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## PLANNING BY STAGES

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I am really very pleased to have a chance to be in your midst, since, as has been already observed by two speakers before me, I gradually begin to feel at home in this country. I had the privilege of visiting it a few times so far. I have had the great pleasure of having several students of your country staying with us, taking their degrees with us, and in fact forming a sort of link of friendship between your country and mine. I am also fully aware of the large number of excellent scholars that this country knows, and of the immense struggle in which it is involved, the struggle against poverty, a struggle of a very deeply human character, which I think is not only your affair, but is actually the world's affair. This is the way we, my circle of friends, feel it.

The subject I am going to discuss with you is, and I have to apologise to those who are not familiar with the subject, somewhat of a technical nature. Yet, I think that the aspects I would like to discuss today certainly are much broader than only an element of econometrics. In fact, the method of planning that I am going to defend today before you is a method not only based on certain considerations of economic research, but also on other considerations that I think must rank highly wherever an attempt is made to do planning, let me say, as a democratic process. Because it is not only the technicians who make the plan, that have to understand it. I think it is the nation as a whole. But it is, anyhow,

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Lecture delivered on 28 September, 1961

of course, the political community that has to understand it. Moreover, there is also the community as a whole, or again more particularly the economic community, that has to participate in it. The two main reasons why it has to participate in it are the following. On the one hand, the very principle of democracy requires that if a thing of such importance for the well-being of a country, like development plans, is done that those affected should have the possibility, if only group-wise of course, to talk about this subject before it is begun to be decided upon. On the other hand, we all know that development policy and developing an economy is about one of the most complicated processes conceivable, because virtually all aspects of human life are involved, and that means that the need for information about all sectors of economic and social life is also a very vital element of such an activity. This is why it is anyhow not only desirable, but even necessary, that at various stages of the planning operation there is contact with the outside world, with the world for which the plan is intended to be. You will find in the reminder of my expose these elements coming back and turning up again and again.

I said, to make a long-term plan is a very complicated matter. This has led one of my most eminent colleagues, certainly well-known to all of you. Prof. R. Frisch of Oslo, Norway, to state and to defend the position that this complicated process could only be done with the highest techniques of modern mathematics, using the newest mathematical equipment for its execution. That, I think, in principle is true because it is a simultaneous problem and it has to be solved simultaneously: that is to say, you have to try to express in your methods all the inter-relations that are at stake; that you have then to try and find the solution, that is to say, the economic development that is optimal and consistent with all the data of the problem. If one tries to do so, and no one better than Prof. Frisch could do so, it leads to a situation which I would characterize as a problem of "one thousand equations with one thousand unknowns"; it is actually even more serious than that. I won't try to explain to you the complexities of it, but the point is that this method may be seen as some sort of an extrapolation of operations research, as we now know it in business life, to society as a whole. That operation is indeed a very complicated one and can either be only

left to the technicians or has to be done in another way. I would not say, that perhaps in the further future we will nevertheless have to decide to leave it to the technicians. We know in industry there are many things that are in confidence left to the technicians. Take some complicated chemical process or physical process for that matter: it will not be attempted by the chemist to explain everything of it to the directors of the enterprise – where it has to be carried out. But, for the reasons that I indicated, I feel that we should try another way, if another way is open, in the hope that by doing so we may make the process not only understandable to others but that it may be possible for others to think with us. This is why I have the conviction, at least for the time being, that this process should be divided into a number of parts that can be done more or less separately and one may say that this represents an example of the well-known method of successive approximations which in many sciences, including economics, has been applied. To some extent, it is also a question of, let me say, being practical. Sometimes it depends on how one tackles a problem whether the problem appears to be very difficult or less difficult. One could not go as far as to say that, as it has been done in Germany, that the characteristics of the true is that it is simple. I do not really want to say so because I do not say that my methods would be truer or better than the one of Prof. Frisch's.

