual standards adopted to conform with local conditions.

e Construction Labour, Materials and Equipment. Manpower requirements and availability, including skilled and unskilled labour, and technical and supervisory personnel.

Local availability of cement, steel, aggregates, water for concrete, building stone, lumber and other construction materials.

Types of construction equipment required for the work, indicating what is available locally and what must be imported.

f Special Construction Problems Foreseen. Climatic conditions, especially time and length of wet and dry seasons as they affect construction schedule and equipment use.

Necessity of keeping an existing plant in service.

Time required to obtain delivery of imported materials and equipment.

g Plan for Execution of Project. General construction plan.

Proposed methods of contracting for engineering, construction, and construction supervision.

Tests to be performed on completed plant.

Equipment guarantee to be required.

Engineering and construction schedules.

h Operating Organisation and Quality of Management. Description of organisation which will manage the business and supervise its operation accompanied by organisation chart, present and projected.

Required number and qualifications of management and technical employees.

Experience records of available key management and technical personnel.

Number, qualifications and availability of required operating employees.

Plans for recruiting and training.

Provisions for competent management and maintenance throughout the life of the proposed loan.

i Overall Technical Soundness. Justification of selection of location for project.

Proven reliability of plant processes and equipment.

Superiority of adopted processes.

Analysis of any adverse factors and measures to overcome them.

Assurance that plant described will produce the quantity and quality of products specified, on a continuing and dependable basis.

IV Financial Aspects

a Estimated Capital Cost. Estimates of cost of land, engineering and construction, prepared in accordance with Annex A so far as applicable.

Total estimated capital cost in U. S. dollars and local currency:

To be financed by Applicant.

To be financed by Loan/grant.

b Working Capital Requirements. Amount required at start-up of plant and at the end of the first, second and third years of operation, to cover raw materials, spare parts, auxiliary materials, goods in process, finished goods, accounts receivable and cash on hand.

Sources and availability of local and foreign currency funds required.

Anticipated occurrence of seasonal peaks in working capital requirements and method contemplated to meet such peak financial requirements.

c Production Cost (broken down to local currency and dollar costs)

An estimate of the direct cost of producing each of the major products and any intermediate products, supported by detailed calculations. (See Annex F for suggested form).

Adopted wage rates and production factors used in production cost analysis, taking into account legal wage and salary scales, including all fringe benefits such as social security, vacation pay, medical allowances, displacement allowances and travel pay, etc.

Provisions included for personnel facilities such as transportation, housing, subsistence, recreation, medical care, etc.

Number of shifts and days of operation per year used in calculations, and basis for determination.

Government preferences or allowances taken into account such as 1. exemption from or deferment of any general or specific taxes on products, 2. exemption from or deferment of corporate or local taxation and 3, any special depreciation allowances for tax purposes.

Estimated effect of possible wide fluctuation of any cost factors entering into computations.

Where applicant is producing the same or equivalent products in an existing plant, show present production cost in same general form.

Availability of foreign exchange to permit necessary imports of materials and supplies.

d Costs of Distributing and Selling. Description of methods of distributing and selling products and estimate of costs thereof.

Cost of advertising.

Administrative expense.

e Selling Prices. Proposed selling prices in domestic and export markets.

Deduction for cost of selling, distributing and transportation.

Net selling prices at the plant and adjustments that might be made in case of wide fluctuation of any of the cost factors.

f Profitability. Analysis of predicted Profit & Loss and Forecast of Earnings, Receipts & Expenditures, prepared as per Annex E.

Estimated level of production and sales at break-even point.

Estimate of net annual foreign exchange earnings from exports, if any.

General conclusions as to commercial profitability of the enterprise, including percentage of returns on total investment and on owner's equity.

V National Economic Benefits

List of benefits which will accrue to the economy, in addition to the profits earned by the project owners, such as:

Taxes paid to the government by the industry and import tariffs included in proposed sale prices of products.

More effective utilization of labour as compared with other available occupations.

Provision of a market for local raw materials.

Foreign exchange gain if products are exported, after taking into account any foreign exchange costs in project operation.

Benefits to consumers on account of lower prices or more dependable supply of goods.

Stimulation of other industrial efforts.

Training of people in factory operation and management.

Evaluation of above and other possible benefits in monetary terms where feasible.

Annex C Industrial or Commercial Project

Balance Sheet

Attach comparative balance sheets for the past five years, according to the following breakdown.

