

Investment Criteria in Ireland*

By W. J. L. RYAN

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I. INTRODUCTION

In planning economic development, projects must be arranged in an order of priority. During the past ten years or so, increasing attention has been paid to the criteria by whose help this ordering might be done. In this paper, six possible investment criteria are critically examined and an attempt is made to draw together what is valid in each of them in the final section.

Investment criteria have a very limited usefulness in *discovering* specific development projects. They are relevant, however, in all circumstances where a choice has to be made between projects. An example in this country of where they might be useful is in the operations of An Foras Tionscal: between 22nd January, 1952 and 31st March, 1959, An Foras judged 367 applications for grants, rejecting 259 and approving 108. There is, of course, no suggestion in what follows that the decisions of An Foras have not been guided by what is valid in the criteria which are described or, if this has not been the case, that the decisions which have been reached differ in any respect from those which the criteria would have indicated.

II. PROFIT AS A CRITERION

Profit is the excess of revenue over cost, both calculated at current (or expected future) prices. If these prices are determined by free competition between buyers and sellers who are adequately informed, there is a presumption that the economic desirability of a project for the economy as a whole will vary directly with the profit which it promises to those who undertake it. This presumption is weakened by three things:

- (i) *First*, the prices which are taken as the basis for the profit calculation are influenced, often to a considerable extent, by the distribution of income and by taxes, subsidies, tariffs, price controls, monopolistic practices, and by ignorance of technological facts or alternative economic opportunities on the part of buyers and sellers. While each individual tax, subsidy and tariff, for example, is designed to achieve a particular economic (or social) purpose, their

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primary effects, and to an even greater extent their secondary effects, are not necessarily consistent with the achievement of the broad objectives of economic policy. Further, the effects are often so complicated that they cannot be traced.

- (ii) *Second*, in assessing the prospective profitability of a project, there is a natural tendency to pay most attention to the profits that are likely to accrue in the relatively short period that lies ahead, and this tends to be rather stronger in private enterprise. Moreover, attention is likely to be directed towards the limited frame of reference about which the promoter is likely to be most adequately informed. This means that profits which will accrue only in the longer term or in a wider frame of reference may be ignored, so that the project will be undertaken only if the profits it promises in the shorter term and within the more limited frame of reference are sufficiently attractive. As a result, projects which would be of greatest long-term benefit to the economy may not be undertaken.
- (iii) *Third*, the profit calculation is based on the cost of producing and the revenue from selling the *immediate* output of a project. The most important contribution of a firm or industry to the economy, however, may not be its immediate product, or even its effects on other industries and the social benefits it creates (for example, the reduction in unemployment), but rather its effect on the general level of skill, the store of technological knowledge, the creation of new demand, the attitudes towards factory discipline, the willingness to invest and to take risks.¹ It is change in these things that is largely responsible for initiating automatic and cumulative growth.

If the estimate of the profit that will accrue to the promoters of a project is to form the basis of a valid criterion, it must be modified to take account, *inter alia*, of the qualifications listed in the previous paragraph. This is done in Part VIII below. It is worth exploring at this stage, however, some of the implications of some of these qualifications of the profit criterion. The second qualification, namely, where there is a long time-lag between effort and reward, has long been accepted as an adequate reason for public enterprise. The third qualification may provide a reason for State enterprise also, but not necessarily in the form of a public enterprise as generally conceived. That is, a company or board the terms of reference of whose balance-sheet are largely limited by its immediate purchases and sales and which has the objective of at least covering its costs and so operating without subsidy. Projects are conceivable—for example, an oil refinery—petro-chemicals—synthetic fibre—fertiliser complex, a steel industry, perhaps even a large-scale A.F.D. plant for meat, fruit and vegetables—in which the longer-term and more widespread benefits to the economy as a whole are large but which might

¹Hans Singer, "The Distribution of Gains between Investing and Borrowing Countries," American Economic Review Papers and Proceedings, May, 1950, pp. 473, 474, 476.

show no profit to the company undertaking them for some considerable time. For such a project, the terms of reference of the balance-sheet must be the economy as a whole; and in this context the project will be profitable, for the costs which the project bears will be more than covered from the increased revenue at existing tax-rates from the increase in national income which results from its being implemented. The net increases in national income are revenues attributable to the project by their nature, however, they cannot accrue directly to the company undertaking the project; the only alternative if the State is involved is to collect the costs of the project by taxation. If the project is reserved for private enterprise, then the only way in which the second and third qualifications listed above can be taken into account is by some form of subsidy, by way of continuing payments or a once-for-all capital grant.

All calculations of profit, whether from a private or a national point of view, relate to some period of years in the future. They necessarily involve present judgments about *future* prices, costs, markets, techniques and a variety of other things. In the absence of a crystal-ball, there is no way in which these future quantities and events can be measured precisely and objectively *now*. The estimate that is actually made will depend mainly on two things. First, the capacity of the person or group making the estimate to mould future events to his (or their) advantage. This largely depends on the resources in men, knowledge and money which they command. A large enterprise, for example, may be able to shape markets to its advantage and thus increase the probability of events confirming its initial estimates.² Second, when present knowledge and power to mould future events have been allowed for, there will always remain many things which cannot be controlled and whose magnitude must in effect be guessed. The estimates of the size of these will mainly reflect the attitude towards uncertainty of the person or group making the calculation.

The "amount" of uncertainty about the future which is experienced and the willingness to plan action in the face of it depend upon the personality of the person(s) charged with making the decision. In order to guard against the possibility that their expectations will not be fulfilled, some people will so diminish their "best-guesses" of future revenues by subtracting, and so augment their estimates of future costs by adding, "safety-margins" that no prospect of profit is left after the corrections have been made.³ Other people may be so constituted that for the same project their "safety-margins" will be smaller and the expectation of profit therefore greater. These conclusions apply not only to private entrepreneurs who

²Even very large enterprises can, however, make mistakes so large that little can be salvaged. See, for example, the history of the Edsel, the "catastrophically unsuccessful medium-priced car" that the Ford Motor Company introduced in September, 1957, by John Brooks in the *New Yorker*, Nov 26, 1960 and Dec 3, 1960.

³The terminology used here in discussing uncertainty is archaic. It is sufficient, however, in the present context. In any case, it might be argued that much recent literature on the subject adds more to terminology than to understanding; i.e., it provides merely other words in which to discuss the problem of uncertainty rather than any solution of it.

are estimating the profit that will accrue to them, but also to those who must pass judgment on their estimates or modify them to take account of the various social benefits or costs which may follow from the project. The importance of the personality of those who make or modify estimates may be seen by taking a hypothetical example: it is very unlikely that a decision to produce the Model T Ford in quantity would have been taken by a government department; it is unlikely also that it would have been made by a state enterprise or that it would have been financed by a state-controlled development bank. The fact of uncertainty means that all investment is a gamble. If the authority that vets projects is unwilling to take risks, then "the result of (this) ill-founded conservatism . . . will surely be discouragingly slow progress, or no progress at all. Waste is a part of the price of economic progress; an irrational refusal to pay the price means that nothing will be purchased."⁴

III. LABOUR-INTENSITY AS A CRITERION

Since one major economic objective in most countries in the process of development is to provide work for workers who are unemployed or underemployed, it is argued that the employment content should be the criterion in assessing the desirability of industrial projects.⁵ This criterion would give much the same ordering of projects as the profit criterion if labour were not only relatively abundant but also relatively cheap as compared with capital, and if labour and capital could be continuously substituted for one another in each line of production. This would happen because the labour-intensive methods of production would be the cheapest in these circumstances. In Ireland, however, it cannot be said that capital is scarce relative to labour: rather, both are plentiful relative to known investment opportunities. Even if it were established that labour is abundant relative to capital it could not be argued that labour is relatively cheap in Ireland. Emigration means that some rough relationship tends to be established between wage-rates here and in Britain; the free flow of investible funds between this country and Britain ensures that a closer relationship is more quickly established between the cost of capital in the two countries. As a result of these influences the British ratio between the prices of labour and capital tends to be approached in Ireland. This means that our methods of production must be the same as those used in neighbouring developed countries if our goods are in general to be competitive abroad at current wage and interest rates.

