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I am afraid I am in a much less enviable position than the two other speakers, who really have something definite to talk about. I am afraid a good many of the things that I want to mention to you will probably strike you as wild flights of fancy. But then, all I can do is to remind you that ten years ago the subject about which Mr. Evans and Mr. Silberman are talking would also have struck anyone as a wild flight of fancy -- such a thing as the Marshall Plan. So possibly some of those day dreams that I now hope to put before you will not appear so wild in time as they seem now.

Let me start off by saying that my talk was originally announced as the "work" of the United Nations in this field of international comparisons and measurements of productivity. That talk I could have given in one sentence because there is no work going on at this present moment. All I can talk to you about is the plans or the hopes for future work in this field that we have, not necessarily for us but for someone else to do. Let me start off by saying that we believe, in the Economic Department of the Secretariat of the United Nations, that our job is concerned roughly with the international aspects of income measurement. It may be said that economists and statisticians in general have had a national bias. They measure national income and national productivity, and it is quite natural that they should have done so; the national statistics are easily accessible and homogeneous. Our job is much more difficult in a way in that we are concerned with the interaction of the various national incomes on each other and the way the various national economies and national incomes are bound together by international trade and international investment.

If you divide up this subject of world income following familiar lines, we are interested in the total size of world income and in trying to measure the changes in the size of world income over periods of time; we are interested in the distribution of world income, not so much in the distribution of national incomes as between individuals within one country, which is very largely a domestic affair, but we are greatly concerned with the international distribution as between countries. Thirdly, we are also greatly concerned with the stability of income over time, the prevention of world-wide trade depression. Fourthly, we are greatly concerned about international trade and international investment. In all these four fields, productivity measurements come in and are very important to us.

If you think, for instance, about the distribution of world income between countries, the subject that has become so important as the problem of technical assistance to under-developed countries is, of course, one of raising productivity. How far is it possible to raise productivity in countries which are lagging behind by applying to them experience or effort or resources coming from countries where productivity is more highly developed? Then again, the question of international trade in a period of full employment has very largely become a question of availabilities. The main thing at this present moment which reduces the volume of world trade is lack of availability -- of capital, coal, steel, food. If certain types of products were available, trade in them could proceed to everyone's advantage. Therefore, trade has become very largely a problem of availability. Similarly, foreign investment has become very largely a problem of availability. Many capital goods are very scarce. Textile machinery is an example. The flow of foreign investment at this present moment is also held back for other reasons, but is largely held back through a lack of capital goods. Therefore, wherever you turn, production, or productivity, is behind so many crucial problems which go by quite different names.

Before the war, increasing domestic output was largely a matter of employment. Governmental ideology has not yet managed to transcend that conditioning. Here probably there is a useful job to be done by nongovernment economists and statisticians, because the fact that to raise output is now a question of raising productivity rather than of increasing employment does not sufficiently enter the consciousness of national governments. In the industrialized countries, governments have become very highly employment-conscious. They are going in for national policies of full employment. They recognize full employment as a national responsibility, but they do not yet recognize high productivity in the same sense. That is probably still a backlog from the days when it was easier to raise output by raising employment than by increasing productivity per head. Similarly, in the underdeveloped countries, where there is no problem of unemployment in the industrial sense, the emphasis is almost entirely not on productivity but on "development." The term development as used by governments of underdeveloped countries often means new industries, new projects. There is quite clearly a danger that these governments neglect the problem of raising productivity, improving productivity and checking productivity in those industries which they already have. That again is quite natural. New projects, new industries are something spectacular, something tangible, something concrete. Increasing productivity in existing industries is perhaps not so spectacular.

