ECONOMIC DEVELOPMENT:
THE PRESENT STATE OF THE ART

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by
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ABSTRACT

This speech was delivered at the "Summer Program of Advanced Study on Communication and Development" held at the East-West Center, 1-5 July 1974.

In it Dr. Arrow asserts that the basic development policies followed during recent years—policies that assumed that industrialization equalled modernization, that the first order of national business should be to mobilize resources and stimulate industrialization—stemmed from an incorrect reading of economics.

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INTRODUCTION

It is usually a good idea, in intellectual life, to lean against the wind. With everybody in favor of the integration of the social sciences, of holistic approaches in life, there is not much value to my agreement, so my best strategy would be to emphasize the purely economic factors. Actually, that is something of a caricature, as you will see, of what I'm going to say. My own position tends very much to emphasize certain social and structural factors in the workings of any economic system. In many ways, the prevailing neo-classical "paradigm" (I use the current cliche; it surely is about ready to go out of fashion) is deficient because it ignores the social structural basis. In my judgment, the particular basis that is missing from this neo-classical paradigm is the problem of information communication within the economic system—the conveying of economically-meaningful knowledge.

But purely economic factors discussed in conventional economics are important. This proposition is not merely a personal predilection; nor is it purely a reflex action on the part of a particular discipline that is seeking to preserve its well-established empire. There has been considerable reevaluation of development programs, much unease about them, and one of the arguments is the way the most elementary principles of economics have been violated by development planning. The differences of incomes and other indices of well-being on the spectrum of nations are due to many causes. One cause is the difference between proper and improper utilization of resources; as taught in basic economics, the difference in efficiency. In recent years, there has been an increasing stress on inefficiency arguments, perhaps because it is difficult to grasp other causes concretely. A striking but not unique example is the major study done by OECD and summarized in a very important book by Little, Scitovsky, and Scott.
I would like to emphasize that the basic development policies that have become widespread within the last twenty-five years—policies which have tended to be based on the assumption that industrialization equals modernization, that the important thing is to mobilize resources and get your industrialization going—do not stem from a correct reading of economics. In fact, they were objected to very strongly at the outset by distinguished neo-classical economists, and particularly Jacob Viner and Peter Bauer. These people have not played much of a role in development economics; their advice was not sought, as it tended to be rather negative anyway. There was a very strong tendency—and I must say it is one that I find myself largely affiliated with—which emphasized that the economic system, in any case, is an imperfect allocator of resources; it is not necessarily bad in some absolute sense, but it certainly falls short of perfection. One can imagine government and other interventions in the process that could improve the allocation. A country that was trying to make large structural changes might find the standard path of free-market allocation and privately-generated savings inappropriate. There is good theoretical warrant for this position, at least in part. I think that some of the economists who were responsible for spreading these ideas now feel that their advice was taken too much to heart. They were suggesting reasons for moderate and well-chosen variations from the free market system, or from the equivalent in terms of a properly planned economy, but nothing justified the extreme distortions of prices that have, in fact, been used by most developing countries. Further, and perhaps this was a little less expected, the attempt to carry out these policies led to unexpected negative side effects. Thus, for example central controls will have to be run through a bureaucracy. The theoretical models called on to justify governmental intervention essentially contrasted an imperfect private sector with a theoretically perfect public sector. When the public sector is large, it develops its own kind of bureaucratic self-interest. To analyze intervention, it becomes necessary to compare systems both of which are marked by imperfections. Then, of course, the choice becomes less obvious.

Let me make some disclaimers as to the scope of this paper, because it is true that every part can lead into others. In the first place, every textbook of economics teaches that the purpose of the economy is to produce goods which are not measured within the economy. It is no part of economics, certainly not of modern post-1870 economics, to argue the purpose of the economy's production. The purpose of the economy is the welfare of the consumers, public and private. In no sense is mere production as such a proper measure, rather, it has to be production for the ends that people want. I will not argue here whether we are concerned with the goods people actually want or the ones they should want, the quality of life and such. In any case, the ends are defined outside the system.
THE CRITERIA OF ECONOMIC DEVELOPMENT

It can be argued that people, on the whole, desire goods and services, and the more there are, the better off the people are likely to be. This has been referred to as the Gross National Product (GNP) fallacy, but I remain doubtful as to whether it is a fallacy; it is fallacious when interpreted crudely and incorrectly, but any country that is desperately poor can use more product, and in fact, the poorer a country is the more valid a material criterion of success is. It is only a rich country and people that can afford to concern itself about beauty and the amenities of life. There is, however, a GNP fallacy, at least an incompleteness of the GNP description, which is always understood, and that is that there are as many ends as there are individuals, and the total product is not necessarily the right way of summing these ends. If there is a vast inequality in distribution, that at least has to be taken in account. Most people, economists or others, would agree when asked that the more equality, the better, but also the more product the better; that is to say, we want more equality but not necessarily too much if it is gained at the expense of more total product. Most of us certainly do not like inequality for its own sake. There are philosophers, however, who defend inequality on the grounds that you need a leisure class in order to develop the arts. There are also a number of economic arguments for saying that the price of equality in terms of the total is so great that we cannot really go too far toward total equality, at least within a private enterprise system. One such argument is based on the idea that saving is proportionately greater among the rich. (This, by the way, is an empirical proposition of doubtful veracity.) A closely related argument is that in countries where it is difficult to assemble capital because of deficient financial systems, it may be desirable to encourage the concentration of wealth. But the chief argument is the incentive argument. It is not so much that it is desirable not to tax the rich as that it is useful to create incentives for people to become rich, to enrich themselves and enrich the public. The real problem is that, while the person who is already rich is a perfectly suitable object of taxation, one cannot become rich without having become rich. It is thus desirable to encourage people to become rich because many, though not all, of the processes by which individuals obtain wealth also promote the welfare of the people at large—technological progress, industrial development, or agricultural development.