Even if labour were both abundant and cheap as compared with capital, it would still be undesirable to encourage the use of methods of production which are labour-intensive, even though

⁴A. E. Kahn, *Investment Criteria in Development Programs*, Quarterly Journal of Economics, Vol. 65, 1951, p. 61

⁵See, for example *Processes and Problems of Industrialization in Underdeveloped Countries*, United Nations, New York, 1955, p. 69; *Measures for the Economic Development of Underdeveloped Countries*, United Nations, New York, 1951, p. 7, N. S. Buchanan and H. S. Ellis, *Approaches to Economic Development*, The Twentieth Century Fund, New York, 1955, p. 64.

these promised the greatest immediate profitability,—and this for five reasons

First, such methods generally mean relatively low labour productivity and thus tend to perpetuate relatively cheap labour. This is not necessarily a disadvantage in a country like India or the Philippines where the relative price of labour is determined almost wholly by forces which operate within the national boundaries. It could be a crucial disadvantage in Ireland where the wage-rate is in some part determined by influences peculiar to another economy, namely, that of Britain.

Second,—and this is a corollary of the first point—labour-intensive projects would be vulnerable if wage-rates were raised. In Ireland, as in other countries, wage rates in an industry are not generally related to the level of, or changes in, productivity within it. If the pace-setters in wage increases are the capital-intensive industries, then industries with a high labour content may be at a continuing disadvantage.

Third, while labour-intensive methods might promise the maximum employment in the project, they would not necessarily promise the maximum increase in total employment in the economy as a whole. With high labour intensity the total wage bill of the project will be greater, but high capital-intensity will generally give a higher *per capita* income to the workers in the project. It is possible that the marginal propensity to consume services increases with income—for example, expenditures on hair-dressing, tourism, travel, repair and decoration of houses, insurance and so on. Some evidence for this is to be found in the almost universal tendency for the proportion of the working population engaged in the provision of services to rise much faster than the proportions engaged in the primary or secondary sectors as the economy develops.

Fourth, there is the danger that methods of production which promise the maximum immediate employment may result in the use of more capital than methods which are ostensibly capital-intensive. This may be borne out by the experience of some countries which have encouraged handicraft production: the reason for it lies partly in the relatively low degree of utilisation of the elementary equipment that is involved, and partly in the rather high average investment in stocks.

Fifth, the notion of encouraging labour-intensive methods rests on the assumption that labour can be continuously substituted for capital. There are probably very few industries (if indeed there are any) where the proportions in which labour and capital can be used are continuously variable. Where it can be done the labour-intensive methods generally result in a less saleable product, and have the least beneficial effect on the store of technology and the other things listed in the third sub-paragraph at the

beginning of II above. While factor-proportions may be virtually fixed within many industries, it might still be possible to vary them for the economy as a whole by encouraging those *industries* in which even with modern techniques the labour-intensity is high. All the disadvantages of encouraging labour-intensity within a particular industry apply equally, however, to any attempt to promote it within a whole economy.

It is concluded for these reasons that this criterion should not be used in Ireland. Indeed, since the ultimate objective of economic development must be to increase *per capita* incomes as rapidly as possible—for it is on this that the material welfare of the individual person or family depends—the criterion might well be capital-intensity, since the productivity of labour, and hence labour income, depends on the quantity (and of course, the quality) of the capital available to each worker, where technical knowledge is included in capital.

The arguments in this section establish a presumption in favour of projects that are capital-intensive rather than labour-intensive, provided all other considerations are equal. Since these other things are not usually equal, a factor-intensity criterion can at best be only a partial guide to the choice of projects: it is something to be borne in mind when measuring the overall benefit of a project to the economy as a whole. If the general tenor of the arguments in this section is accepted, there might even be a case for putting a premium on capital-intensive methods of production by making labour more expensive. In Britain and Ireland, for example, social services are generally financed out of taxation; on the Continent, they are largely financed by a tax on the wage bill, which appears to the employer as a part of the cost of employing labour. A shift towards the continental system would tend to encourage the use of more capital instead of labour.⁶

IV. LINKAGE AS A CRITERION

In the countries where economic growth has been proceeding under its own momentum for some time—for example, U.S.A., Britain, Germany—the process of “economic take-off” was not something which was consciously planned in an over-all sense: rather, it happened, though there were many examples of State intervention, control and guidance. In these countries, both in the past and in the present, not all parts of the economy are growing at a uniform rate: growth is being caused and sustained by some key, dynamic industries which pull the rest of the economy along behind them. During the early phases of the industrial revolution in Britain, the key industry may have been textiles; and later, coal, steel and engineering. During the past decade, the most dynamic industries have generally been motor vehicles, electronics, chemicals, plastics and machine tools. In countries like Ireland which are now attempting to accelerate the pace of their economic growth, it is especially important to create growth

⁶See, for example, *Growth in the British Economy*, P E P Report, Allen and Unwin, London, 1960, p 12

industries whose later expansion will provide sufficient continuing inducements to further industrial development. In this section the usefulness as an investment criterion of these linkage effects between projects is considered.

This criterion has been put forward by Hirschman.⁷ A particular investment project may have both "forward linkage" (that is, may induce investment in industries which use the products it produces), and "backward linkage" (that is, may encourage investment in industries producing the materials, etc. which it requires). An example of forward linkage would be forests—pulpmills—newsprint; and of backward linkage, textile finishing—weaving—spinning. In practice, it may not be possible to distinguish clearly between these two kinds of linkage,—if only because in a sense *all* linkages are backward from demand. However, the general concept of linkage is important, and the projects which promise the maximum total linkage are to be preferred. These projects will, of course, vary from country to country and time to time.⁸

At any time it should be possible to classify projects according to the degree to which they are interdependent: firms which buy more than (say) 20% of their inputs from, or sell more than 20% of their outputs to, other firms would all be placed in the same group. The firms within each group would generally be in different "industries", as that term is usually defined. If there are five potential firms— A, B, C, D and E—within a particular group, the next step would be, starting with *each* of them in turn, to calculate the probability of its establishment leading to the creation of the others. The probability, for example, of the setting-up of A resulting in the establishment of B will depend, *inter alia*, upon the importance of the outputs (inputs) of B for A; the relationship between the minimum economic scale of plant in A and in B, and the local availability of the resources that B requires.

The total value for the probability of all the firms in the group being created will vary according to the firm which is taken as the starting point for the calculation. If it were found that the probabilities of all firms in the group being set up were greatest if A were established first, then it would follow that grants and other inducements should be concentrated on A. From the establishment of A, the 'key' firm, there would then follow the more or less automatic creation of B, C, D and E, to supply it with its inputs or use its outputs, for the appearance of the 'key' firm or industry would provide sufficient inducement to evoke the other related activities. These calculations of the probabilities of linkage, however, can never be made precisely; in addition, the strength of linkage effects will vary with time,

⁷A. O. Hirschman. "The Strategy of Economic Development," New Haven, Yale University Press, 1958, Ch. 6

⁸A project for which linkage effects are very important may be called a "key" or "dynamic" project. The notion of a key industry or "pole of growth" (*pole de croissance*) is apparently important in French literature on regional development and "immense importance is attached in practice to the indirect or induced effects of . . . development schemes." See *International Labour Review*, "Regional Development, Economic Growth and Employment in France," October 1959, pp. 289-318

place and circumstances For these reasons the notion of linkage effects becomes less valuable: it would seem merely to suggest that the possibility of linkage is something which should be borne in mind in assessing the order of importance of a project, and that the size of grant towards a project should depend upon the choice by its promoter of a scale of production and of a location which facilitated subsequent linkages.