Perhaps I had best now try to mention some of those specific questions that are of particular interest in the field of international economics. May I revert again for a moment to this problem of under-developed countries that is now so much in the public light. There are a great many concrete questions to which a tentative answer would be highly valuable in guiding assistance programs, in telling us in what lines assistance to under-developed countries in all forms would be most productive and would be likely to yield maximum returns. There is a general belief, quite universal among the governments of under-developed countries, that agriculture and primary production -- production of minerals, metals -- which are the backbone of their economies at the present time are less promising for technical progress, that productivity has a tendency to increase less fast in those occupations than in manufacturing industry. This is one of the reasons why industrialization is one of their major objectives. Almost universally it is believed that in industry you have something more dynamic, that if you have industries you participate in economic progress. Is it true that in primary production productivity tends to rise more slowly? If so, what are the reasons? Are they inherent in the economic conditions of under-developed countries so that even in their industries, if they had them, productivity would rise more slowly than in advanced countries, or is it really true that industry is generally more dynamic in a universal sense?

Take a second problem. In industrialized countries progress in productivity has become practically automatic. As, for instance, Schumpeter pointed out in his book on "Democracy, Socialism, and Capitalism," improvement in productivity has become almost an industry by itself. There is a certain group of activity, research, improvement, invention which has become so highly specialized, so regularly carried on, that increases in productivity have come to be roughly predictable and form part of one's confidently held expectations. How far is it true of this type of research which results in automatic progress in industrialized countries, that the way this particular type of research is organized it has no application to economies different in structure from the U. S. economy?

A third problem: the limiting factor generally is supposed to be labor, and hence in general our productivity measurements are productivity per man-hour, per worker. Well, it is at least possible that research has had a heavy bias in favor of exploiting the type of improvements that are most useful in large-scale highly mechanized plants, a bias in favor of labor-saving inventions. The only problem in an industrialized economy is the ultimate labor problem -- manpower shortage -- since given sufficient manpower and a few strategic resources you can get your machinery. In under-developed countries the situation is very different. They have labor but they can't apply that labor to the manufacture of machinery. The manufacture of machinery is also a labor problem in the sense that if they only had a sufficient export surplus, if they had sufficient manpower, they could also get the equipment to raise their productivity. But in practice it amounts to saying that capital goods to them are not a labor problem because in fact -- because of currency complications, pricing problems, inefficient methods in agriculture -- they cannot possibly achieve that export surplus. Therefore, the limiting factor in under-developed countries is capital, not labor. Is not a very different type of productivity measurement required in countries in which the limiting factor is not labor but capital? Secondly, is not a very different type of research and of current technical progress activities required in such countries in order to reproduce that atmosphere of continuous and automatic progress which now pervades the industrialized countries? This is a very interesting problem which has hardly been tackled, on which I think we feel that research might be well worth doing. And of course, related to that, if you study the productivity problems of under-developed countries, what strikes you very often is that because they have to rely on capital goods from some other highly industrialized country, perhaps quite a different type of capital good would be more useful, more productive in under-developed countries, that is, reliance on a few sources of capital goods may perhaps have led to a neglect of such problems as operation of machinery in tropical climates.

Another type of neglected productivity problems in under-developed countries refers to the different type of labor in such countries. Workers, for instance, have a different attitude. They strongly dislike, in a number of these countries, the monotonous, standardized tempo imposed by machinery. They perhaps like to work in jerks. Given that attitude of workers, which is not easy to change, is not a very different type of technique, a very different type of outlay of factories, a very different type of arrangement of machines, a very different type of machine itself required?

Then again, in these under-developed countries, perhaps there are possibilities of starting small-scale rural industries, providing part-time employment, such as, for instance, the production of agricultural tools or the development of crafts into industries which on general qualitative grounds look quite hopeful. But a good deal of productivity research I think is required to establish the relative productivity of small-scale rural capital saving industry as distinct from the big project these countries generally want. Again, possibly a different technique is required to measure productivity of labor in these small-scale rural occupations than in the large-scale highly mechanized industrial plants. In that particular field, a good deal of pioneering has been done, in the development of small-scale rural industries, by UNRRA in China. To my knowledge the data arising out of the operations of small-scale rural industries in China have never been used as a basis of statistical measurement or comparative measurement of productivity of this type of industry compared to large-scale industry. Again, it is possible that a very useful field of research is lying unused waiting to be done. Perhaps I'll now leave, for the time being, the subject of under-developed countries.