The ends of economic life, then, I understand to include distributional goals as well as GNP. These are both income concepts, and so the concentration on income as an end is justified when properly understood. There are, to be sure, severe technical problems of measuring income. For example, if housewives go to work in laundries, conventionally measured income rises, though there has not been any real net
economic gain, because the same work is being done, only in a different place. These problems in measurement are understood, which does not mean, however, that the figures we always use in any way reflect even the most elementary corrections for these misconceptions. One of the characteristics of underdevelopment is underdeveloped statistical information; published income figures, growth rates, and all such data are based on extremely shaky foundations. Regardless, I am going to use them, like the fellow who went to the crooked faro game because, after all, it was the only game in town.

Sometimes, it is claimed that GNP calculations ignore environmental problems and natural resource scarcities. I place a high value on the preservation of the environment as an end in itself and as one of the significant contributions to our individual welfare. But taking account of environmental effects is, when properly understood, a technical problem in the measurement of income. Ignoring the effects merely means that we have not been growing as fast as we think we have. The measured growth rates should have been corrected for the destruction of the amenities of life. Our policies in the future should reflect the fact that there are certain costs being imposed on us by the destructive side-effects of our production and consumption. The value of industrial goods is lower than the price we pay because we are not taking account of the destruction of the air and the water. Those should be taken care of by appropriate changes of measurement and, in a policy sense, by appropriate changes in prices, taxes, and regulations.

But I do not think we can reject the basic idea that growth, with properly corrected measures, is good. The corrections amount to subtracting the negative side-effects.

The scarcity of natural resources is a little more complex; in the long run, it is obviously of the greatest importance. I would like to note here that I think no one should mention The Limits of Growth in polite society. It is an utterly meaningless piece of work based essentially on made-up numbers and using a computer program that has proved very difficult to understand. As a piece of research, there is nothing there. Its only proposition is the trivial one: If demand is growing exponentially and supply is limited, there is going to be a problem sooner or later.

Since Malthus first enunciated this proposition in 1798, I find insistence on it without qualification a little puzzling. It is obviously true that if you took the book's "analysis" and applied it to the year 1900 or to the year 1850, you would have found similarly that the world would come to an end in 40 to 50 years. The triviality of this exercise is likely to cause great damage to the environmentalist cause. There is a serious problem, but the time span is longer and the adjustment mechanisms of society, particularly but not only the price system, are far richer than the authors of
The Limits of Growth acknowledge. No doubt the concept, "natural-resource scarcity," is important in some secular sense; I do not think it will have much to do with the growth of developing countries in the next twenty years, except as far as those developing countries that happen to have natural resources will benefit, to some extent, by shifting prices in their favor. That price shift has occurred, not by natural "scarcity" but by old-fashioned monopoly, to the benefit of a few countries that have the unusual property of having small populations. Therefore, the effect on development as a whole is rather negligible.

THE PROCESS OF RESOURCE ALLOCATION

The Resource Allocation Problem

We are trying here to abstract the salient points about the economy for policy and for analysis. Basically, there has been built up over a period of a century now the analysis of allocation of scarce resources—what is called the neo-classical theory—which stresses that the economy is a device for allocating scarce resources, preferably in an efficient manner. Its main thrust is a kind of short-run analysis, and you may wonder why I bring it to a developmental context which is basically a matter of changes over time. Short-run and long-run cannot be divorced from each other as there are serious connections.

The argument is that at any moment there is a body of resources available; first and foremost, labor, including not merely bodies, although they have some importance, but skills. The population of a country has at any one moment a diversity of abilities due to many factors: genetics, education, previous industrial experience, exposure to all sorts of communication, family influences, and others that we are not in a position now to understand. But for whatever reasons, a body of skills exists, and the lack of these skills may play a serious role in lowering product.

Secondly, we have the land, natural resources, minerals, and so forth available. Again there are quality problems in all of these. Land is not a uniform commodity. There is some good land, some bad land, some good for some but not all purposes, not excluding for example, recreation as a socially and individually desirable activity.

The third category of resources is capital goods—the machines. I want to make a point here about capital goods. The picture you usually have is of a turbine, lathe, or automatic spindle—some big piece of equipment. Another kind of capital equipment houses it, a factory or other building. These are only one part of the capital goods. In fact, most of the economic activity of mankind does not involve these machines.
Industrial activity in the advanced countries yields nearly 25% of the total output. If you add in the activities similar to industry, such as construction and transportation, you might get 40-50%. The remaining output is in agriculture, still a major sector even in advanced countries, and in all types of services. Services use machines too—calculators, typewriters, pencils, and desks are all necessary. But it is evident that the picture of industry as the typical economic activity is only a partial truth. I do not want to understate the importance of industry. But one must keep in mind that it is simply not and never has been the predominant part of the economy. I interject these anti-industry remarks because, as it was already suggested, there has been an over-emphasis on industrialization. Furthermore, much of what goes on in a manufacturing plant is the use of skills and not the use of equipment. Most of the activity in an automobile factory consists of assembling various parts, not of manufacturing the parts. A steel mill closely conforms to the usual idea of what industry is. A mill is mostly a group of furnaces, performing a transforming process. Almost all chemical industries involving transformation of materials through heat or other reactions are capital-intensive activities, the nature of whose activities are indeed determined by the machinery used. But elsewhere in the manufacturing sector, a major part of the activity is a matter of organization and individual skills, and the actual transformation of materials by big equipment is subordinate.

