INTERNATIONAL COMPARISON OF RATES OF ECONOMIC PROGRESS

8 September 1958

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INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

Dr. Colin Grant Clark, Director of Research, Econometric Institute, Inc., Fellow, Econometric Society, and Director of Research, Oxford, was born in England on 2 November 1905. He received his M. A. degree (Oxon), and another M. A. degree (Cantab). He took a degree in Chemistry: Frances Wood Prizeman of the Royal Statistical Society. He was an assistant to the late Professor Allyn Young of Harvard, and has been a lecturer at Cambridge and a visiting lecturer at the Universities of Melbourne, Sydney, and Western Australia. He worked on the Survey of London Life and Labour, 1928-29, and the social survey of Merryside, 1929-30. He was on the staff of the Economics Advisory Council, 1930-31. He was Under Secretary of State for Labour and Industry; Director of Bureau of Industry and Financial Adviser to the Treasury of Queensland. Among his many publications are: "Economic Position of Great Britain" (with Prof. A. C. Pigou), 1936; "National Income and Outlay," 1937; "Critique of Russian Statistics," 1939; "The Conditions of Economic Progress," 1940 (revised ed. 1951 and 1957); "The Economics of 1960," 1942; "Australian Hopes and Fears," 1957; and many pamphlets and articles in technical periodicals. He lectured at the College in 1947 while representing his government at the International Statistical Conference.

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DR. KRESS: Admiral Clark, Gentlemen: Our speaker this morning, Dr. Colin G. Clark, is the Director of Research at Oxford University. This post allows him to come to this country fairly frequently to make lectures and to take part in research programs. He was announced as a Director of Research of the Econometric Institute of New York City on 10 July, and since that time we have been busily engaged in trying to get him here at the earliest opportunity, which is this morning. And it's time enough, too, because he is leaving the country again on 22 September.

Dr. Clark is one of those economists whose every word, written or spoken, attracts attention. Some years ago he gained an international reputation as a predicter of things to come and, with the Econometric Institute, he has been working along those forecasting lines, because the Econometric Institute, itself, is interested in providing forecasting information to business for everyday use.

But, among academic economists, Dr. Clark is known for his work in the study of comparative national economies, and it is on this general topic that he is going to talk to us this morning.

You will note in the biography that you have that one of his books, "The Conditions of Economic Progress," written in 1940, was revised in 1951 and again in 1957. So his topic this morning, "International Comparison of Rates of Economic Progress," will furnish more information in the international economics field for each of you.

Dr. Clark was here in 1947 at the time of a visit to this country in connection with one of the international statistical congresses and spoke from this platform.

Dr. Clark, it is a pleasure to welcome you back to this platform and to present you to the Class of 1958-1959.

DR. CLARK: Admiral Clark, Gentlemen: It is very interesting for me to come back to the topic which was the subject of my address

here 11 years ago. There has been a great deal of fresh factual information since that date; otherwise I wouldn't be so anxious to come back to the topic. This is a field in which I have been working for over 20 years.

I first published some work on these international comparisons of productivity and income in Germany in 1938. It makes an interesting digression to note that in Germany in 1938 it was still possible to publish objective scientific papers. It is difficult to imagine a foreign economist publishing a scientific paper in a Russian or a Chinese journal now.

The first thing I must ask you to do, gentlemen, is to put out of your minds, or at any rate to view with a very, very critical eye, the international figures of income per head comparisons which have been published by United Nations. My reason for asking you to do that is that they have been compiled, more or less deliberately, on an inaccurate basis. Perhaps I can explain the situation best by saying that the statistician who presided over this section of the United Nations Secretariat once explained it to me in a very delicate language. He said, "Every statistician in my office has to be first a diplomat, and secondly a statistician."

When United Nations was formed, one of the subjects on which they had to bargain was how the contribution should be assessed. A natural enough suggestion was that each country should pay an assessment on a proportion of its national product or national income. This was very irritating to the Russians, who now had to submit, for the first time, an estimate of their national product and, if they submitted it as high as they had hitherto been claiming they would have to pay a high assessment. So they got a special clause put in that Russia and affiliated countries should be assessed on a different principle.