This judgment of the usefulness of linkage as a criterion finds support in Hirschman's description of how linkage works in practice. Industrialisation generally begins with industries that cater for final demand, since no market exists as yet for intermediate products This means that it will be possible to set up only two kinds of industries. those that transform domestic or imported primary products into goods needed by final demands ; and those that transform imported semi-manufactures into goods needed by final demands To a significant extent, industrialisation was initiated in some of the under-developed countries which are developing most rapidly (for example, Brazil, Colombia, Mexico, and, in an earlier age, Japan) by the second method,—by setting up "enclave import industries", which added the final touches (e.g., assembly, mixing, packaging) to almost finished industrial products imported from abroad. Industrialisation worked its way back from the "final touches" stage to domestic production of intermediate, and finally to that of basic, industrial materials, Hirschman regards tariffs, subsidies and tax concessions as appropriate ways in which to launch the process by creating the initial import-replacing industries.

Hirschman is forced to admit, however, that this process of backward linkage is not necessarily automatic in practice The industries first set up create resistances to each new step in the trickling down process, for a number of reasons. *First*, an industrialist who has worked with imported materials may oppose the establishment of domestic industries because he fears that the domestic product will not be of as good and uniform quality as the imported product *Second*, he fears that he might become dependent upon a single domestic supplier whereas previously he had a variety of sources for imports to choose from *Third*, a processor may feel that, if his materials are produced domestically, other processors will appear and competition will be intensified. *Fourth*, the location which was chosen when the ingredients were imported may not be the best location once they are produced within the country. *Fifth*, backward linkage may be inhibited because the minimum economic scales of production in the 'earlier' stages are much larger than in the 'later' stages of production. In addition to these reasons it might be argued that the industries which are established are likely to be examples of "derived development". They will generally be industries in which the technology has already settled down ; all the equipment and many of the semi-finished materials and parts will be imported. The entrepreneurial function will be, or will seem to be, a rather routine one. Since the products that will be produced are products that were previously imported, the economy is deprived of the 'unsettling' effects which accompany the establishment of entirely new activities or the introduction of new products. As

a result, no dynamic of industrial development is likely to be released.

For these reasons, linkage does not generally occur automatically in practice. All the forces which tend to inhibit linkage in either direction can be seen at work in Irish circumstances in the field of industrial development since the early nineteen-thirties. For example, protection of the later stages in an industry was seldom sufficient to cause the establishment of the earlier stages, these in turn had to be protected, so that a "pyramid" of protection had to be built up. Some of the industries which have been sought especially during the past decade or so consist either of new backward linkages from an existing domestic demand (e.g., gas cookers, fires and heaters, pressing, washing and drying machines; vacuum cleaners; synthetic fibres, fishing nets; sanitary ware, telephone and telegraph equipment), or new forward linkages from existing products and resources (e.g., woodpulp, newsprint, tissue papers, prestressed and precast concrete products; potato starch; seaweed products, products of Connemara marble).

The notion of linkage is to be found, though in a rather narrower context than in Hirschman, in an International Cooperation Administration publication.⁹ A dynamic or key industry is defined as one possessing two features. *First*, it must mesh into the existing economy: that is, it must draw necessary inputs from existing industries or from industries that can be set up easily and quickly, and it must see immediate, expanding markets. *Second*, it must "fit underneath the next phase of economic development," by supplying consumers with goods they will need, or by supplying investment goods for the investment activity that will occur, or by supplying inputs for other productive activities that will be undertaken, or by creating new exports which will pay for the inputs that will be required, in the next stage of economic development. "This linkage of the project with both the present and the future, looking back to its inputs and forward to expanded future markets, is a feature possessed only by the truly dynamic and profitable projects at any particular time."¹⁰ If a project possesses the first of the two characteristics set out above, it will almost certainly be profitable in the sense defined in Part II above. The application of the second characteristic requires, *inter alia*, a broad programme or plan of development into which the project can be fitted. This aspect is discussed in Part VII below.

In developed countries, it can easily be seen that certain firms or industries are closely linked together, buying from and selling to each other to an appreciable extent. It has already been noted earlier in this section that in countries in the process of economic development, the establishment of any one of these firms or industries will not necessarily lead to the setting-up of the others. In addition to the reasons already given, the explanation

⁹ "How to Select Dynamic Industrial Projects," prepared for the International Co-operation Administration by the Council for Economic and Industry Research, Inc. and published by the Office of Industrial Resources, Washington, 1956, pages 45-6

¹⁰Ibid, p. 46

might partly lie in the fact that any single firm in the group might be unprofitable unless all the other elements of the group are already operating. If this is so, then the solution might lie in simultaneously creating all the firms in the group. In this way, the difficulties in the way of setting-up the whole group *seriatim* will be overcome. This approach is followed in a recent work by Isard, Schooler and Victorisz.¹¹ They define an industrial complex as a set of activities at a specific location which are linked by technical and production inter-relations and they consider an oil refinery—petrochemical—synthetic fibre—nitrogenous fertiliser complex within the context of the Puerto Rican economy. For six alternative combinations of these four activities a net revenue advantage (or disadvantage) is calculated. In this way, the precise combinations for which Puerto Rico had a locational advantage were determined.

This kind of industrial complex analysis effectively eliminates linkage effects as an investment criterion. All significant linkages are between firms which are within the complex: the problem is to choose between complexes, and in this choice linkage has by definition no relevance. The ordering of complexes must be done with the aid of the other criteria which are examined in this essay. For this reason, industrial complex analysis is not considered further. As a method of industrial development it has obvious attractions, though it has perhaps equally obvious disadvantages and dangers. It seems to be used to a limited extent in Puerto Rico.¹²

NOTE ON INPUT-OUTPUT ANALYSIS

An attempt has been made¹³ to measure the strength of linkage effects of different industries in Italy, Japan and the United States. The measure was based on the degree of inter-dependence between different industries as shown by input-output tables. In this context, such studies have one basic defect. The degree of linkage which is shown depends upon the definition of industry. The broader the definition, the lower will be the degree of linkage which is shown by the statistics (see above), and in input-output analysis at this stage broad definitions tend to be used. Ideally, in applying a linkage criterion, one requires a measure of linkage between individual firms. The use of input-output analysis to discover projects which mesh into the existing economy is recommended also in "*How to Select Dynamic Industrial Projects*". Here again, however, the value of the input-output

¹¹W. Isard, E. W. Schooler and T. Victorisz, "Industrial Complex Analysis, and Regional Development," New York, 1959.

¹²"In recent years, PRIDCO (the Puerto Rico Industrial Development Company) has been developing a programme of industrial subdivisions, each containing several factories. The subdivisions are intended to bring together complementary and auxiliary industries essential to the development of a modern industrial complex." William H. Stead, "Fomento—The Economic Development of Puerto Rico." National Planning Association, Washington, March, 1958.

¹³H. B. Chenery and T. Watanabe, "International Comparisons of the Structure of Production." *Econometrica*, XXVI, No. 4, pp. 487-521 (October, 1958). See also H. B. Chenery and P. G. Clark, "Interindustry Economics," Wiley, New York, 1959, Chapter 8.

matrix varies with its order: a 100×100 matrix would be much more than twice as useful as one 50×50 . Finally, industrial complex analysis "combines an evaluation of inter-industry relationships, along input-output lines, with an analysis of the factors that lead to regional differences in costs and revenues, along industry comparative cost lines".¹⁴

It might be unwise to expect that any new projects will be brought to light by input-output matrices of the order which is at present available—other than those which would be suggested, for example, by a detailed perusal of an import list. If matrices of a much higher order were available, they would at best enable the degree of linkage between firms (or small groups) to be measured; such studies would tell us nothing, however, about the direction or strength of the causal relationship between firms—that is, the probability that the setting-up of firm A would lead to the establishment of firm B. If a matrix did suggest a new project, before its economic desirability could be assessed, much more information would be required—for example, about general market prospects, scales of production and how these mesh with scales of existing firms in related activities and so on. As a basis for future economic projections, the matrix has defects also, for in using it, it is not easy to avoid the assumption that the various technical coefficients, etc., will remain unchanged: it is these, however, which are perhaps most likely to alter when the pace of development is accelerated. These difficulties are in part overcome if input-output analysis is used in conjunction with comparative cost analysis, as in the work on industrial complex analysis already cited. The above criticisms apply primarily to the matrix as a device for suggesting new projects. They must not, of course, be taken to apply to the value of input-output analysis in providing a more informed basis for economic control.