I remember a story about a group of American engineers who were touring the Soviet Union to see the latest accomplishments, and they were shown an automated ball bearing plant, more automated than any plant known in the United States. Molten steel came in at one end and was poured in droplets, the droplets were smoothed by mechanical activities, and finally out of the opposite end came steel balls in an endless rain all sorted according to size. No human hands intervened. The engineers found the process remarkable. Then one of them noticed what goes around the central process. A critical aspect of the manufacture of ball bearings is the purity of the air in the processing chamber, because the smallest dust particles considerably reduce the precision. In the United States such a plant employed four men who used gigantic vacuum cleaners to clean the area. In the Soviet plant, there were hundreds of women with straw bundles sweeping up the place. In fact, there was much more labor than there would be in the American plant. Even in such a highly mechanized industry, there are many service activities that support the basic activity.

In industry today, there are more white collar workers than there are blue collar workers. Their functions are those for which skill and organization play a major role. They involve capital goods, but these are not the workers we ordinarily think about when the central part of the plant is being considered.
Another example of excessive concentration on machines is the neglect of inventories. Somehow inventories are thought of as a waste; they are not part of the production process, they are stuff that is hanging around. Of course it is always good to reduce your inventories, but why are they not reduced to zero? Because in fact they serve a very useful function; if there are unpredictable variations in the flows of input and output, either in the sales or in the purchases, a buffer stock smooths out production. If an economy tries to do without inventories, its output will fall very sharply indeed, and its costs will rise sharply. So these three economic entities, skill, organization, and inventories, which are not normally thought of as the hard capital goods, are nevertheless, part of capital and they form an important part of the resource base.

We have then a set of resources of various kinds located in various places, and the control over them is exercised in different ways. People own their own labor, even in a socialist society. It is not possible to direct labor efficiently, and a considerable degree of autonomy is always given to the individual. Other resources are owned by productive organizations, called firms.

The bulk of production takes place in firms (the farm is included as a firm for this purpose). A basic problem of the economy is to direct or allocate the resources into the firms. A firm or a plant is thus an agency for transforming resources into products. A key point in this description of the economy is the extent to which it is possible to get product out of resources, a relation that economists call the production function or the production possibility set—the output, or range of possible outputs if several goods are being produced, that can be achieved from a given set of resources. It is clearly established that there are strong international differences in production functions. It appears that with the same body of resources, different economies get different amounts out. This fact sometimes leads to a statement that capital formation is unimportant because it is more important to get more out of existing resources than to get more resources. Obviously a more complete statement is that both are important.

The problem of allocation has still another dimension. Some of the needed inputs of any particular firm are outputs of other firms. An automobile factory needs steel, for example. The economy has not only to allocate its primary resources among the firms but also to allocate flows of outputs from one industry to another and from one plant to another. The results of such allocation and productive activities are outputs of different commodities, some of which have been used by other firms but some of which are left over and thus available. The leftovers constitute what we call the national product, in total. It is actually, of course, a listing of many commodities; the national income is a kind of one-dimensional summarization of them.
There is one more point about transformation or production that should be emphasized. It is obvious when one's attention is called to it, but it is sometimes neglected, and that is transformation through foreign trade. One of the ways by which you can get goods is to trade with other countries, to exchange some of your goods for the products of foreigners. This may be a very efficient way of getting these goods, and perhaps more efficient than trying to manufacture them at home.

Finally, the net product emerges and has to be distributed. There are at least two aspects of the distribution that are of special concern. One is distribution by use which can be divided into two basic kinds—immediate and accumulation. Immediate use (destruction) is usually called consumption, either private or public—the military, the expenditures on a bureaucracy, police, health services whether they are provided for publicly or privately, food, housing. Accumulation is capital formation: We build additional machines; we add to the stock of capital we had before, we add additional factories and what not; we may add to human resources by education and training.

A second aspect of distribution that is receiving increasing attention in recent years, in both the domestic and international spheres, is the distribution of income by size—the fact that some people receive more goods than other people. This is the outcome of the economic system which is judged by the criterion of equality. Candidly, our theories give relatively little basis for predicting the size distribution of income.

The Government's Role

Now, in the whole procedure of allocating resources, there are many places in which the government has, or can have if it chooses to exercise it, a basic modifying role. One is the split of consumption between public and private. There is an irreducible public sector, the English nineteenth century ideal, police, defense, justice. These are not entirely trivial. The maintenance of order is not a trivial part of economic development for a lawless state is not the one which is likely to see much in the way of progress. But in addition to order, health and education have been much discussed as contributing to economic development. The provision of medical care may be public or private, but public health measures, which are perhaps the most important, are intrinsically public; it does not pay any individual to carry them out, but it pays society to do so, the classic reasoning for government services. So public health and to a considerable extent, in countries today, even individual health services, are provided for publicly.

Another role the government plays is to modify the distribution of income as set up by the system by means of transfers—cash gifts to the
very poor, free food transfers, and a panoply of measures which have been under discussion in advanced countries perhaps even more than in developing countries. Finally, the government, in order to divert the resources needed to do the tasks it has undertaken, imposes taxes. Taxes modify the flows that take place in the private sector or in the public sector because they create the incentives to change the flows. One of the most dramatic illustrations is the use of protection and import quotas to influence the growth of industry. The main purpose of protection is not really to raise revenue, but to keep foreign goods out. And, of course, import quotas are an even more dramatic and violent means to the same end.

The Efficiency of Resource Allocation

The foregoing has displayed the basic structure of resource allocation. An economic system chooses a particular resource allocation and is judged by how well it does that. I have already suggested two criteria of judgment—one is efficiency, defined in a very broad sense, and the other is equity, a more vague concept. First of all, we want to make sure that the resources are not wasted, in a very narrow, technical sense. That is, it should not be possible with the same resources, to get more of every product. If it is possible to do that, then the system is inefficient in a very basic sense. Efficiency in this sense sounds as if it should be taken for granted, but the fact is, it is not so easy to verify. The producer does not know the uses to which his product is put and certainly does not know if it could have been put to more productive use. It may be that by shifting a resource or product to another use, more of every final product could be achieved.