But, when it came to assessing a number of very poor countries in South America and the Middle East, they were terrified of having to pay an assessment beyond their means, which had to be paid in American dollars. So the statisticians found a way out by estimating their national products at an unusually low level. The way they did this did not involve any falsification of the figures. There are more subtle processes than that. (If you take any interest in this matter, I would recommend as required reading a short book, called "How to Lie with Statistics." It is very entertainingly written, and full of very important truths. There

were some things in it new to me, including some of the ways in which medical statistics are handled, and how an independent research agency proved that "9 out of 12 of the people who smoked a particular brand of cigarettes were free from hay fever." You can get results like that if you just go on long enough. You break up your sample into very small units and send them to one research agency after another, and eventually you will get a favorable result. You throw the others away and publish the favorable result, and it's perfectly true.)

Now, in international statistics the method is a bit more subtle. The method consisted of estimating the national products as accurately as it could be done, but then converting them to American dollars at the current exchange rate. On the face of it, that's perfectly reasonable, and that is what has been done. These figures have been published and have been circulated around the world, and millions of people have heard that the inhabitants of Saudi Arabia have an average income of $50 per head per year, or some such figure as that.

The defect in the method, which only a trained statistician will pick up, is that, if you use the current exchange rate, it very much understates the purchasing power of the money, and so very much understates the income and productivity of the poorer countries. Anyone who has traveled in the poorer parts of the world knows that, except for a few things like motor cars and gasoline, your money buys very much more in the poorer countries--at any rate in the ways of housing, food, domestic service, clothing, and most objects of consumption. To get a true comparison you have, therefore, to use in the poorer countries a much higher purchasing-power equivalent for money than the exchange rate.

So the effect of the United Nations method is to understate the productivity of the poorer countries and to create the impression of gaps even wider than they are. The gaps between the richer and the poorer countries are certainly wide enough. I think that it is very harmful to overstate the difference, because it gives people an excessive impression of the hopelessness of the problem.

Now, on a related subject, a statement which you must have heard hundreds of times, and therefore believe implicitly, is that statistics have proved that two-thirds of the world's population don't have enough to eat. That statement, since it was first made in 1952, has gone around and around the world. As Hitler once pointed out, if you tell people a falsehood

frequently enough, they come to believe it implicitly. This statement is completely false. Not deliberately false, but if you track it down to its origin, you will find that it was simply based on the statement of a well-meaning British official in the Food and Agricultural Organization of the United Nations, Lord Boyd-Orr. This well-meaning old gentleman just mixed up two columns in a statistical table which was placed before him and reached this astonishing conclusion. If you want to follow this subject further, it was all traced down by the Stanford Food Research Institute in California, and this conclusion was published in a book, called "The World's Food." No reply has been made to it.

I should say that the proportion of the world's population who are hungry, in the sense of not getting enough calories, or persistently not getting enough calories, is infinitesimal. After all, if you persistently don't get enough calories you very quickly die. The number of people who are short of protein may be more significant, but even so, it's only a small percentage. The number of people who live on extremely monotonous diets of boiled porridge is on the other hand very considerable. But after all, monotony and starvation are not quite the same thing.

So, with that as our background, we now take a look at the different income levels in the richer and the poorer countries. When you get down to a really poor country, incomes expressed in dollars rather lose their meaning. All you can say about the poorer countries is that you get a range from the poorest and most primitive parts of the world, like Central Africa, where people have enough to eat, and sleep in a grass hut, and that's about all, up to four or five times that level of economic welfare. For very poor countries it is best to express income and productivity, not in dollars but in grain, in the amount they have to eat. Where you have about 300 kilograms of grain per head of population per year, that is just about enough to keep people alive. By the time you get to twice that level, you find people beginning to keep livestock. If a community can keep livestock, it shows that the people are above the very minimum of subsistence--and so on up the scale, until you reach the countries where something like a money economy prevails.

If you work in present-day American dollars--I am dealing now with the more successful countries--it is best also to work in terms of figures per man-hour rather than per head of population, because the proportion of the population who work, and the number of hours per year which they work, vary very greatly between countries.

So, let us take as our standard the United States, where the average American at work produces and earns about $2.50 per hour. That doesn't mean, of course, that this is the average wage. This is the productivity of the whole community, including businessmen and executives, as well as farmers and unskilled laborers. But the general national average is $2.50, and that can be compared with comparable figures for other countries, Canada, New Zealand, and Australia being the runners up, with figures at or approaching $2; and then you run down the scale through the European countries, the most productive of which is Sweden, with a figure of about $1.50, and come down to considerably poorer countries, like Italy, where you get a figure of about 80 cents. When you get down to the poorer European countries you are on a level nearly reaching that of the more productive Asian countries, like Japan, which is only a few cents below Italy.