V BALANCE OF PAYMENTS CRITERION

New projects may impose two strains on the balance of payments. First, more foreign exchange will be needed to finance the direct import-content of the initial investment and to finance the increased imports which will result from the expenditure of the new incomes generated in the actual process of investment. Second, more foreign exchange will be required to finance the direct import-content of the new goods which are being produced, and to finance the additional imports demanded by the workers engaged in producing them. If the project is financed by foreign borrowing, then the first strain is reduced or removed, and the second increased commensurately by the payment of interest and the repayment of capital. It is sometimes argued that, for these reasons, some at least of the new projects should yield additional exports or displace existing imports.¹⁵

¹⁴W. Isard, E. W. Schooler and T. Victorisz, *op. cit.*

¹⁵See, for example, J. J. Polak, "Balance of Payments Problems of Countries Reconstructing with the Help of Foreign Loans," reprinted in H. S. Ellis and Lloyd A. Metzler, Editors. *Readings in the Theory of International Trade*, pp. 468-70.

If this is accepted, then it follows that projects should be given a higher ranking the greater is their contribution to exports or to the displacement of imports.

Polak's argument seems to imply that even projects whose products, for example, by their very nature could not be traded internationally would involve a continuing threat to the balance of payments. This, however, need not happen: Kahn¹⁶ argues that the adverse effect on the balance of payments are only likely to appear if the project is financed in an inflationary way—a point which is also recognised by Polak. The same thing would happen if the implementation of the project tended to increase domestic costs—for as the cost-increases were spread through the economy, existing export industries would suffer to some extent and imports would tend to become more competitive. In the articles cited, however, this possibility does not arise because all the projects being considered are assumed to be competitive.

While the balance of payments criterion may rest on rather slender theoretical foundations, it may nevertheless be wise to attach some importance to it in practice,—not as in any sense a crucial requirement but merely as something to be borne in mind together with profitability, and the vestiges of the other partial criteria that are considered here, when ordering projects. If the implementation of a number of projects should result in a continuing tendency towards balance of payments deficits, certain costs will be imposed on the economy as a whole. A depreciation of the exchange rate, for example, will impose some reduction in real income by making the terms of trade less "favourable." If corrective fiscal or monetary policy is used, the real cost will lie, to a greater or less extent, in real output (or its rate of growth) being reduced—*vide* the recent history of the British economy. It is probably worth paying some premium by way of encouraging some projects which promise an increase in net exports, in order to reduce the chances of these real costs being inflicted on the economy.

In Ireland, the stage has now been reached where virtually all imported products for which the home market could support domestic production are now made here. If plants were set up to make the final and intermediate industrial products which are now being imported, the minimum scale of production would be in excess of home-market requirements. In these circumstances, the quest for an import saving industry becomes a search for an export industry. At the same time, the expansion of exports is probably the only way of achieving a permanent increase in domestic income to the level at which it will support the minimum economic scale of plant in industries producing many consumer-durables which appear to be located near the markets for them.

In the literature on economic development, increasing exports are not regarded as a promising route to a more rapid rate of

¹⁶A. E. Kahn, "Investment Criteria in Development Programs," *Quarterly Journal of Economics*, vol. 65, 1951, pp. 43-6.

economic development.¹⁷ There would appear to be two reasons for this general conclusion.¹⁸ *First*, the volume of exports cannot be controlled by the government of the exporting country, for it depends on world market conditions. A policy of increasing exports is unlikely to be successful in periods when world market prices are falling, either because of a general recession or increased competition. This first reason needs little emphasis in Ireland, with our experience in the field of agricultural exports. *Second*, measures to increase exports tend to operate rather slowly for they involve the introduction of new techniques of producing and selling, better management, increased labour skill, and the setting up of new industries. Increased exports are therefore more likely to be the *result* of successful development rather than a way of initiating it, and the possibility of importing technical know-how and skilled labour only partly modify this conclusion.

In Ireland, however, these things have modified the conclusion to a significant extent, for the present inducements appear to have been successful in expanding existing exports and in establishing new export industries. If there is danger in these developments, it lies in the possibility of many of the new export industries being "export-import enclaves"—that is, industries which import the bulk of their materials and export almost all their output. Such industries might have no direct impact on existing activities—these latter would only benefit indirectly through the expenditure of the new incomes of the workers in the new industries. The new export industries might not be meshed into the existing industrial structure—there might be no "backward linkages," and there might, therefore, be no strong pressures, emanating from the new activities, on existing industries to improve their methods and techniques. Moreover, the new export industries might exert little pressure towards the creation of industries at earlier stages of production. Indeed, the resistances to backward linkage of the kind mentioned in Part IV above would probably be much stronger from new industries that depended largely on export markets than they would be from industries which sold mainly in the home market. Where this happens, there may be much less chance of a dynamic of economic development being released by them. One advantage may be seen in the export-import enclave, however, though it should not be over-rated: namely, the effects of a recession in world markets for the products of the enclave would tend to be localised, and the extent to which a depression was likely to be imported would probably be reduced.

¹⁷For example, the ICA "*How to Select Dynamic Industrial Projects*" states on p 21 ". . . taking under-developed countries as a whole, the prospect of achieving substantial industrial development by increasing exports of either processed materials or manufactured goods, are not generally favourable." Again, Kahn, *loc cit*, page 47, states: "An entirely specialised export operation, however rapidly expanding, has not ordinarily sufficed to set off and sustain the self-perpetuating, cumulative process of economic development."

¹⁸See Benjamin Higgins, *Economic Development*. Norton, New York, 1959, p. 570

VI NEW RESOURCE CRITERION

In textbooks on economics it is generally argued that the industries which should be established in a country are those for which its existing endowment of factors of production gives it a comparative advantage. It might be more useful, however, to regard the purpose of economic development as an attempt to create a new comparative advantage by "endowing" the country with new resources, rather than as an attempt to exploit a given structure of comparative advantage.¹⁹ One brief example may make this criterion clearer.

In Ireland, it is generally said that labour is relatively cheap because the money wage-rate is relatively low, as compared to that in neighbouring industrial countries, when converted at ruling rates of exchange. What is relevant, however, is the ratio of the wage-rate to net productivity,—that is, the labour cost per unit of output, when the comparison is made within the same method of production. It is unlikely that labour is cheap here in this last sense, which reflects the inherent ability of the worker, his acceptance of factory discipline (which depends partly on custom and tradition), transport costs on materials imported and products exported, and so on. One way to proceed towards industrial development would be to concentrate on large projects in which flow production is used. In these industries, labour productivity depends not so much on the attitudes and training of the workers as on the pace at which the machines are set. The operative labour which is needed is generally semi-skilled—but a high degree of skill is needed at the supervisory and managerial levels. With such industries, there may be little or no sacrifice of present output while the general fund of skill is being increased and while a tradition of industrialism is being created. Furthermore, such industries are likely to be capital-intensive, and they will possess the various advantages listed in Part III above.

The brief discussion in the previous paragraph is merely another way of looking at the general "leverage effects" that projects may have on the economy as a whole.²⁰ Some projects may be particularly good training grounds for operatives, supervisors and managers. Some may introduce new facilities and techniques of marketing which can be used or copied by existing industries. The promoters of some projects may plan to create a public rather than a private company, and this may be important for

¹⁹This point is made by Hans Singer, "The Distribution of Gains Between Investing and Borrowing Countries," *American Economic Review Papers and Proceedings*, May, 1950, p. 484. He goes on to say that "This perhaps is the real significance of the present movement towards giving technical assistance to underdeveloped countries not necessarily linked with actual trade or investment. The emphasis on technical assistance may be interpreted as a recognition that the present structure of comparative advantages and endowments is not such that it should be considered as a permanent basis for a future international division of labour."