A more subtle sense of efficiency is the definition by Pareto; there is no other allocation of the same resources which will make everybody better off. Being better off is a different concept than having more goods; if you have more of every good, it is possible to make everybody better off, but it may also be possible to make everybody better off even if there is not more of every good; each has more of the goods he values highly, so to speak, and less of the goods that he values less highly.

One particular aspect of efficiency that draws a great deal of attention in both advanced and developing countries is the full employment of resources, and particularly of course, the full employment of labor. If there are idle people, or idle machines for that matter, there is prima facie evidence of inefficiency in the system. It should be possible to produce something with the idle resources. (It is, to be sure, possible to have an economy, let us say a narrowly based agricultural economy in an over-populated country, where additional people simply are no use at all.) Given the complexity of the economy and the variety of activities that one
can engage in, it would seem that usually there is some way of using any additional able-bodied person in a way that will enhance the national product to some small extent. The existence of unemployment should be interpreted in general as a sign of inefficiency. It is, in fact, turning out even in advanced countries, to be difficult to achieve full employment without creating other problems, especially inflation. But the rates of unemployment in advanced countries, however serious they may be to us, are low compared to that of many developing countries. Full employment is one of the goals where equity and efficiency have no conflict. Because income is usually tied to employment and it is typically the poorest part of the working population that is unemployed, full employment, by increasing their income, reduces inequality. A still further benefit of full employment is the sense of self-worth implicit in the concept of employment. Employment means a contribution to society; unemployment means uselessness. For all of these reasons, full employment should be a basic component of development policies.

The Achievement of Desired Allocations: Planning

Starting from concepts of efficiency, one direction which has been widely pushed both on the theoretical and practical levels has been the idea of posing resource allocation as a mathematical problem—usually called mathematical programming. It is required that one write down precise criteria for the performance of the system; then, given the available resources, the problem is to choose the allocation of resources to make the criterion reach as high a level as possible. The criterion might be some measure of total product adjusted for considerations of equity in the distribution of the product. The programming approach has been pioneered by George Dantzig in the United States and L. V. Kantorovich in the Soviet Union; the methods have become steadily more powerful and the problems dealt with have become more sophisticated. Programming has been applied in practice to economic development problems by many hands; it is used for example by the International Bank for Reconstruction and Development.

Programming can be regarded as an instrument of central planning. It was indeed created for this purpose in the United States as a result of war planning, in the Soviet Union as an attempt to get efficient allocation of resources in industry. Every now and then in the internal debates about planning and the price system in the Soviet Union, it is argued that mathematical programming permits a completely centralized system, because there is now enough computer capacity to really solve the programming of the economy as a whole.
But it is not only a question of computer capacity; it is a question also of highly needed information, the data needed to implement the models. The Hungarians have been extremely sophisticated in seeking to use programming models for practical work. How influential have formal methods been there? According to Janos Kornai, their chief proponent, the politicians who make the final decisions (planners are essentially politicians in his view) look at the results of the models and are influenced by them. He would not go any further than that, and my guess is that formal plans have had greater influence on actual development in Hungary than in anywhere else in the world. Let us differentiate between two questions. Have formal planning methods really had an impact on policy? It is hard to assess this because of the difficulty in deciding how you are going to prove it, but at least some time ago Albert Waterston made a number of surveys and concluded that there was essentially no influence. Should formal plans have had an influence, were formal plans right? Or were they at least better than the plans that were made? I do know some examples from the Indian experience where the mathematical models turned out very much better. For example, they always tended to emphasize the role of agriculture much more prominently than the officially adopted plans did, and I think in retrospect that they were not entirely wrong.

One consequence of the mathematical theory of programming, an old point, is that it produces, as one of the technical consequences of the program, a set of numbers, auxiliary to the computation, which have a simple interpretation—they can be called prices. You can put values on commodities and say that you ought not to use them if the cost of the inputs valued at these numbers is bigger than the output value of the output. You do not allow productive processes to operate when they yield negative returns. Variations of this concept play a central role in the work of L. V. Kantorovich; indeed it is an old thought which, for example, Oskar Lange put forth in his famous discussions on the economic theory of socialism, in the 1930’s. (It is true that when he returned to Poland and became an important official there, he took a less optimistic view of the price system.)

The Achievement of Desired Allocations: The Market

This leads to the question of the price system in the real world. The fact is we do have a system in some countries of the world, typically the more advanced ones outside the socialist camp, in which prices play a large role in pretty much the way that the theory says they ought to. I am in an ambiguous position here; I have recently given a Presidential address for the American Economic Association where I talked about the limitations of the price system. I do not want to undermine the fact that
it is both useful and important, but it is not omnipotent. I find it necessary to talk differently to different audiences. When I talk to economists who are fully convinced of a price system, I attempt to expose its failures, but with other audiences, it may be well to emphasize the virtues. As a theoretical proposition it is correct to say that if all the relevant transactions took place at freely variable prices, that is not manipulated prices, and if the price paid by the buyer is the same as the price received by the seller, if there is no monopoly, and if several other qualifications of this kind hold, then the resulting allocation of resources is efficient. I have said nothing about equity; there is nothing in the theory that leads to equity, but prices do lead to efficiency. Efficiency may not be the only virtue one desires in a system, but it is a virtue.