The subject for our discussion today is international comparisons of productivity. Therefore, let me just point out a few of these international problems on which I hope that one day we may do research or on which research done by others would be very useful to us. For instance, let me mention one problem which directly involves comparison of productivity of different groups of countries. One of the fiercest current discussions is on colonialism. The two points of view simply clash at the moment. There is no bridge between them. No research is available which enables us to say whether colonies are economically backward because they are politically dependent or whether they are politically dependent because they are economically backward. At the moment you have two assertions with no link between them, and again it seems to me that research might come in useful. It would be interesting, for instance, to compare productivity in colonies with countries which are otherwise similar but not colonially dependent, and to study changes in productivity in countries which have left colonial status behind them. You have here an example of one of those thorny political problems which give so much trouble in which economic research might possibly be helpful. At least, discussion might become a little more rational on both sides if figures and data of that kind were available. Again, that seems very far-fetched at this moment. It seems very difficult to see how that can be done, but it is one of those things that are worth thinking about.

In a different field, one of those political movements that are now current and fashionable is the idea of unions. The Western European Union, the Benelux Union, the general tendency towards regional organization are illustrative. There, again, is a big field for research on comparative productivity. Presumably, there is going to be a certain amount of economic specialization. What are the economic advantages of specialization and integration in a given industry, for instance, in the Western European steel industry? That would be a very good example. Or, vice versa, what are the effects on productivity of partition? India and Pakistan were partitioned. So was Palestine. What would be the effects of such separation? It really involves the cutting of some link between plants, between industry. What is the effect of that on productivity? If research were sufficiently advanced to enable us to answer some of those questions, it might have a useful bearing on those final decisions that are being made. At the moment, all one can say is that these decisions are made in complete ignorance of what the economic effects might be. Well, perhaps it isn't beyond hope that at some future date research on such subjects might be done before political decisions are made.

Let me raise another subject that returns me at least for a moment to this problem of under-developed countries. Roughly speaking, there are three types of investment in such under-developed countries. There is first of all what you might call the creation of external economies -- creating the necessary pre-conditions for economic development. Secondly, there is the idea of multiple development, of advancing simultaneously along a broad front to develop one industry and simultaneously develop another industry which provides a market or source of supply for the first industry. This idea is that if you proceed simultaneously along a broad front your various projects mutually support each other, and it is easier to proceed in that manner than by isolated projects. Finally, there is the big isolated project -- your big steel plant here, your big copper manufacturing plant there -- plants that are enormous relative to the total industrial output of the country. A single plant of that type may raise the industrial output in such a country by about 50 percent. What are the relative productivity, the relative advantages and disadvantages of these three types of investment? If you take the first type, external economies, you have a thorny statistical problem. The direct productivity of such things is nil. That is to say, if you develop transport, that investment by itself does not add to your national output. It creates the foundation for such increases. As long as that is the case, as long as there is only that nebulous link, so difficult to define, between the creation of these foundations and the final output that you get, how can we measure productivity? A great many of the decisions that are being made by governments, whether they are to go in for this patient laying of foundations by creating external economies or to go in for big projects, as well as a great many of the decisions of such organizations as the International Bank, whether to support the one type of development or the other type by making the loan, depend upon such comparisons. Of course, the same would apply to the Export-Import Bank or any other loan-making agency. At present, all these decisions are made in the dark. Is it impossible or is it at all possible statistically to find methods of estimating in advance the improvement in industrial productivity of plants in a certain area which can be anticipated as a result of building a railroad line in that particular area or as the result of developing a multiple project in that area? There are a number of such interesting statistical problems.