Assets

1. Current Assets:
 - a. Cash
 - b. Marketable securities
 - c. Notes Receivable (show separately amounts owed by subsidiaries; directors, shareholders, their families and agents; all other amounts other than normal commercial debts.)
 - d. Accounts Receivable from customers
 - e. Inventories
 - f. Other Assets (describe)

2. Investments:
 - a. In subsidiaries
 - b. Other Investments (describe)

3. Capital Assets:
 - a. Land
 - b. Building and Site Facilities
 - c. Machinery and Equipment
 - d. Construction in Progress
 - e. Other Capital Assets (describe)

4. Gross Assets: (1 thru 3)

5. Depreciation Reserves (state method of amortization)

6. Net Capital Assets (3 - 5)

7. Intangibles (patents, licenses, good will, trademarks, formulas, franchises, etc.)

8. Other Assets: (specify)

9. Total Assets (6 thru 8)

Liabilities

10. Current Liabilities (due within one year)

- a. Notes Payable
 - to banks or other short-term lending agencies
 - to holders of long-term debt maturing within one year
 - to directors, shareholders, their families, and agents
- b. Accounts payable to commercial creditors
- c. Contractors' bid and performance bonds
- d. Royalties
- e. Other Current Liabilities (describe)

11. Long-term Debt (over one year) (indicate terms)

12. Construction Costs Payable

Capital and Surplus

13. Capital, (authorized, issued and paid-in)

14. Reserves: (describe)

15. Surplus:

- a. Revaluation Surplus
- b. Earned Surplus (or Deficit)
- c. Net Surplus or Deficit