²⁰On this see, for example, "Manual of Industrial Development with Special Application to Latin America," prepared for the Institute of Inter-American Affairs, Foreign Operations Administration, United States Government, by the Stanford Research Institute, Stanford, California, October, 1954, Chapter IX, and especially pp. 160-1.

the development of a local capital market. These leverage effects have already been referred to at the beginning of Part II, as examples of the ways in which the private profit criterion must be modified. They will be referred to again in Part VIII below where an attempt is made to assess the value of a project to the economy as a whole.

VII TELEOLOGICAL CRITERION

In applying all the criteria considered so far, an individual project is measured against some present fact such as current prices and costs, unemployment, degree of technical skill possessed by workers, present technological relations, and so on. By proceeding in this way, the future pattern of economic activity, and the pace at which it develops, will emerge as a result of the implementation of a large number of individual, and possibly unrelated, projects. It has been said, of course, that "to travel hopefully is a better thing than to arrive, and the true success is to labour."²¹ But surely the source of hope can lie only in the traveller's knowledge of his ultimate destination? It might be argued, therefore, that a better way to proceed is to begin by defining in broad terms the rough shape of the pattern of economic activity which is desired in ten or twenty years' time and the approximate pace at which the economy should move towards this future objective, and then to choose projects now with reference both to the broad framework and the pace at which it will be implemented. This raises the whole problem of economic planning, however, and this is far too wide and important an issue to be discussed incidentally here. It is of note that interest in some kind of economic planning seems to be quickening in Britain.²² There has been an emotional element in many previous discussions about planning, partly because the sterile question of the 'proper' limits of state intervention in economic matters has tended to be raised. This has been unfortunate, for if history is any guide, there is no logical (nor, indeed, any inherent) limit in a democracy to the extent of state intervention in economic matters. The only limit is that imposed by public opinion and this relates to the methods by which the state should intervene.

It *may* be argued that any planned approach to the problem of development must be artificial, in contrast to the organic and spontaneous economic development of, for example, Britain. In Britain, however, development was not spontaneous. The urge towards economic development most probably originated "in a series of external events spread over centuries: the expansion in European trade following the Crusades; the new trading possibilities opened up by the geographic discoveries of the late fifteenth and sixteenth centuries; the 'price-revolution' of the sixteenth century, (caused by the inflow of gold and silver from the New World); the development of Dutch and German trading and

²¹R. L. Stevenson, *Virginius Puerisque*, VI, El Dorado

²²See, for example, "Growth in the British Economy," A P.E.P. Report, Allen and Unwin, London, 1960, Ch. 10, and the reports in the Press of the discussion on economic growth at a F.B.I. Conference in Brighton in Nov 1960 (e.g. *Statist*, December 3, 1960, p. 790). Also, Andrew Shonfield in *The Observer*, 15 January, 1961.

financial empires”²³ Development was a result of the adjustment of the economy to these external events: a response by entrepreneurs to the needs and opportunities of a given situation. It was not a case of new opportunities arising within the price system, but rather of these being created by the impact of external events on the price system.

It may be argued also that the teleological approach is defective in that it places too little emphasis on the present price and cost structure—that is, on the market. The pattern of prices, however, provides a distorted basis for economic calculation for the reasons that were set out in Part II above. As a result, “the market provides very limited guidance in allocating resources so as to maximise the degree of development”²⁴ Even if prices were not distorted, the market would still not be a good guide in development planning. For the market prices reflect present conditions and the investment opportunities they throw up are determined by the existing structure of the economy, but the objective of development is to change the structure, for this is what ‘launching a process of development’ or ‘achieving take-off’ means. It is necessary, therefore, “to estimate the best allocation of these resources *after* a take-off has been accomplished and substantial structural change has been achieved”²⁵ The “investment projects being undertaken at any time (must) be highly productive as integral parts of the *future* economy”²⁶

One advantage of the teleological approach is that if the destination is known, the economy can proceed towards it in larger steps. A number of writers on economic development favour big steps as opposed to small steps. For example, Hans Singer advises underdeveloped countries to “stop thinking piecemeal and start thinking big”;²⁷ Leibenstein attaches great importance to the notion of the “critical minimum effort”;²⁸ Hirschman advocates growth through the deliberate creation of disequilibrium or imbalance, and this generally requires large dollops of investment.²⁹ It may be argued against large steps that they will lead to the creation of some “white elephants”³⁰ This criticism, however, is largely irrelevant in the present context: the point at issue is the size of projects and not the possibility of mistakes, and there is no reason why the probability of error should be greater for large projects than for small ones. If a man breeds mice he must expect the occasional albino; if he breeds elephants, he should not be surprised by the occasional white elephant.

There are at least four reasons in favour of development by big jumps. *First* investment is always undertaken to exploit an

²³ Benjamin Higgins, *Economic Development*, Norton, New York, 1959, p. 459

²⁴ *Ibid.*, page 454

²⁵ *Ibid.*, p. 454

²⁶ I.C.A., “How to Select Dynamic Industrial Projects,” p. 11.

²⁷ Quoted by B. Higgins, *op. cit.*, p. 400

²⁸ H. Leibenstein, *Economic Backwardness and Economic Growth*, New York, 1957

²⁹ A. O. Hirschman, *The Strategy of Economic Development*, New York, 1958, p. 36

³⁰ For a good description of how to identify “white elephants”, see Murray D. Bryce, “*Industrial Development: A Guide for Accelerating Economic Growth*,” McGraw-Hill, New York, 1960, pp. 17-8

existing or potential demand. Demand, however, does not rise continuously, and otherwise sound projects may be postponed until demand has grown to a level large enough to absorb their products. There is a case, therefore, for a large gestalt of investment to increase demand by an amount sufficient to absorb the new products and to evoke further investments. In its extreme form, this thesis becomes a plea for "balanced growth".³¹ *Second*, it is probable that a large integrated investment (partly because it is localised) will have a greater total effect on the economy through its direct and indirect leverage effects than a collection of unrelated and smaller investments adding up to the same value. The large investment is more likely, *inter alia*, to administer a sufficient shock to the economy—for example, by upsetting established ways of thinking—to evoke a creative response. *Third*, the economic risks may be smaller for a large investment than for a collection of small items of the same value. A government is not "better than private entrepreneurs at judging the outcome of particular investment projects, but . . . it is better able to judge the outcomes of various constellations . . . of investment programmes. It is also better able to assume the risks associated with them, since many of the rewards accrue, not to the particular projects in which the initial investment is made, but in the form of external economies".³² These arguments do not imply public enterprise: there is no reason to suppose that a large integrated investment could not be made, or that it would not be, attractive to private enterprise. *Fourth*, there is a danger that small investments which are justifiable in terms of the expected small increment in demand may be uneconomic from the longer-term point of view. For example, the expected growth in the demand for electricity in the near future may justify a generating station of a particular size. The electricity generated on this scale, however, may be appreciably dearer than that obtainable from a station five or ten times the size.³³ While the "small increment" in capacity is justifiable on

³¹This thesis is elaborated in Ragnar Nurske, *Problems of Capital Formation in Underdeveloped Countries*, Oxford, 1953

³²Benjamin Higgins, *op cit*, p. 443

³³"In 1948 it cost £67 a kilowatt to build a power station in Britain and since 1948 the price of plant and machinery in general has gone up by at least 55 per cent. Yet power stations that the Central Electricity Generating Board has recently ordered are costing no more than £39 a kilowatt to build. The main reason is that in 1948 the standard generating set with its associated equipment was one of 30 megawatts, today, CEGB has on order a 550 megawatt double-shaft turbo-alternator and several 375 megawatt single-shaft machines, and is planning to standardise for the future on 500 megawatt single-shaft machines. This is what has enabled the electricity supply industry in Britain to thumb its nose at inflation in capital costs, to adopt a lofty attitude above the battle of historical versus replacement depreciation, and to stop electricity prices rising nearly as much as the price of almost everything else." *The Economist*, October 1, 1960

This suggests the possibility of a "self-terminating subsidy"—that is, build a 500 megawatt station, and pay a subsidy per unit equal to the difference between the *actual* total costs per unit of electricity generated in it and what the average total unit cost would be if it were operating at capacity. To the extent that cheaper electricity acts as an industrial inducement, the demand for electricity will expand more rapidly. When the station is operating at capacity, there will be no subsidy payments

immediate economic grounds, it will saddle the economy with a cost disadvantage in electric power over the longer term.