Let me give you an example of how by being practical, I think, we can in fact simplify a problem. I think we can organize economic development policy in such a way as to deal separately with some parts of the problem, and thereby we will simplify the remainder of the problem. An outstanding example is I think to make a distinction between *short-term economic policy* and *long-term economic policy*. We all know that all economies are subject to a number of annual fluctuations, due to crop variations, to changes in international markets and so on and that these continually threaten, for instance, the balance of payments equilibrium, the price system, or the employment situation and I think we have developed to some extent with Keynesian methods, but not necessarily only with such methods, possibilities of adjusting the economy to such changes. If we try to do so by taking action at a correct moment, we may say that the remainder of the problem of development is simplified, because

we may then assume this long-term process to be a process which takes place under a balanced balance of payments, or which takes place under a balanced price system, or similar simplifications. So, here you have one example of how, I think, one can split off a part of the problem and eliminate one of the complications. In fact, Prof. Frisch does not eliminate these complications. He keeps within his system the existence of over-capacity and I make the assumption that by and large for the long-term process that remains after the elimination of cycles we may assume that all capacity is being used. It would be precisely the task of the short-term policy to see to it that such a thing would happen and although in the beginning it may not be possible everywhere, I think, after some time it may be possible almost everywhere. Another example of the pieces of research that can be split off so to say from the general field of research, I would indicate with the name of *partial research*, such as the research referring to single enterprises or single industries. For instance, the question of determining what is the optimum size of an enterprise in any industry that we want to add to the national pattern. These are studies that can be done I think almost independently of what precisely the future development will be. Of course, in principle it is not independent. But, I think that as a first approximation it is independent. That means that in fact quite a bit of the operations involved can be delegated, as they are in practice very often, to Ministries or to services that are experts on certain types of industries or activities and which will eventually then present their results to the general planning agency. One may by the way sometimes find interesting things. I want to quote, for example, a piece of research that has been conducted in my country years ago and which showed that in the bakery industry, there was the possibility not only of producing efficiently in large factories but just as well in small units. In fact, the interesting thing was that the middle-size units did worse than both the big-size and the small-size units. That is to say what we would call the local bakeries or the bakeries for one single quarter, would still do well; so would, what we call, the large "bread factories". But, the intermediate levels of production were not competitive. In this particular case the reason was that bread has always to be transported to the consumer and even daily, and that means that

transportation cost plays an important role here. Now, for the small bakery you can avoid the transportation cost. That was the kernel of the feature that made it possible that two types of enterprises could be in equilibrium and could both exist.

Now, coming to the core of the matter, to the planning process proper, here I would like to apply the phrase of "stages" that I have chosen in the title of my talk. I do think in fact that here it is sensible to use successive steps in the process, and these successive steps would in principle be three stages. But, on top of that there may have to be revisions several times, typical for any process of successive approximations.

The first step would be this: A decision has to be taken on the *overall rate of development* of the country. This decision, as you know, of course will always be intimately connected with another decision, namely, the decision of what portion of national product to save. If we use the somewhat crude but useful knowledge about the capital-output ratio for illustrative purposes, we may say this: if a country is at a certain moment saving, say 12 per cent of its national income, or at least the total savings available – they may be partially available from outside – are 12 per cent of the national income, then, if the capital-output ratio is 3, we can hope for a rate of development of 4 per cent per annum of national product. This is the standard example that you all know of. But if, instead of having 12% savings, we would decide to save a bit more, say 13%, then evidently at the first moment we would be left with one per cent less consumption – which is not pleasant. But on the other hand, that would enable us to increase future production by 1/3 per cent, for all future and we must compare this advantage with the disadvantage of less initial consumption, in order to make our choice. The choice that has to be made here typically is to find the optimal combination among those that are possible. While I once hoped that economic science might give guidance to solve this problem, I have temporarily been forced to give up this hope. In an article which I published in *Econometrica* in 1960, I have reported my negative findings. So, for practical purposes, I would say for the moment that this decision has to be taken intuitively, and I think by the Government at large. Here, the broad lines of general policy are involved. If the economists are not really able to

answer the question in a very precise way, it is better that the answer be given by the Government, because the Government is responsible, but, of course, based on the technical knowledge that the economist can supply, and which in fact limits the choices.

The next stage then would be that, once we know how the general development of national income should be, we ask ourselves about the *sectors* into which investment has to go. That means that we try to get an overall picture of the development according to industries. This would largely be a question of market analysis, let us say, and would involve estimates of what the internal markets as well as the external markets will be able in the future to buy. It necessarily somewhat involves that we can only do so for what I would like to call the *traditional* industries, those that are already there. It is less easy to do it for the new industries. There would be no clue to find what the new industries had to be. This in fact can only happen in the third stage.