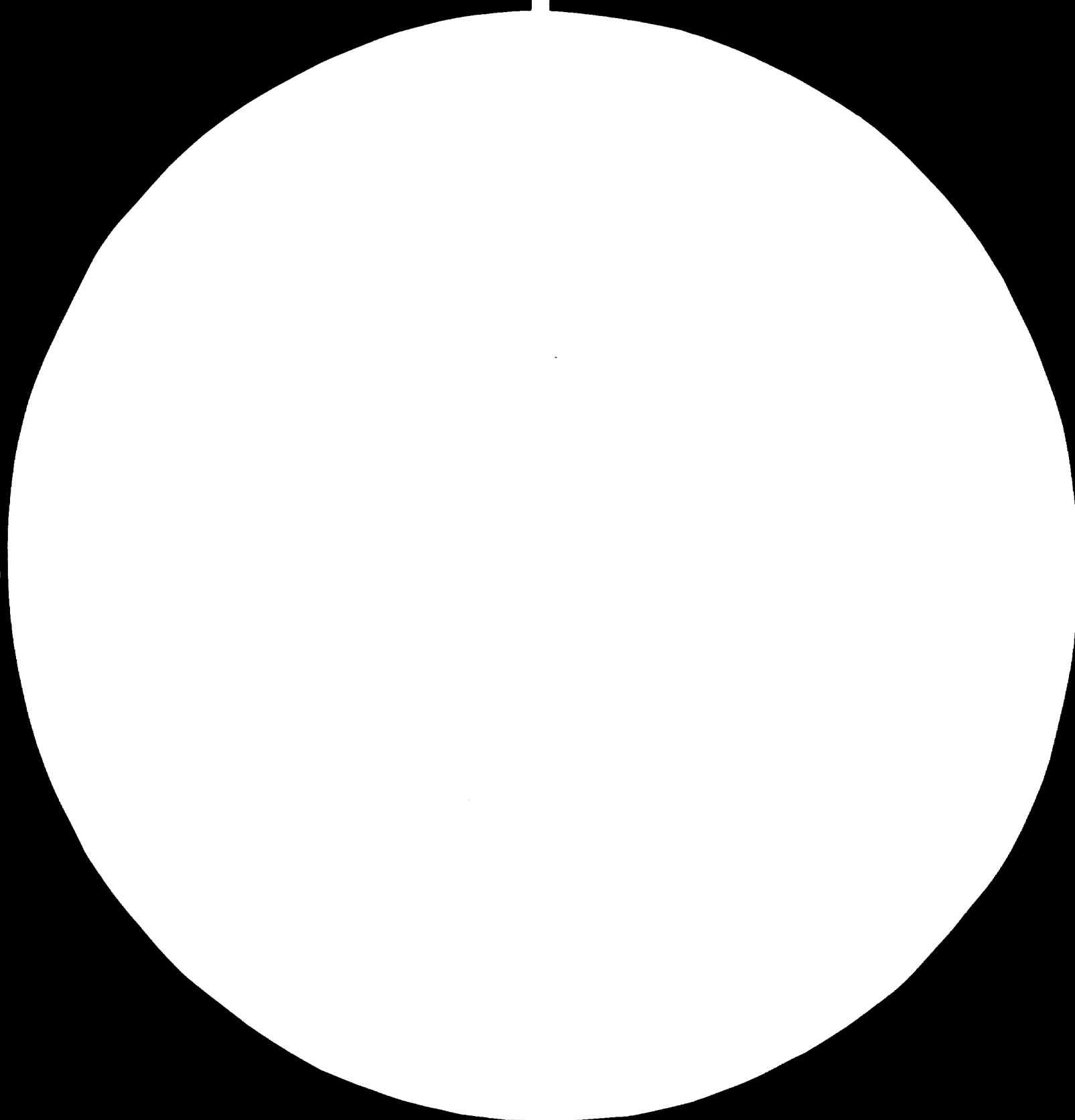
16. Total Liabilities and Capital

(10 thru 14 minus or plus 15)

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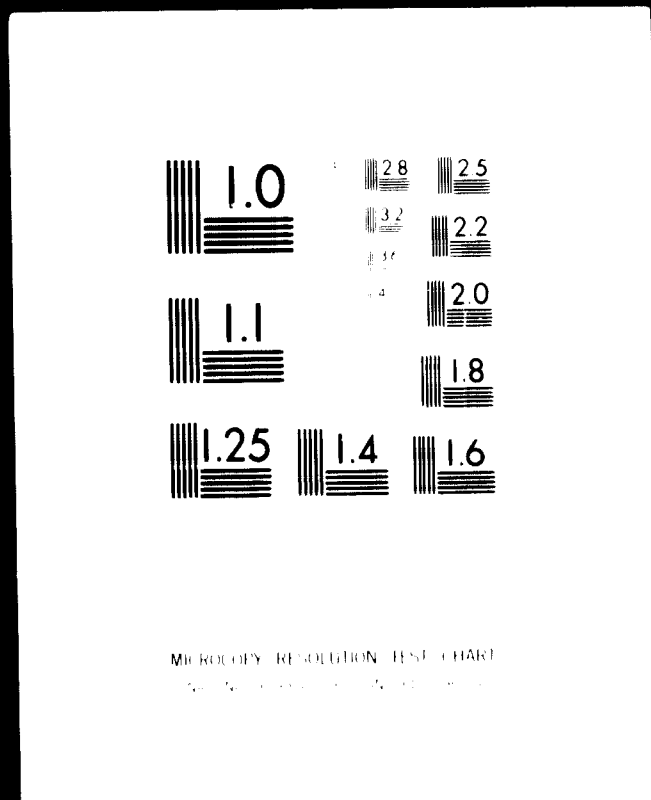


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ANNEX D - INDUSTRIAL OR COMMERCIAL PROJECT

Financial Information

1. Capital Structure (present and planned)
Authorized Capital
Issued Capital
Subscribed Capital
Paid-up Capital
Capital Surplus (if any) arising from asset revaluation
2. Distribution of Shares

	<u>No. Issued</u>	<u>Total Nominal Amount</u>	<u>Total Paid -up Amount</u>	<u>No. of Votes per Share</u>
Ordinary				
Preference				
Deferred				

3. Indicate number and type of shares held by any individuals and/or group controlling more than one-fifth of the votes. Indicate relationship of such individuals and/or group to the company. If held by a holding company or other industrial enterprise, provide balance sheets, profit and loss statements, and capital structure information on such enterprises. If held by individuals, provide general and financial information on such individuals.
4. Outstanding debentures (term of issue and redemption, interest rate, etc.)
5. Outstanding mortgages and other long-term debt (terms of issue and repayment, interest rate, etc.)
6. Bank borrowings. Give details of amounts owed, interest rates, terms, renewal arrangements and unused credit limits.
7. Pending litigation either by or against the company.
8. Contingent liabilities, guarantees or endorsements.
9. Method of valuation of inventories. Note any departure from stated procedure affecting past profits as shown in attached statements.
10. Book value and estimated current market value of inventories for the past four years, adjusted to a comparable basis.
11. Give the book value of fixed assets for the past four year according to the following breakdown:

Book value of fixed assets at beginning of year (describe basis of valuation)

Plus acquisitions during the year, at cost

minus retirements during the year, at book value

minus normal depreciation (state normal depreciation method and rates used by major categories of assets)

minus extraordinary depreciation or write-offs (or plus any shortfall below normal depreciation)

plus revaluation of fixed assets

Book value of fixed assets at end of year.