VIII. NET SOCIAL PRODUCTIVITY AS A CRITERION

Ideally, the net productivity of a project to the whole economy could be calculated by adding together all the known and expected benefits which it promises and subtracting from this total its known and expected economic costs. It would, however, be very difficult to do this. The ideal can probably be approached more simply by starting with the promoter's estimate of prospective profit and progressively modifying this in the light of the defects listed in Part II above and of the vestiges of the other criteria remaining from the critical examination of them in Parts III-VII inclusive. This progressive qualification of prospective profit to the promoter requires estimates of those things which can be measured, and judgments about those things which are not susceptible to measurement.

The promoter's estimate of profit—as was pointed out in Part II above—is the difference between his expected revenues and costs over the life of the project, both calculated at current market prices; it will normally be expressed as a rate of return on the capital which he is venturing. This requires immediate modification in two respects. *First*, it must be re-expressed as a rate of return on *all* the new capital expenditure relating to the project, irrespective of how this has been financed or who has undertaken it. Debenture and other loan capital must be included as well as equity.³⁴ otherwise the rate of return on different projects will not be comparable. Capital expenditure by a public or semi-public authority in providing, for example, road improvements or new rail connections, must be included also if these are an integral part or a necessary consequence of the project. *Second*, the promoter's estimates will reflect his assumptions about future happenings (see Part II above). There is no way of eliminating, or allowing for, the subjective elements in the original estimate. A new estimate by an independent authority will merely reflect *its* attitudes towards uncertainty and will be informed by the knowledge which it possesses and this may be more or less than that in the mind of the original proposer. Nevertheless, some judgment must be passed—if only on the reasonableness—of the promoter's initial estimates.

When these modifications have been made, the next step is to correct the promoter's estimate for differences between private and social revenues and costs. A private individual bases his estimates of costs and revenues on ruling and estimated future market prices, and these provide a true measure for him of the costs he will incur or of the revenue he will enjoy. The revenue that will accrue to the economy as a whole, however, may be different from that accruing to the promoter. For example, if the project is intended mainly to supply a protected home market, the promoter will use the home market price, which reflects the tariff protection, as the basis for his revenue estimates. The revenue accruing to

³⁴This means that if interest has been included as a cost in the promoter's estimate, it must be deleted.

the economy, however, is measured by the prices of equivalent imports when all costs such as insurance, freight and handling (but excluding the duty) have been met: this is so, because it is a measure of what the economy would have to give up to get an equally good product. The difference between the home market price and the price of the equivalent import is in no sense a gain to the economy: it is rather a redistribution within an existing level of real national income from those who buy the protected commodity to those engaged in its production.

Similar adjustments must be made to costs. If the project uses a material which is produced under protection at home, the relevant valuation from the economy's point of view is the cost of the equivalent import. Alternatively, if the material is subsidised, the cost to the economy is what the promoter pays *plus* the subsidy. If the new project uses domestic resources which would otherwise have been unused or under-used, the promoter's estimates must be qualified, because the cost to him of employing these resources or using them more fully may be higher than the costs to the economy. For example, if there is surplus generating capacity within the existing electricity system, the cost from the point of view of the community of the power required in a new project is not the ruling price (i.e., what existing firms are paying) but the price at which this additional power could be sold in an alternative use, or the direct costs of generating it, whichever is the higher.

All the modifications listed in the paragraphs above, with the exception of the judgment on the reasonableness of the promoter's assumptions, can be estimated with a fair degree of precision. When the promoter's estimate of profit has been modified in these ways, there is left an approximate measure of the direct productivity of the project to the economy as a whole. The further adjustments that must be made to take account of the other things which have been considered—i.e. capital-intensity, linkages, effects on balance of payments, external economies, the extent to which the project fits into a broad plan for the future, its importance in creating new or in improving existing domestic resources,—either cannot be quantified or can be estimated very much less precisely. These adjustments require the exercise of judgment on two planes. First, what weight is to be attached to each of these characteristics which a project may possess, both as compared with each other and with the direct productivity of the project to the economy as a whole. In all circumstances, a heavy weighting should be given to the direct productivity to the economy. In our circumstances, as far as the other characteristics are concerned, it would seem that a relatively high weighting should be given to external economies (such as the creation of new skills, etc., which may be encouraged by capital-intensive projects) and linkage effects. It would seem also that in our present conditions, a relatively low weighting should be given to the effects on the balance of payments. *Second*, having weighted the various characteristics, the next step is to judge the degree to which a project is likely to possess them. In the case of balance of payments effects, it may be possible to do this by estimation. For linkage effects, some estimate of probabilities is conceivable: in the special case where there is a broad plan

for economic development, the value given to linkage effects will depend on the extent to which these conform to the plan.

When the various relevant characteristics have been weighted, and each valued according to the extent to which a project possesses it, the next step is analogous to the calculation of a weighted arithmetic mean. In practice, it is unlikely that this calculation can ever proceed in mathematical terms, for some of the characteristics cannot be cardinally measured. Judgment is therefore required in synthesising the results and arriving at some ordering of the projects. It may be argued that the problem of ranking projects is not one of science but rather of art. In the previous paragraph, however, there is no suggestion that science should supplant art: it is merely argued that the exercise of art should be informed as far as possible by science.

Some calculations along the lines described in this Part have been made by Chenery for other countries.³⁵ He begins with the net private return over cost per unit of investment, and corrects this to allow for tariffs, taxes and subsidies, unused resources, the more immediate external economies and balance of payments effects, to get a measure of the net social marginal productivity per unit of the investment.³⁶ The resulting formula is applied to a number of projects in Greece—namely, lignite mining and briquetting, nitrogenous fertiliser, cement, phosphate fertiliser, sulphuric acid, glass, refractories and soda—and the results give a ranking in the order in which they have been listed.³⁷ A simpler calculation ignoring balance of payments effects (because these were much the same for the projects considered) is described for various road, irrigation and flood protection projects in Southern Italy.³⁸ It must, of course, be recognised that there is a large margin of error in all such calculations. While this may limit their value it certainly does not destroy it, for the purpose of the calculations is not to determine the productivity of an individual project in absolute terms but rather to rank it as compared with other projects.

One possible application of calculations along these lines in Ireland is in determining the limits to the size of grant to a new project. If the giving of a grant is influenced solely by economic considerations, then its maximum size might be made equal to the direct productivity of the project to the economy as a whole less its productivity to its promoter. In some circumstances, this difference might be negative: this would indicate that such projects should pay for the privilege of establishing themselves here. A calculation along these lines would not, of course, help in fixing the actual grant which should be paid: it would merely help to fix a ceiling for it.

³⁵See H B Chenery, "The Application of Investment Criteria," *Quarterly Journal of Economics*, vol. 67, 1953, pp 76-96.

³⁶Chenery, *loc. cit.*, pp 81-2.

³⁷Chenery, *loc. cit.*, p. 84, Table II

³⁸Chenery, *loc. cit.*, p. 85, Table III. In a footnote to this table it is stated that the examples were selected more or less at random from the files of the MSA Mission to Italy.