Finally, let me return to a more general subject. As I said before, governments of national countries are in general still unduly employment-conscious and not enough productivity-conscious. Statisticians and economists have always tried to point out that even before the war unemployment was not, in a normal year, the most serious economic problem, even of the most highly industrialized countries. That is to say, that the increase in output that you would have got in the inter-war period over the industrialized countries by eliminating unemployment, let us say by lowering it to 3 or 4 percent or whatever the possible minimum level may be, the increase that you could have got that way was not more than perhaps two or three years normal technical progress in the industrialized sectors of the world. And that, of course, is a continuous process while the increase in output you get as a result of reduced unemployment is a once and for all affair. You get it once and you have done with it. And from that point of view the speeding up of the rate of progress was always more important than the elimination of unemployment, although that may be a very cold and detached statistical viewpoint. I think in the days of unemployment, economists almost implicitly assumed that if you only created full employment productivity would look after itself, because you get all the dynamic pressures of labor shortage -- scarcity of labor would put pressure on wages, rising wages would put pressure on management to mechanize their plants, and you get increasing productivity as a by-product of full employment.

I think the lesson of economic history so far is that that was a mistaken view. On the contrary, there is a distinct danger that full employment may lower productivity, may be a danger to productivity, that the inflationary pressures that you now get through most of the world have a bad effect on productivity. That, of course, has been much discussed. There is nothing new in that, but certainly it is a change from the pre-war view that if only you get full employment then productivity will look after itself. From that point of view perhaps the primary economic problem now is to eliminate the dangers to productivity inherent in inflationary pressures. At the same time, how is it possible at this present moment to retain the beneficial effects of inflationary pressure in industrialized countries (because such pressure is in many ways a good thing; it may be a prerequisite to maintaining maximum output)?

Finally, let me just mention the considerable interest from the point of view of economic relations that attaches to the measurement of differential rates of growth of productivity, especially in the various industrialized countries. As you know, this rate has been different for different industrialized nations. The United States, for instance, advanced at a much more rapid rate in the 50 or 60 years preceding the last war than the United Kingdom or France. That may strike the statistician at first as a fact of merely statistical interest, of not very far reaching importance. You may advance by 3 or 4 percent or by 1 or 2 percent a year, but after all, you advance; it is the same thing. In fact, I believe it is not so. As among industrialized nations, a rate of advance slower than that of your main competitors in the industrial field means a decline. Either you have got to keep running or you have got to move backward. You can't move forward slowly. Differential rates of growth have an enormous bearing on the shift in economic power from one industrialized country to another country. And in particular, of course, it also has an important bearing on this policy of exchange stabilization. As you know, one of the international agencies that now exist is the International Monetary Fund. One of the main purposes of the International Monetary Fund is to maintain a reasonable degree of exchange stability -- to prevent temporary movements from forcing countries into exchange depreciation or exchange controls by providing the international short-term credit fund or medium-term credit fund which is the essence of the International Monetary Fund. Ultimately, exchange stabilization can not be maintained by international rules, not by a charter or by a code. It can only be maintained by fairly equal rates of progress or, alternatively, by a domestic wage and price policy which just offsets the higher rate of progress in one country.

Supposing the United States proceeds up by 4 percent each year, while another country proceeds up by only 2 percent each year. Well, if the United States by some arrangement could raise prices 2 percent faster than the other country does, then exchange stability would be possible without harmful effect on international trade and investment. But that, of course, would require almost a miracle, since wage and price policy is entirely a domestic affair in different countries; it is subject to institutional differences and a tug of war between domestic groups in each country. Such miracles can not be expected.

One of these flights of fancy which may or may not come true but which should provide promising fields for work would be to measure differential rates of exchange, differential rates of increase in productivity in various countries, and then try to develop an international exchange rate system which would take into account the changes in productivity. Don't wait for your balance of payments before you adjust currencies. Adjust currencies according to international rates of productivity. But, of course, this is one of those nebulous ideas that may or may not be worth research.