12. (a) Give the average annual amount written off on bad debts during the past four years;
- (b) Give the total amount of claims overdue as of the date of the latest balance sheet and percentage of nominal value at which claims are recorded in the balance sheet.

Annex E - Industrial or Commercial Project

Forecast of Earnings, Receipts and Expenditures

	Present Operation		Construction Years		Operative Years					
	1959	1960	1962	1963	1964	1965	1966	1967	1968	Etc.
A. Earnings from Operations										
Revenue (Separately for each major product or category of sales)										
1. Annual Sales (Units per year)										
2. Unit Sales Price										
3. Gross Revenue from Sales (1x2)										
4. Other income (describe)										
5. Total income (3+4)										
Cost of Operations, Net Income & Profit										
6. Operating Expenses:										
a. Manufacturing										
b. Maintenance										
c. General Administration										
d. Distribution and Marketing										
e. Short-term Interest										
7. Depreciation Allowances (Show basis)										
8. Taxes (describe)										
9. Total Cost of Operation before interest on long-term debt (6 thru 8)										
10. Net Income before Interest on long-term debt (5 - 9)										
11. Interest on Long-term Debt										
12. Net Profit (or Loss) (10 - 11)										
B. Sources of Funds										
13. Net Income before Interest (Item 10)										
14. Depreciation Allowance (Item 7)										
15. Increase in Paid-in-Share Capital										
16. Borrowings:										
a. Existing DLF or AID Loans										
b. AID Loan proposed herein										
c. Other Long-term borrowings (each loan separately)										
d. Anticipated short-term loans										
17. Other receipts (describe)										
18. Total Receipts (13 thru 17)										

Annex E. (contd.)

	Present Operation		Construction Years		Operative Years					
	1969	1960	1962	1963	1964	1965	1966	1967	1968	Etc.
C. Use of Funds										
19. Construction Expenditures:										
a. This AID Project										
Foreign currency										
Local currency										
Total AID Project										
b. Other construction										
c. Total construction expenditure										
20. Current Assets (minimum expected)										
(See Annex C)										
21. Fixed, Intangible and other Assets										
(See Annex C)										
22. Debt Service:										
a. Amortisation of Principal										
1. Existing DLF or AID Loans										
2. AID Loan proposed herein										
3. Other borrowings										
b. Interest										
1. Existing DLF or AID Loans										
2. AID Loan proposed herein										
3. Other borrowings										
23. Other expenditures (describe)										
D. Cash Flow										
25. Annual Cash Surplus (or Deficit)										
(Item 12)										
26. Cash to Reserves										
27. Cash to Dividends										
28. Cash Balance, End of Period										
(25 - 26 and 27)										

(continued)

Annex E (contd.)

	<u>Present Operation</u>		<u>Construction Year</u>		<u>Operative Years</u>		
	<u>1959</u>	<u>Exc.</u>	<u>1962</u>	<u>Exc.</u>	<u>1964</u>	<u>1965</u>	<u>Exc.</u>
E. Balance Sheet, End of Period							
<u>Assets</u>							
29. Current Assets (See Annex C)							
30. Investments							
31. Capital Assets (See Annex C)							
32. Gross Assets (29 thru 31)							
33. Accumulated Depreciation							
34. Net Fixed Assets (32 - 33)							
35. Intangible Assets (See Annex C)							
36. Total Assets, end of period (34 + 35)							
<u>Liabilities</u>							
37. Current Liabilities (due within 1 year)							
38. Share Capital (authorized, issued paid-in)							
39. Reserves (describe)							
40. Surplus: a Re-valuation surplus b Earned Surplus or deficit							
41. Total Liabilities (37 thru 39 + or - 40)							

Annex F - Industrial Project

Production Cost

Cost per unit of output (pound, ton, thousand, etc. based on _____ units per day or _____ units per year)

<u>Item</u>	<u>Quantity Required per Unit</u>	<u>Price</u>	<u>Cost per Unit of Product</u>
Labour (classes and rates)			
Raw materials (list)			
Power			
Fuel			
Utilities			
Supplies			
Supervisory and technical salaries (classes and rates)			
Other direct costs			
<hr/>			
Total Direct Plant Cost			