There are some special problems in applying the price system to investments. The payoff is in the future whereas the commitment is in the present; the efficiency check provided by prices is not the same as for a transaction for a current moment of time. The payoff is only an expected, not an actual payoff, and this is a serious problem for a firm deciding on investments. The accountability that would ideally be called for is not really there, because when the future comes, it is a little too late to worry about whether you should or should not have made the investment; it is already made. Even in a carefully articulated programming model with an explicit time structure, one is still making predictions. The investment planner is never completely on the ground of currently known facts but rather on the ground of conjecture.

Another important problem with regard to investment is that those who know of an investment which is in fact profitable—good for society to make—are not necessarily the same ones who have the financial capacity to invest in a price system. In a theoretically perfect system, if I have an investment opportunity, I borrow enough money to buy the capital goods and then, presumably, if my predictions are correct, I will be able to pay back the loan in the future.

This requires institutions that will be able to mediate between the entrepreneur or the firm, that want to make the capital investment, and the holders of available resources in a liquid sense. Those who can actually supply the capital goods have to be paid; they may not themselves want to sell on credit so there must be a third group of people who are willing to forego current consumption and thereby release the resources available for the capital formation. This requires a whole system. It is not that any particular person says, "I have a lot of machines today. I'm willing to lend one to you to get back tomorrow." Transactions do not take place that way in a complex world. Rather, it takes place through one person saying, "I see you want me to lend you money; well, it is worthwhile to forego consumption today in exchange for repayment with interest in the
future." The individual consumes less; the resources that would have gone
to his consumption go into producing machines; the machines are sold to
the entrepreneur, the firm that is going to use them. You have to have an
elaborate set of financial institutions. Not only do we have domestic credit
markets, but of course we have the possibility of borrowing abroad. In a
generalized sense, the economy as a whole can be thought of as importing
goods and paying for them on credit; thus a source of financing for further
capital accumulation. Presumably, at some point in the future, the country
has to reverse the cycle, and therefore there need to be future exports.
There was a period when there was an extensive international credit sys-
tem in the world, during the 30 to 40 years preceding World War I. The
world has never returned fully to the great days of that international credit.
There is a considerable amount of international investment today, but
apart from oil it is proportionately a good deal less than it was in the past.

Deficiencies of the Price System: Incomplete Information

There are real problems with the practical realization of the ideal
price system. One set of problems deals with the general question of in-
formation, and this is especially important in future commitments. The
economic agent has to know what transactions are possible, where and at
what prices goods can be bought and sold. This information is not always
easy to come by, and its acquisition is an aspect of cost, although it is not
treated as such, and our economic literature is very poor on how to handle
it. Information on price and availability of goods may be publicly supplied;
as you know, a certain amount of our economic information, for example,
comes through the media. We buy newspapers, but we do not pay for the par-
ticular items we want. Rather, the newspaper prints a lot of information,
very little of which may be of any interest to any particular individual, but
it is more economical to combine it. There are many other possibilities,
some public, some more private kinds of information. Even in the absence
of a market system, a system of planning needs analogous information for
efficiency. You can have the same problem under any system, but the
resulting form may be different. In particular, one of the reasons why
intermediate institutions, like banks, are so important in the field of
financing capital, is that there are more grounds for specialization in the
acquisition of information in investment than there would be in contem-
poraneous transactions.

Deficiencies of the Price System: Dualism

One main way in which the price system is supposed to have failed
in developing countries is known as dualism. The idea is that somehow
there are two or more economies, between which communication and mobility are very imperfect; for example, wages for unskilled workers in the cities can be much higher than the income accruing to marginal farmers in the country, and these wage and price relations tend to persist over long periods of time. The conclusion that prices lead to efficiency depends on the assumption that, among other things, the same kind of labor will have the same price everywhere. If that is not so we find what you might expect—the restriction of industrial output relative to agricultural output. Further, as dualism implies that wages will be higher than they would be in a smoothly working model, not only is the incentive to industrialize reduced but also the actual manner of industrialization may be effected. Specifically, because labor is more expensive than it would otherwise be, entrepreneurs tend to substitute other kinds of goods for labor; in particular, they use more capital than would be desirable. I want to return to the question of excess capital intensity; there are other reasons.

I think dualism is an important feature of many, perhaps most, developing countries. It seems to be a somewhat intractable matter—it does not disappear easily. Furthermore, its existence is used as an argument that the price system is wrong and therefore we should resort to governmental interventions, because if the prices are not set at the competitive level, the efficiency arguments are false, then there is an argument against laissez-faire, which in itself is quite correct. The only thing wrong in practice has been the magnitude of the reliance on that argument, and not the fact of dualism nor its efficiency implications.

Deficiencies of the Price System: Increasing Returns

One more difficulty with the price system which is very well-known classically is the existence of increasing returns. Certain kinds of industrial processes are much more efficient on a large rather than on a small scale, a very familiar concept. The argument is that a small-scale process will never get started because it is hopelessly inefficient by itself and would never pay; therefore the country will never get to a high scale. The price system by itself will not drive the economy in that direction. There is obviously some truth to this argument. A possible reply is that if a possible entrepreneur anticipates that he will eventually get to a large scale operation, he will be willing to take initial losses in order to get to a more highly profitable state. Pure laissez-faire is not completely wrong. But increasing returns poses an argument that it may be desirable to give a positive push.

A second kind of increasing return is that due to experience, a very familiar one that goes back to Friedrich List. His book in 1827 referred to Germany, which at that time could well be regarded as an economically
undeveloped country. List started all the anti-laissez-faire arguments by saying that England's success with free trade and liberal economic policy was no argument that the other countries would similarly benefit. He advanced, in a crude form, many of the interventionist arguments that are still bandied about, in particular, the argument that one learned how to be efficient by experience. There is much evidence for that proposition that learning is a by-product of productive activity. There are all sorts of small innovations, not big enough to reach the level of being noticed as such, which nevertheless, cause a firm, over a period of time, to be able to produce its output at increasingly lower costs. Learning by doing is a kind of increasing return, although it is a little different from the conventional kind; in fact, it has been given historically as an argument for a protective tariff—the so-called "infant industry" argument.