DISCUSSION

Mr Niall Crowley I consider it a great honour to be invited to propose the vote of thanks to Dr Ryan, firstly, on account of the eminence of the speaker and, secondly, because of the high place which this Society holds in the intellectual life of the country

I am sure that all of us fortunate enough to have had the opportunity of hearing Dr Ryan's masterly address will have no hesitation in agreeing with me that no one could be better qualified to speak to us on this important subject. When the Honorary Secretary invited me to speak to this paper, I decided that if I could make any worth while contribution to the discussion, it would have to be from the standpoint of a practising accountant.

I have no doubt that a study of Dr. Ryan's paper would be of great assistance to the members of my profession who are called on to advise promoters of new industries in this country and to assist in the assessment of the merits of various projects, when, apart from the more sordid aspect of commercial profitability for the promoters, the desirability of the project by reference to the overall advantage to the country's economy must be considered.

The part of the paper which aroused in me the strongest feeling was that in which Dr Ryan so clearly and comprehensively dealt with labour intensity as a criterion, with an assessment of the comparative advantages of capital intensity. While I accept that Dr Ryan's conclusions are theoretically valid, I feel that I must take issue with him, from a practical point of view.

First of all, I am aware from the contacts I have had with foreign industrialists who have promoted or are in the course of promoting new industries in this country, that one of the great attractions for them in setting up these industries (if not *the* greatest attraction) is the availability here of an untapped pool of intelligent labour and a lower level of wage rates than in their own particular countries. Furthermore, these foreign industrialists (on whom, I am sure it will be agreed, we are dependent to a very great extent for the introduction into this country of technical "know-how" and—to a lesser extent—capital) have expressed on numerous occasions in no uncertain terms their admiration and respect for the intelligence and adaptability of the Irish worker. There is the additional factor that the introduction of new industries with a high labour intensity has the most immediate and direct beneficial effect on our unemployment and emigration problems. Furthermore, the introduction of industrial projects with high labour intensity has the psychological advantage, by reason of the substantial number of new jobs immediately available, of inspiring a more confident and hopeful frame of mind in the citizens of this country and so perhaps deterring them from emigrating and giving them a stronger expectation of finding a permanent livelihood in their own country, worthy of their particular talents and qualifications.

For these reasons I am inclined to think that, at least until our industrial growth has progressed a little further, labour intensity should continue to be given the verdict as against capital intensity.

It is true that in economically advanced countries such as the United States and the United Kingdom, capital intensity produces better returns economically than labour intensity and this is borne out by the great advance in automation in such countries in recent

years It should be borne in mind, however, that, apart from the increase in the service industries which economic development, particularly of industries with a high capital intensity, undoubtedly generates, there is also the direct benefit to the economies of the advanced countries by reason of the fact that the highly technical plant and equipment required is produced to a great extent in the country concerned, whereas in our case such equipment would have to be imported

In giving priority to industries with a high labour intensity, one must, of course, rely on Trade Unions and the work people generally continuing to adopt a reasonable and responsible attitude on the question of wage increases. The danger of seeking and obtaining wage increases greater than the increase in productivity in the particular industry, or the real increase in national income, is obvious and is one of which foreign investors in this country are becoming aware. Apart from removing one of the great attractions to foreign industrialists, it would also result in existing enterprises being forced to introduce automation, with consequent loss of direct employment, although, as Dr Ryan points out, the consequent increase in capital intensity may not necessarily be a net loss to the economy as a whole. One method of guarding against this danger would be to introduce something on the French style of planning commission, which would calculate each year the level of general wage increase which the economy as a whole could afford without inflationary effects.

In his remarks under the heading of "New Resource Criterion", Dr Ryan suggests that whatever the differential in terms of money between the wage rates here and in Britain, labour costs in this country, in the full sense, are at least as great as in England. The experience of foreign industrialists here, as I have heard them reported, would appear to be against this interpretation of the situation. All of them appear to be full of praise for the qualities of the Irish worker and in particular his sense of personal identification with the job on hand and the industry concerned, which is something which is very rare nowadays in highly developed countries such as Britain and the United States

The only slight criticism which I have heard voiced is that Irish workers do not always react so well when promoted to the technical supervisory level. No doubt this will right itself in time when the tradition of skill is built up over the years. Meanwhile, however, it might well prove a barrier to the attraction here and development of capital intensive industries.

It has been suggested to me (although I have seen no direct evidence of it) that the training of satisfactory technical supervisory staff in this country is being hampered, in some cases, by an apparent inability or unwillingness to accept the responsibilities attaching to this work and in particular the application of discipline to, and the exercise of authority over, their fellow workers. If there is any basis for this suggestion, it might point to some failure in our educational system, particularly at Primary School level, which would warrant close study by those concerned with the economic development of this country

The balance of payments criterion is one which at present seems to be accepted by the authorities as one of the most important in assessing the merits of a project in this country. In practice this results in some cases in undertakings being required from the promoters, before

Grants are given, that 90% or even 100% of production will be sold on the export market. This attitude of mind is, of course, to some extent conditioned by the provisions of the Industrial Development (Encouragement of External Investment) Act, 1958. Apart from the flaws in this reasoning, to which Dr. Ryan draws attention, there appears to me to be two practical objections to it:—

First, it is not necessarily a good thing to insulate existing home, based industries from competition from new enterprises in the same or similar trades, *provided* that competition is fair.

Second, it is undesirable for any industry to be completely dependent on the export market. Against this, of course, is the fact that, for an industry of substantial size and scope, the home market in this country is too small to provide an adequate base for the operations of the industry.

I notice that Dr. Ryan seems to be rather in favour of economic development by “big jumps” rather than building up the edifice brick by brick—despite the possibility of breeding some white elephants—on the grounds that in creating a larger number of smaller units one is just as likely to breed the same number of pink mice! The trouble that I foresee in the “big jump” method is that any mistakes made are much more serious and more noticeable. One pink mouse in a large litter is easier to bury or drown than one white elephant!

In his concluding paragraph, Dr. Ryan suggests (perhaps with his tongue in his cheek) that, applying his criteria, some industrialists should be made to pay for the privilege of coming here, instead of receiving grants and other forms of assistance. Having heard his brilliant paper on this most interesting subject, I think that he, if anyone, might be the man to convince some of the hard-headed industrial promoters that I have met of the reasonableness of such a suggestion!

It gives me great pleasure to propose the vote of thanks to Dr. Ryan.

Professor David Walker: I am very glad to have the privilege this evening of seconding the vote of thanks to Professor Ryan for his learned, meaty and most interesting paper. It is a particular pleasure as I heartily agree with almost all its contents.

Professor Ryan's paper is in a long honourable tradition. It is, in essence, concerned with pointing out the conflict that exists between private interest and national or public interest. Such a tradition of what we may call the economics of State intervention has been an important part of economics for at least a hundred years; though even to-day economists are often attacked for their alleged attachment to the belief that the pursuit by firms and individuals of their own narrow, personal, selfish ends will produce the best possible position from an economic point of view. This is bunkum and has been known to be bunkum for a long time. But on its rejection by the State and government intervention through taxes, subsidies, grants, loans, tariffs, quotas, and the establishment of marketing boards and nationalised industries becoming acceptable and widespread, it becomes most important for the State to take the correct decisions in these matters and in particular to know what are likely to be the effects of various alternative courses of action.

In his paper Professor Ryan has surveyed most admirably—and, indeed, has contributed to—the corpus of knowledge upon which governments have to draw when considering their attitude to particular investment projects.

Before formally seconding the vote of thanks I would like to make one or two comments on the subject-matter of the paper.

I wondered to whom and in connection with what sort of expenditure the paper was addressed. In his second paragraph Professor Ryan indicated it could be of use to An Foras Tionscail but the amount of money so involved would be small. I would have liked Professor Ryan to show how the ideas in his paper could be useful to the government as a whole in planning the allocation of its expenditure on current account and on capital account. This would, I think, have involved him in showing how important it is that a good proportion of government expenditure should be income creating and how the productivity and new income creating capacity of the private sector is a crucial element in determining the level of non-income creating public expenditure that can be afforded.