APPENDIX 6

Outline of Information Required
By the IBRD on Light Industrial Projects


The following questions should be answered when they are pertinent:

1. The Borrower:

- (a) Name and Address.
- (b) Nature and location of enterprise.
- (c) Corporate organization - whether privately or publicly owned, by whom shares held, brief details of affiliation to any other company or group.
- (d) Quality of management, business and technical experience, knowledge of this industry.
- (e) Plant description, production capacity, condition of facilities, etc.
- (f) Operational and financial history:
 - 1. Record of production and sales for past four years.
 - 2. Financial statements: balance sheets and profit and loss statements and distribution of earnings records for past four years.
- (g) Financial position - analysis of most recent balance sheet, including comments on capital structure, nature of reserves, valuation of inventories and fixed assets, etc.

2. The Project:

- (a) Description of the entire project, including that part, if any, financed from other than IBRD funds, indicating expected results, increase in production capacity, increase in efficiency, reduction in production costs, etc.
- (b) Are qualified personnel available for the engineering and for the installation, maintenance and operation of the equipment? Will technical services be required?
- (c) Total cost of the project, showing cost of fixed assets (in suitable breakdown) separately from working capital requirements. Indicate foreign exchange requirements included in total cost.
- (d) The List of Goods to be acquired. Will competitive bids be obtained for this equipment?
- (e) Construction and installation schedule.
- (f) Proposed sources of raw materials, labour, power, water, transportation, etc.
- (g) Present status of the project:
 - 1. Expenditures to date.
 - 2. Equipment on order.
 - 3. Problems, if any.
- (h) Market:
 - 1. Information on existing markets and plans for supplying and expanding them. Imports in past years.

- 
2. Estimated itemized production costs as compared with selling prices of competition indicating customs duty for raw materials and finished goods, transportation costs, etc.
 3. Methods of marketing the product and adequacy of the present or planned distribution setup. Export possibilities.
 4. Information available on existing or expected competing plants, such as their capacities and locations, sales territories, etc.

(i) Operating and financial projections (if applicable):

1. Estimated unit production for each of the first three years of operation.
2. Estimated sales revenues, costs and expenses (showing interest, depreciation and taxes separately) and net profits for each of the first three years of operation. Profits should be related to all financial charges, including probable dividend payments.
3. Cash flow estimate for each construction year through the first year of normal operation (see Annex 1).
4. Pro forma balance sheets as at the completion of the project and first year of normal operations.

(j) General economic justification of the project (if applicable).

1. Over-all benefits to the country.
2. Utilization of unemployed natural resources.
3. Employment of labour.
4. Foreign exchange savings.
5. Economic diversification.
6. Benefits to other industries.

(k) Any other relevant information, e. g. on necessary Government licenses, consents, effect of tariffs, taxes, etc.

3. The Proposed Loan:

- (a) Amount requested.
- (b) Proposed term of loan. Repayment schedule, specifying proposed grace period.
- (c) Security available for loan.
- (d) Credit standing of proposed guarantors, if any.
- (e) Any special legal, tax or corporate consideration.

Information to be Submitted with First (Or Only) Application
For Withdrawal in Respect of Credits Between \$5,000 and \$25,000

1. Name and address of borrower.
2. Type of business.
3. New project or expansion, etc. of existing project.
4. Amount of credit.
5. Terms of repayment; interest rate.
6. Brief description of goods to be financed.

7. Brief description of project.
8. Name of commercial bank granting project.
9. Reference number of credit.
10. Has the borrower benefited by any previous credit under the capital goods import program? If so, give amount and date.
11. Amount of this withdrawal application.