But, before embarking on the third stage, which will be called the stage of projects, I would like to tell you about the controversy that has arisen on this point between Prof. Frisch and myself, because it is exactly at this point that Frisch has formulated one of his criticisms. What he says is this: You cannot decide on the rate of savings in advance because the capital-output ratio is not given in advance. It depends on what structure you are going to give to the economy later. Therefore, there is inter-dependency and you cannot split up the problem into stages. I think that in principle this is perfectly true. We all know that the capital-output ratio is very different for different industries, and evidently it makes a difference whether you will have in the future, say, heavy capital-intensive activities, or whether you will have labour-intensive activities and to what extent you have them. But my point is that, although in a way by doing so, you originally may make a mistake, by repeating the process you will very soon get at the right values; that it is what we call in mathematic a converging process.

I think that the most important portion of the whole process is the third stage, the one of the *single projects*. But before embarking upon this, let me say that the importance of the second phase is, I think, mainly in making forecasts for those general servicing industries like the energy-producing industries, transportation, trade

and a few other general activities; very probably also for education – but that is a matter to which I shall return later for a short while.

The third phase is in fact decisive because I think we can all agree that the decisive element in a development programme for a newly-developing country is to find out what are the industries of the future, and here I think as an economist I must repeat a well-known old phrase, namely, that it is comparative advantages that matter most. It means that a country should concentrate on those industries for which, of course with the quantities demanded in the future, the cost-price ratio is the most advantageous one. Because only if we choose those industries we will get the maximum national product out of a given level of investment.

I have had the pleasure of having the intimate co-operation of one of your young countrymen, who took his degree with me, Dr. Sukhamoy Chakravarti, to work with me on this problem, and I can partly refer you to his thesis. The essential things that are coming up here, of course, are these. It should not be done, let me say, in the old-fashioned way, that is to say, in the way in which private enterprise did it, without corrections. First of all, we should be aware, in the case of a developing country, of what the Americans call the “learning curves”, that is to say certain curves which seem to be more or less general, indicating what progress can be made by a new industry as a consequence of the exercise to be obtained during the life of the enterprise. We should not therefore take the actual cost of it but we should estimate the cost figures of the future. Then we should not use the private profit criterion but rather the national income criterion. That means we are not only interested in the income called profit, that can be created by such an industry, but we are interested in the sum total of certain types of income, profits plus wages plus salaries and, maybe a few other items, because it is those that will accrue to the country at large and it is those that will determine whether a certain investment is attractive or not to a nation.

Then, to be sure, it is not necessary that only the contribution to national income be considered the aim. It may be very well that we have *additional aims*, such as employment, or an aim on the distribution of income between social groups and we are able to combine the various criteria. But we do need one new concept in

order to do so, the famous concept of *shadow prices*. Shadow prices, as you all know, are not necessarily the prices you find in the actual market. They may be different from them. There are some very clear and simple examples. The shadow price of a good which is protected in the national market must not be the national price but the international price.

The shadow price of foreign exchange may be a price higher than the official rate. The shadow price of labour – of unskilled labour at least – may be lower than your official price and so on and so forth. But we can also have shadow prices for aims, that is not only for production factors. If you want to compare different projects and in one of the projects the contribution to national income is very important, whereas in the other project the contribution to employment is very important, you have to compare these two things and you have to have some common measure for them. In principle you have to depend on the policy-makers' preferences. You have to enquire maybe from your prime minister, maybe from all your ministries, or all Members of Parliament, as to how much employment, say in per cent, they would like to give up if they could gain by that one per cent in national income. If once you know the answer to this question, then you can make the estimate and I think this sort of interviewing is certainly not out of the question. It is certainly possible.