ECONOMIC DEVELOPMENT

The Main Elements

The discussion so far has dealt with short-run changes, but these cumulate into long-run shifts, endogenously-generated changes in the shape of the economy. The resources that were listed earlier as data of the economy themselves change as the result of the economic process as well as of interventions into it.

First of all, investment cumulates into capital. But it is not only the formation of capital in general that matters but its formation in specific and hopefully fruitful directions. It is one thing to say you need a ten, twelve, or fifteen percent savings rate to grow, but it is another thing to note that in order to grow you had better have ten or twelve percent placed properly. It is not just enough to save; it is important that the savings be properly used. This is where the central planning methods have their limitations. The direction of capital formation is the crux of the much-discussed role of the entrepreneur, the organizer of production, the firm (whether it be a large firm or individuals). There is a theory that an important aspect of economic development has been the need for people who will grasp opportunities and be the agents who mobilize the resources, who will borrow the money and also hire the engineers and workers, and act overall as coordinating agents. Of course their motivations have been under discussion since the work of Max Weber, if not earlier, with inconclusive results. As I stressed before, financial institutions which can mediate between borrowers and lenders are partly complementary, partly substitutes for entrepreneurship.

A second resource that shifts over time is the skill of the labor force. The government here plays an important role by providing health
and education facilities. The industrial structure is itself a transformer of skills. Skills are learned by doing. The entrepreneur and the manager learned by trial and error, but it is also true that the workers learn; they acquire skills and these are transferable from one work place to another. So the needs of the system itself generate some of the necessary skills to transform the labor force. This skill acquisition is partly endogenous in the system.

The economic transforming factor that is hardest to understand, although, many would argue it is the most important, is the shift in production functions—technological progress. At the level of the plant or the farm, the problem is to get more from a given body of resources. There are two aspects of technological progress. One has to do with the situation in which there is knowledge available somewhere but not necessarily in the place you want it. This is a transmission problem. It seems to be simple and is one of the reasons why we have expected economic development of backward countries to be rapid, and why we are consequently disappointed that it has not been. The second aspect is a question of expanding the total stock of information available. This is the sort of thing that goes on under the heading of research and development, and is an inherently uncertain process. It is possible that at some point we just might run out of new ideas. In any case, it cannot be expected to be a very rapid process.

It is the first aspect, that of transmission and its failures, that is surprising. There is a very old argument that it is better to be backward, at least in the sense that one can expect more rapid growth by importing technology from advance countries. The reasonableness of this argument is, I think, why we are disappointed, why we feel that something has gone wrong with the development process. (It can also be held that economic development has not been all that bad.)

Another cause for shifts in the system are changes in the efficiency with which resources are utilized. I have already stressed the fact that a well-working price system would guarantee efficiency; a poorly-working one will not. No price system works perfectly; in advanced countries there is recurrent unemployment, itself strong evidence of breakdown. It is also possible that the system will become more efficient because of changes in attitudes and in institutions as some break down and others are created.

In the long run, another problem of economic growth is the development or depletion of natural resources with the consequences being fairly obvious.

Finally, and this may be very important for individual countries, the foreign trade situation changes from time to time.
These factors, capital formation and its direction, development of skills, technological progress, changes in efficiency of resource use, development and depletion of natural resources, and foreign trade, are a sketchy catalog of factors in economic development because almost anything can be put under one or another of those headings.

International Differences in Income and the Cost of Information

Why are countries so vastly different in income levels? For 1972, per capita annual income was as low as $71 in the case of Indonesia, $82 in Pakistan, $99 in India while on the other hand, the United States has a per capita income of $5,000 or $6,000. We know that the resources per capita, including capital, in the first set of countries are lower but all the evidence shows clearly that the resource difference cannot solely explain the income difference. We can estimate the production function for the United States, and so calculate what would happen if its capital and other resources were suddenly reduced to the per capita level of India, Bangladesh, or Indonesia. We would find a considerably higher income than those countries actually have. Of course, the calculation is an extrapolation, so its value may be limited. We seek other explanations, the most obvious seems to be a difference in technological knowledge. But why is the technological knowledge different? Ideas float around a lot. It would appear to be cheap to transmit production methods from one country to another, certainly cheaper given the scale of the countries involved. Much of the knowledge is basic and not owned by anybody; some of it is patentable, but while patent royalties may amount to something, they hardly seem a sufficient reason not to use knowledge that is so desperately needed; and yet somehow, we do not have it transmitted.

Another related explanation for international income differences is that the labor force has embodied in it a lot of education and skills, sometimes called human capital, and this differs very much from country to country. I think it is fair to say that it would be difficult to find any measurable magnitudes of this kind which would explain the enormous variation in incomes. We are left with the idea that the backward countries simply do things differently. But this gives rise to the puzzle as to why, therefore, rates of growth for the least developed countries are not very high. Do they not simply have to change their ways to resemble the United States more? Perhaps they will reach ceilings, but it is hard to believe the ceilings they now seem to have reached are anything appropriate.

But in fact, if you recognize that many changes occur very slowly, then all sorts of explanations appear. It could be said that development requires the accumulation not only of capital in the ordinary sense but
also the more subtle intellectual capital, new ways of thinking and doing. Replacing intellectual capital is not cheap.

Information exchange is costly not so much because it is hard to transmit but because it is difficult to receive. A teacher realizes all too painfully the difficulty of getting information into a student's head. Perhaps we should not be totally surprised that the acquisition of information is not the same as its transmission. Giving a man a book is not the same as his comprehending what is in it, particularly if he has to know in a concrete, operational sense. I do not know any really good theories about this process.