ANNEX 1

Cash Flow

Sources of Funds

Net income before taxes and interest		000
Depreciation		<u>000</u>
Total cash generated from operations		000
Sale of capital stock		000
Increase in long-term debt		
IBRD	000	
Other	<u>000</u>	000
Increase in short-term debt		000
Increase in other current liabilities		000
Decrease in current assets (other than cash)		000
Other (itemize)		<u>000</u>
		<u>000</u>

Application of Funds

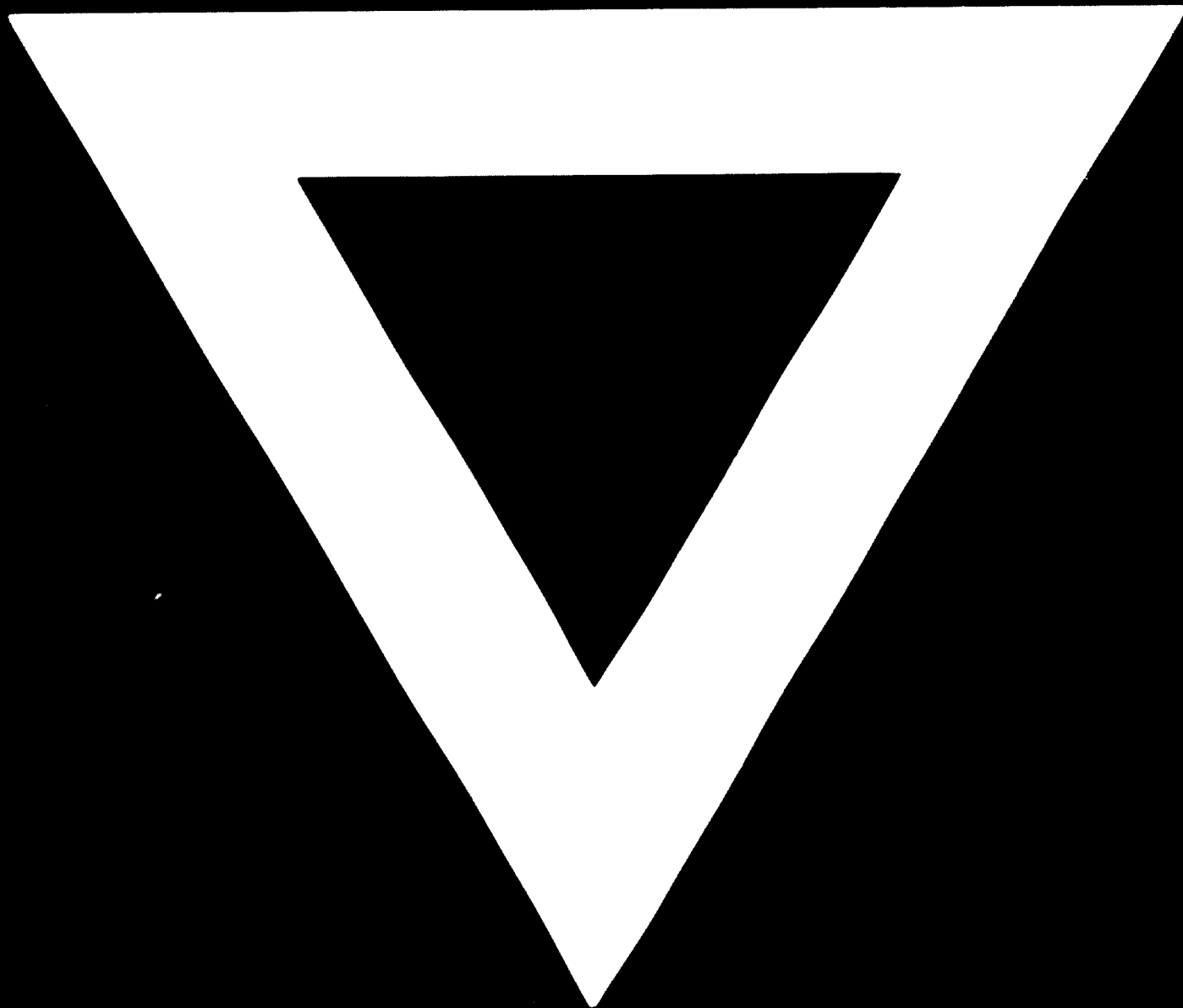
Investment in fixed assets:		
IBRD Project	000	
Other construction	000	
Renewals and replacement	000	
Interest during construction, if capitalized	<u>000</u>	000
Interest:		
Short-term debt	000	
IBRD) excluding that	000	
Other long-term debt) which is capitalized	<u>000</u>	000
Amortization:		
IBRD	000	
Other long-term debt	<u>000</u>	000

Continued/

Taxes	000
Dividends	000
Decrease in short-term debt	000
Decrease in other current liabilities	000
Increase in current assets (other than cash)	000
Other (itemize)	<u>000</u>
	<u>000</u>
Cash surplus or deficit for year	000
Cash balance at beginning of year	000
Cash balance at end of year	000



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