The Soviet Union, incidentally, measured in this way, rates below Italy and probably a little below Japan. It has a productivity on the borderline between the poorer European and the more productive Asian countries.

These figures are, of course, interesting, but I am now going to ask you to think in these terms--that the rates of growth of productivity are considerably more important than productivity itself. At any rate they are at least of comparable importance, because productivity can change, does change, very fast. If you go back to the turn of the century, about 1900, the productivity of the average American and of the average Briton were very much the same. In the course of a little over 50 years, because of different rates of productivity growth, the American has climbed to a level more than twice the British, and is still gaining. This very big discrepancy between American and British standards is the product of only the last half-century. It doesn't go any further back than that.

I want to put before you the proposition, too, that the social and political outlook of a country depends as much on the rate of growth of productivity as it does on the level of productivity. At first sight that may appear a rather abstract proposition. Does the average citizen really know what his country's rate of growth of productivity is? Does he, for that matter, know what his country's productivity is? No, he doesn't. But he does know very well what his wage is, and what the purchasing power of his wage is. If you give him an increase in his wage, and at the same time prices go up, he knows very well that his real income has not changed, or, if he has any illusions on that subject, his wife soon disillusions him. The average citizen knows very well what the real

purchasing power of his wage is, and he knows also whether it is increasing or not, and whether he is better off than his father was under comparable circumstances 30 years ago. I think it is impossible to exaggerate the importance which these growth rates play in the outlook of a country, as a measure of the success, or lack of success, of a country's economic policy.

I will ask you now to study these figures which I have put on the blackboard, which show the percentage per year growth rates, over a fairly long period, of the different countries. I have confidence in the method of measuring over a long period. As I say, I have been examining this information and all the detail available for the last 20 years, and it is rather surprising how uniform the rates of growth are. It is true they are more uniform in some countries than in others. The United States is one of the most astonishingly uniform. The figure of 2.3 percent per annum rate of growth of productivity per man-hour has prevailed, with only minor fluctuations, ever since the 1890's. Before then it was slightly lower.

Other countries in most cases are similar. There are a few cases where there are violent breaks, but they are very rare.

Before we look at the figures in detail, perhaps I had better explain one further point. If you draw diagrams (drawing on blackboard) you should draw them on a logarithmic scale, because you are dealing with percentage rates of increase. I think logarithmic diagrams must be familiar to any physicist. The usual course, subject to minor fluctuations, is pretty uniformly upwards in every country. Now you say, "What about wars, civil wars, revolutions, and other disasters?" Well, there certainly have been plenty of them in the last 50 years. The pattern, however, is always the same. You get some upward growth; then war comes, maybe a serious war, and you get a very heavy reduction of productivity; then eventually the war comes to an end, the postwar disorganization comes to an end, and you get a recovery. You can project the old trend line; the country will recover very rapidly until it gets back to the trend line, and then it continues to advance at the old rate like a scar healing after a wound--the flesh as it were knows how far it has got to grow, and when it has reached there it stops growing. You can almost predict what the temporary abnormal postwar growth rate is going to be, before the old growth rate is restored again.

This has been the pattern for all the countries which were seriously damaged by the last war. But, unfortunately, a great many statisticians,

including some of the most eminent, don't see this. To go back to my medical parallel, suppose a surgeon were watching a wound healing, and he watched the rate of growth of the flesh and skin, and he said, "It is growing very rapidly; I now predict that for the next five years it is going to go on growing at this rate, until what was formerly a wound has become an enormous growth." If a surgeon began talking like that, you would send him to a psychiatrist. After all, medicine is a fairly exact science. A surgeon knows that growth continues back to the trend line, and that then normal growth supervenes. But economics is still a much more immature science, and a great many economists now are taking these very high growth rates in countries like Russia and Germany during recent years, and projecting them indefinitely into the future and are saying "There's just no limit to the extent to which Russia or Germany (whichever the case may be) will grow."

That's a very serious mistake. You can enunciate as a general principle--after all, it is only commonsense--that in the years just after a disastrous war economic growth rates are bound to be very high, because recovery is taking place. And you can equally certainly predict that, when the normal trend line has been regained, the growth rates will be slower.