The second point concerns the meaning of investment. Academic economists are often criticised for spending too much time on definitions. Professor Ryan certainly cannot be accused of such behaviour: he has not attempted a definition of investment. This could be confusing. There are two ways of looking at investment. First, as something which helps the other factors of production to increase output and second, as an addition to the community's stock of wealth. Now Professor Ryan is concerned with the first meaning. I would have liked him to be specific and also to have emphasised that investment in this sense need not only take the form of buildings or machines—of expenditure on tangible assets—but may take the form of expenditure on research, on education, or on health improvement schemes.

Thirdly, I would have welcomed a view from Professor Ryan as to the sort of statistical and other information that is needed to enable his "investment criteria" to become operationally valuable and whether such material is available in Ireland.

Fourthly, I felt that Professor Ryan tended to playdown too much the balance of payments position. I should myself have thought that a most important criteria for investment in Ireland was its contribution to the balance of payments—either from the point of view of exports or from the point of view of import saving. If one looks ahead either for a comparatively short period of years or for a period such as fifteen or twenty years it seems to me that balance of payments considerations are likely to be a major difficulty or impediment to achieving rapid and sustained increases in the standard of living. Indeed, besides the balance of payments criteria many of Professor Ryan's criteria seems rather insignificant.

Finally, may I refer to Professor Ryan's apparent approval of the "big push", "think big" school. Perhaps I am now a little cynical but in Africa I have seen many unfortunate examples of thinking and acting "big". And whenever a too "big" plant is constructed or there is a complete "white elephant" (to use Professor Ryan's phrase) this is waste of capital which is in extraordinarily short supply in many countries—and I venture to say—in Ireland as well. I would seriously doubt much of the economic reasoning behind the "big push" philosophy and would also stress that such ideas may generate

extravagance and tend to prevent the carrying out of many profitable and most desirable small scale projects—or prevent taxation concessions which might help such projects in the private sector.

With these few remarks I would like again to thank Professor Ryan for his excellent paper. I do, indeed, have much pleasure in seconding the vote of thanks to Professor Ryan.

Mr. John J. Walsh I should like to congratulate Professor Ryan on this important and realistic contribution to Irish economic thought. The paper provides a valuable framework for our thinking on investment problems. I find myself in substantial agreement with the broad statement of the subject and what I have to say in criticism derives largely from matters of emphasis.

While profit as a criterion of development is shown to be unreliable it would seem that profits envisaged as being made in a situation where there is a large measure of free international competition are less subject to distortions arising from tariffs, monopolistic practices and price controls than profits in a highly protected economy. Indeed so far as private enterprise is concerned a criterion relating to viability in a context of free international competition—unavoidable where export industries are concerned—has much to commend it, though I appreciate that such a criterion is implied to a substantial extent in the criteria described in the paper. Clearly the prospect of profit for the promoters of a private enterprise is a *sine qua non* of development, but I doubt if it is quite right to say that the emphasis among private promoters is generally on profits in the relatively short period. It depends of course on what is meant by the short period. For some projects a realistic assessment must anticipate some difficulties—or in the conventional phrase “teething troubles”—in the early stages when losses may occur. It is probable in many cases that training cannot be completed and full efficiency attained for two to four years after production commences. If, in examining a project in the field of private enterprise, it is judged unlikely to be profitable within, say, five years one would need to be prophetic indeed to foresee any assurance of profits later than this, given the speed of innovation nowadays and the shifting pattern of international markets. There are, of course, obvious exceptions to this, particularly in the exploration and development of raw materials or processes, but these are either within or on the fringes of the category of research and development. I might add that it is the task of the Board of Foras Tionscal under the Grants legislation to assure themselves so far as possible that any project for which grants are sought is likely to be of a reasonably permanent nature.

It can, of course, be advanced that capital grants result in a distortion of the profit position. There is one aspect of grants and other Government facilities which is, I think, sometimes overlooked. In seeking to attract new industry from abroad we are, in effect, operating in an international market where competition has been growing steadily more intense. We cannot dictate both the volume of entrepreneurial skill and capital we propose to absorb and the facilities and conditions we offer. We must have regard to the official and the other inducements offered to foreign industry not only by less developed countries like ourselves, but by industrially advanced countries such as Great Britain, France and Belgium. While we have certain locational

advantages we cannot usually offer the foreign promoters such facilities as immediate proximity to major external economies and mass markets. Bearing in mind that he must, in all probability, export from an Irish location the industrialist abroad will weigh the various factor costs in Ireland, including transport, against those prevailing in other countries, taking into account the effect of Government incentives. Perhaps our major resource is ample supplies of labour. Deliberately to enhance labour costs to the producer in the hope of encouraging capital-intensive methods of production would be to risk the loss not only of labour-intensive projects, but of existing labour-intensive industries which may be particularly suited to our present conditions and the level of technology we have achieved. A distinction should perhaps be made between labour-intensive and capital-intensive methods within a particular industry and labour-intensive as compared with capital intensive industries. I believe that with our present relative level of wages no attempt should be made to encourage labour intensive methods within a particular industry but rather the reverse. This, however, is somewhat different from creating a situation which it is hoped may encourage capital-intensive industries—some of which require special facilities such as cheap power—at the risk of seriously jeopardising labour-intensive industries. Every effort must, of course, be made within the existing framework of labour costs to encourage the establishment of capital-intensive industries. If, as I believe, such industries will constitute an increasing proportion of new industries in the future, the effect on wages could organically and gradually follow their establishment. There could possibly be some conflict between the observations in the paper on factor intensity and the criterion of net social productivity. In assessing a project in accordance with this criterion account would presumably be taken of the consideration that the social cost of labour in a country enjoying full or overfull employment must be much higher than in a country with relatively high unemployment, much underemployment and large emigration.

Just as import enclaves have in the past formed the basis of backward linkage, export-import enclaves may also lead to backward or forward linkage, and there are some instances when this is already occurring. Indeed it is easy to underestimate the possibility of such linkage, partly because its form and direction may be new or unusual. Much of course depends on the success of the industry concerned and its ability to expand.

Finally, I should like to refer briefly to the time element in the examination of new projects from the standpoint of the application of criteria of investment. A judgment is, of course, always made of the value of a project to the economy. One cannot in practice, however, hold up a project for any long period while it is being compared with others either awaited or not yet clearly formulated. Unless a project is examined when it is received, without any serious hold up on the part of the body concerned, beyond what is necessary for its complete formulation, the promoter may abandon it altogether. The process of examining projects is a dynamic one, changing from day to day as new projects are received or new information becomes available; it is not feasible to halt the process for any length of time while extensive comparisons are being made.

Dr. C. E. V. Leser : To the investment criteria given, a further one might be added, allied but opposed to the linkage criterion : it is that of diversification. This may not be of major importance in present-day Ireland but has played its part in location of industry considerations in Britain. The experience of Birmingham and the motor industry shows that concentration on growth industries does not remove vulnerability to economic fluctuations.

On the basis of Australian experience I should also regard the balance of payment criterion as important. There is development but also a persistent balance-of-payment crisis there, and it seems doubtful how far one can get one without the other.

I should imagine that considerations of social opportunity cost, at least in qualitative terms, would be in the mind of any government department or planning authority concerned with investment decisions, but I should be interested to hear about any actual experience of such kind.

Mr. A. C. Crichton said that he thought that Dr. Ryan's paper deserved close consideration by all those concerned with planning the country's future. Quoting instances from his own experience he mentioned that private enterprise in cheese making had in the past been hampered by orders of the Department of Agriculture, and that the Irish Distilling industry had been similarly restricted by the Department of Finance. Appreciation of Dr. Ryan's criteria by the officials in these Departments might have allowed greater freedom for progress. Mr. Crichton also said that the paragraph on Linkage would be valuable to bankers who were authorising loans to enterprises, which, if successful, might influence development in other industries.