The main contribution, as I said, of the third stage, is that you discover which industries have to be the new industries for the future. I am not able, in the short time available, to go into the many details that must be solved in such questions. But, I would like to touch on one subject that is of some particular importance, namely, the question of the so-called *indirect effect* of an investment project. So far when I spoke of the contribution to national income, I thought rather of the direct effects of the projects. But since Keynes we have also been thinking of the indirect effects. I think we can perhaps with some advantage make use in this problem of a new concept that I had the pleasure of proposing some time ago in an article which has been published in the periodical "Industrial India" – I chose the same 'Semi-Input Output Analysis' for the new proposal. But, although that may sound very learned, the principle is simple. The idea is this. I think it is useful to follow the

theory of international trade, one step further than we did so far and to make the distinction (admittedly a crude distinction) between *international* industries and *national* industries. By an international industry I mean an industry of which the products can be transported over the national frontier, that is, which can be exported or imported. By a national industry I mean an industry of which the product cannot be transported over the frontier. Broadly speaking, we would consider, for instance, energy, railway transportation, road transportation, internal trade, and building as some important examples of national industries, even though it is true that electricity is exported by some countries. Now, I come to the essence of the remark I have to make on indirect effects. I think we are all aware of the fact that, if you start a new enterprise, say in textiles, which is typically an international industry, you always have to have a *complementary set* of projects – an increase in energy, an increase in transportation, an increase in buildings. I call this the complementary set of projects and they can just not be divorced from the first project. They have to be carried out together or they have not to be carried. So, if we want to judge the importance of the first project – of the project in an international industry – we have to consider not only what it contributes itself to national product but also what the other projects, the complementary set, do. We must also know what the complementary set requires in the form of investment and it is only of the whole set that we have to have the figures. It is for this purpose that one can make use of input-output tables in a somewhat different way from the way so far usually advocated and the word "semi" comes in for some kind of mathematical reason which I won't now set out.

The last remark, Mr. Chairman, should concern itself with still another portion of work that must be done and again to some extent could be done separately. I am now thinking of the *regional* aspect of it. In many countries and particularly in large countries like yours it is of considerable importance that the development programme should bring, or maintain, some equilibrium between the various parts of the country. In your case it would be between the States; in my country which is much less important, it would be provinces, and so on. One thing, for instance, may be that we want to develop more strongly the regions that have been lagging behind others.

There is a need of a certain minimum documentation in order that we are able to carry out any regional policy and I would like to give some thought to what the minimum set of data needed should consist of. I have a feeling from many discussions that I heard about regional planning, that there is a considerable confusion of minds here; that not very much of a system has yet been developed to make such a plan and that in fact we often do not see the forest but only the trees. It is necessary to create some mental order and we must distinguish between what is important and what is not important. My attempt will be to restrict myself to the most important things, forgetting completely about the less important. I would even put the problem this way: in what way can I present a simple model, where the most essential things of regional differences just come in but nothing more than that. Of course, you may differ in opinion as to what is the most essential thing that the regional subdivision brings into the picture. I certainly do not say that this problem has been generally agreed upon. In my opinion the most important thing is that essentially there are two types of projects, which I call *shiftable* and *non-shiftable* projects. By shiftable projects I understand projects that can almost as easily be carried out in one State as in the other. By a non-shiftable one I understand a project that has to be carried out in one certain State, e.g. because of geological conditions. It may be coal mining, which can only be done at a few spots of the country, or a big harbour's activity which can only be done on a few spots and so on. In order to make a proper selection of projects, we have to combine the last two elements I spoke of. We have to be aware first of such complementary sets: we have to arrange all our projects as complementary sets. That is the first thing to do.

The next thing to do is to make the distinction between shiftable and non-shiftable sets of projects. If that were the documentation available to you, then you can already make a first very crude, but I think sensible, attempt at a regional programme. You can then, depending on the policy to be followed, indicate which projects have to be carried out and what are their priorities. If, for instance, your regional policy would simply be that you would always want to increase national income as much as you can, and not bother about any inequalities between regions, then you would simply have

to carry out your sets of projects in the order of a list arranging them according to their contribution to the national income per million of investment. But if you would, for some reason, like to give priority to certain regions that have lagged behind, then you will take decisions which are deviating from the order first established. You will then, namely, add a further rule to the game. You will say, I will only have projects of Region 'X' which is behind and even if there are several projects which, from the national point of view, are more attractive, I do not take them. I wait until I hit upon a project of Region 'X', and only when that region is brought to the level desired, I start again looking at my list from the top.