How Bad is the Growth Experience?

Actually, if you look at growth rates rather than at the international comparisons of levels, the situation does not look so bad for most of the underdeveloped world. From 1967-1972, the average rate of growth in selected developing countries (excluding socialist countries) is nearly 6%. This is higher than the growth rates of the advanced countries; it is much higher than that of advanced countries at corresponding stages in their development. Even in the famous examples of Germany and the United States in the second half of the nineteenth century the growth rates were not at all like this. On the basis of a comparison such as this, one would say that there is no problem. At one extreme, you will find South Korea, at 10.6% growth per annum, and Taiwan with 10.3% over a five-year period. Even Indonesia, hard as it is to understand, shows a rate of 6.8% per annum over a five-year period. We can even find a large and important country such as Brazil growing at a rate of close to 10% yearly.

Even more interestingly, countries that were formerly classed as developing countries have now moved out of that category: Greece, Spain, Singapore, and Israel are no longer regarded as developing countries by the OECD. In 1946, we would have regarded Italy as a developing country. Even Japan had a very low per capita income in 1956, much lower than that of most of the present day "developing" countries. Japan was heavily industrialized, and in that sense it was atypical, but it was a very poor country. On an income basis at least, it would have been regarded as a developing country, though probably not on social or industrial scales. Today of course, there is no yardstick that would put Japan into the category of developing countries—20 years of 11 or 12% annual growth have seen to that.

It is true that listing by countries is a little misleading. Many of these countries are very small. In the list of developing countries, you find two countries with one-third or more of the total population of all the countries involved—India and Pakistan (which then included Bangladesh):
3.6% per annum for India, while Pakistan achieved 4.9%. These are gross figures, not per capita. The failures of development are, on the one hand, a number of small African countries that are on the lowest possible rung of development with no sign whatever of moving. They are numerous in the sense of the number of countries but not in the sense of population. On the other hand, you have the Indian subcontinent together with Indonesia, and there you have the largest relative failure. The Latin American countries on the whole do not look so bad. Mexico has had a long steady growth of 6.4% and shows very good signs; Brazil is at a faster growth rate though not for as long. Brazil, to be sure, is conspicuously inequitable.

I might point out that the oil countries, of course, are very special. There are countries like Venezuela with an income over $1,000 a year which are still regarded by most observers as essentially undeveloped; they receive income from a particular source, but it does not affect the countries as a whole. But some of the other countries are beginning to use their resources more effectively.

**Industrialization Policy**

With this background, we can consider the leading policy used in economic development—devoting special efforts to industrialization. Manufacturing is considered to be, in some vital sense, a leading sector. In one form or another and with many variations, industrialization has been pushed by many development economists and adopted as a policy by many countries. (The relation between advocacy by economists and policy adoption is not an accident, though any causal relation probably runs from national policy to economists' advice and not vice versa; economists who might not agree were not used as advisors.)

Some of the arguments for industrialization are respectable and some are not. The dualism argument implies that industry will be too small if left to the play of the actual imperfect market. The existence of increasing returns urges the need for a push to get beyond a critical size. There is a self-sufficiency argument which is based on nationalism, a cardinal principle in many of the new countries, a non-economic aim which is usually costly in economic terms but is legitimate for those nations willing to pay the price. Finally, there is the argument that industrialization provides a more easily mobilizable source of savings. The profits in industry are now highly concentrated, and no longer scattered into the hands of thousands of farmers. Profits are more accessible to the industrialists for reinvestment, and thus a self-generating process becomes possible. This argument assumes that financial intermediaries are inadequate and industrialization is a compensating device.
The techniques that have been used for industrialization include subsidy of capital, low import duties or none at all on capital goods, direct allocation of funds by the public sector, and high protection for the products of industry. In fact, the rates of protection invoked by the developing countries in this period are much higher than anything known in the history of the developed countries. However, it is true that for almost all developed countries there was a phase when their industry was protected. The United States had a high degree of protection; France had a high degree of protection, though that is usually regarded as one of the reasons for the relatively slow industrial progress of France; Germany had a fair degree of protection during its industrial development period before World War I; and therefore the argument has been that protection is needed in order to get industry started. However, the magnitude of protection in today’s developing countries is far greater than anything that was known before.

Furthermore, and this is a technical matter but technical matters sometimes have a great deal of consequence, one of the ways by which the subsidy of imported capital goods is achieved is by an overvaluation of the currency relative to the foreign countries. The rupee is worth more dollars than is consistent with balance-of-payments equilibrium, thus imported goods are cheaper. To provide protection for the products of industry, even higher tariffs become necessary. But the overvalued currency implies, by its definition, a deficit in the balance-of-payments if industries are allowed to import capital goods freely. To prevent this, the country has to control imports; licensing agencies and bureaucracies decide how to allocate the foreign currencies which appear scarce because they are priced too low.

This process sets up a decision-making apparatus that is intrinsically less well informed than the industries or firms themselves. That is an old and very important lesson of classical economics. The firms know what they need. The bureaucrats simply do not spend their whole time at it; even if we assume the highest degree of collective motivation, they cannot be as well informed as industry members. In addition, of course, they develop their own bureaucratic interests. Every regulatory agency in any country always develops symbiotic relationships with its regulatees; developing countries are no exception. To go on, bribery is not at all absent, and in fact, some cynical economists regard bribery as the only safety valve in the system; those who need the capital goods most will bribe the most, and so bribery is a working price system. It is clear that it can hardly be called an ideal price system; it has its problems as does an allocative device, not to mention of course any social disruption in running a system in a way perceived to be illegitimate.
Further, the operations of the bureaucracy itself generate delays which have no production value. Indeed, the more conscientious a bureaucracy is in trying to acquire more information, the worse the delays become. Everybody who studied the Indian experience regards this factor as a significant source of inefficiency in the system.

A policy of forced industrialization has an adverse effect on income distribution. First of all, there is a higher concentration of profits. Perhaps even more important, the effect on employment and therefore on the income of laborers is less than it should be. The subsidy to capital plus the high wages due to dualism imply that capital is cheap relative to labor, and there is a tendency to use a lot of capital. This means less employment, a phenomenon that is being noted all over the world. Industrial employment is not creating the jobs we were hoping for, and it is not creating jobs to keep up with the flow from the farms.

The subsidy on capital is not only distributionally perverse but very much a waste of scarce resources. From the efficiency point of view, the neo-classical point of view, a developing country should use its abundant resources and conserve its scarce resources. That remark sounds more like common sense than anything else. What is abundant in many of these countries, certainly in Latin America and in Southeast Asia, is labor--unskilled labor. That can become a source of skilled labor if the right investments are made. Capital is very scarce--these poor countries have not yet accumulated it. Therefore they should somehow emphasize labor-intensive processes. That would mean that they should use methods of production that are old fashioned by the standards of developed countries. To be sure, the matter is not simple. Many of these old fashioned methods are so inefficient that they are wasteful even for capital-poor countries. There has certainly not been sufficient motivation for the creation of intermediate technology--technology appropriate for labor-abundant economies. In the absence of such middle technologies it might still be appropriate to use methods which have been abandoned in the West because the price of labor is too high but which might be socially profitable under conditions of labor abundancy. The subsidization of capital goods, of course, creates exactly the wrong incentives.

Let me turn to still another defect of the industrialization strategy. As I stressed earlier, manufacturing is just one aspect of production. Agriculture is an equally important aspect. Improving agricultural productivity is just as important for increasing GNP, or any other measure of output you may want, as improving industry. The question is, why prefer industry, especially when industrialization strategies are financed at the expense of agriculture.
These points have been made many times, but now they have suddenly been rediscovered. It is popular to ask, why should we follow the Western model? Well, it is not clear that the Western model was being followed. Look at the United States for example. The “Western model” does not mean doing what the United States does today, rather it means following the historical path of the United States. As we well know, in the United States, the rate of growth of the productivity has been higher in agriculture than in any other productive sector. Higher agricultural output has been a basis for industrial growth; the policy of encouraging agriculture has been complementary to industrialization in the long run, though competitive in the short.

The subsidy of capital has even reached the point where, in many of these countries, not only is labor under-utilized, but capital is under-utilized. There are fewer multi-shift operations in many of these countries than there are in advanced countries. In a country where capital is scarce one obvious way of extending the use of capital is round-the-clock operation. No doubt there are many reasons for this failure, including the leisure class habits of the managers, but certainly a sufficient price of capital would induce a change in that kind of behavior.

Finally, industrialization policy creates still another distortion. The high protection means that imports are not as cheap as they might be, so that opportunities for gain through foreign trade are wasted. The overvaluation of the currency compounds this problem by reducing potential exports.

SOME FINAL REMARKS

- Ordinary economic principles are not totally irrelevant to economic development. Efficiency is important in increasing welfare and growth. I do not want to deny that other factors are important, particularly the acquisition of technological knowledge and the development of technologies appropriate to labor-abundant economies. Sometimes the argument is advanced that the gain from improved efficiency is so small compared to the gains from improved knowledge that the former is not worth considering. I think, in several instances, this is not true. There is considerable gain from efficiency. It is not going to solve completely the problems of underemployment, but to a large extent the drive for efficiency will increase the utilization of manpower, with gains in both output and equity. Achieving greater efficiency requires creation of new institutions such as financial institutions and the protection of contracts. The government thus has a strong protective role to play.
• It is sometimes held that culture is indivisible, so that no changes to improve economic development can occur without complete changes in culture. For example, it is held that increased efficiency requires new values and new attitudes. But knowledgeable observers, Clifford Geertz, Albert Hirschman and W. Arthur Lewis, have been arguing that there is a certain separability between general social attitudes and economic attitudes. People take advantage of economic opportunities without necessarily changing their ways. We have already seen in advanced countries that different countries do not have identical institutional structures and have succeeded in rather different ways. The way United States industry was financed, for example, was very different from the way German industry was financed, and a very different set of financial institutions developed. According to all the accounts I have read, the relation of the labor force in the Japanese factory to management is very different from that in most European countries or in the United States. And yet all these arrangements seem compatible with efficiency and growth. In other words, there is no simple one-to-one relationship between culture and development. Therefore, the whole idea that the culture has to change, that everything has to move up (whatever direction that may be), is certainly overstated.

Of course, one can add the argument that changes in attitudes may be the result of changes in behavior as well as its source, an argument that draws upon Leon Festinger's theory of cognitive dissonance for justification.

• It is essential for good performance that decision-making be made close to the source of information. If you cannot bring the information to the decision maker, it may be a good idea to bring the decisions to the source of information. I know there has been talk about decentralized decision making, but there are many ways of decentralization and not all may be viable. It may mean that pushing the responsibility onto the individual, an individual farmer for example, by manipulating the prices and then letting him make his decisions is a more effective procedure than trying to set up a village cooperative. In other societies the opposite may be the case. One cannot generalize about the mode of integrating information and decision making, that is a factor of the individual countries and their attitudes. But one can stress the importance of getting detailed information to the decision-maker.

• Finally, the problem that calls for joint participation by both the advanced and the developing countries is the development of technologies which better utilize the labor abundance of the poor countries. Intermediate technologies using the most advanced scientific and technological principles but which allow for much more to be done by hand must certainly be developed.
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