Russia was in a comparable position in the 1920's. In those days, when discussion was freer, some of the Russian statisticians understood this point, and predicted that the growth rates were going to slow down. That is in fact what happened. But the world is now full of statements, which are half-truths, about the high growth rates of the Russian economy during this postwar recovery period, and projections of them into the indefinite future.

Even the measures which have been made are very dubious. If you have heard this figure of 6 or 8 percent per annum as the supposed growth rate of the Russian economy, which you have probably heard so often that you have come to believe it must be true, it is based on very flimsy evidence. In any case it is evidence from this postwar recovery period. If you choose to apply a similar technique to the figures for Germany, Italy, Japan, or any other country which was severely damaged by the war, you can get very much higher growth rates.

So, after removing this very widespread source of misconception, I will now ask you to look at the actual evidence of growth rates over the long period. I have arranged the countries in alphabetical order. You

LONG-PERIOD RATES OF GROWTH OF REAL PRODUCT PER MAN-HOUR PERCENT PER YEAR

Country	Period	Rate
Argentina	1916-51	1.1
Australia	1891-1913	0.0
	1913-30	2.0
	1930-43	0.9
	1943-55	2.0
Belgium	1895-1913	2.6
	1913-38	1.3
	1938-51	2.1
Brazil	1929-49	1.0
Canada	1870-1952	1.9
Chile	1929-38	3.3
	1938-53	0.0
Colombia	1929-53	1.6
Cuba	1939-53	0.9
Denmark	1913-51	1.2
Finland	1913-39	1.1
	1939-51	2.9
France	1870-1951	2.3
Germany	1860-91	2.1
	1891-1913	0.6
	1913-38	1.6
	1938-57	1.4
Ireland	1926-45	1.4
Italy	1901-25	3.5
	1925-39	0.7
	1939-43	3.8
Japan	1914-29	3.2
	1929-40	1.4
	1940-52	2.4
Netherlands	1900-13	0.7
	1913-38	2.3
	1938-54	2.1
New Zealand	1901-52	2.2
Norway	1891-1913	1.6
	1913-52	2.6
Portugal	1914-51	0.8
Sweden	1861-90	1.5
	1890-1909	3.5
	1909-30	1.4
	1930-52	3.0
Switzerland	1890-1951	2.1
Union of South Africa	1911-28	1.2
	1928-52	2.3
United Kingdom	1870-95	1.6
	1895-1913	0.0
	1913-29	1.6
	1929-39	0.8
	1939-56	0.9
United States	1890-1952	2.3
U.S.S.R.	1913-28	0.7
	1928-38	1.6
	1938-53	2.0

will naturally be interested to start at the lower alphabetical end of the table. You will notice the curious similarity between the American and Russian figures, with the Russian figures slightly lower. The Russian growth rate is compounded of most extraordinary fits and starts. Quite apart from the two major wars and a revolution in which Russia has been engaged during the last 50 years, there have been a large number, even during so-called peaceful periods, of internal disturbances. There was the Great Purge of 1937, and there was the chaos which followed the introduction of the farm collectivization in 1929. In each case economic growth stopped for some years and then was resumed with a violent jolt, catching up arrears, and then slipped back again. But the overall consequence adds up to only about a 2 percent per annum rate of growth.

I think that it is quite mistaken to pick out the short periods during which growth was very rapid and project them indefinitely into the future.

My conclusion is confirmed in a very interesting way by a recent document published by the National Bureau of Economic Research in New York by Dr. Nutter, who set out to measure how far behind Russia is compared with the United States, by the simplest and most direct measurement, namely, per-head comsumption of shoes, textiles, and a number of other commodities. The Russian figure now compares with the American figure, say, 30, 40, and 50 years ago. You can tabulate these figures and measure how far behind Russia is. Dr. Nutter began by measuring how far behind Russia was in 1913, then how far behind it was in a recent year. The general conclusion he reached is that Russia is slightly further behind now than it was in 1913.

In looking at these figures, I think you may be surprised in the first place to see that they may appear to be very low, figures of 1, 2, and almost 3 percent per annum. But let me remind you that these are compounded growth figures. You must reckon them as a compound interest-rate and not as a simple interest-rate growth. Even a 2 percent per annum rate of growth will double your national product per head in 30 years. When you put it that way, you will find many sociologists and statesmen who regard that as an alarmingly rapid rate of growth. I think that their doubts are a bit misplaced, but there are some quite serious men who doubt whether the social institutions of a country can stand the consequences of growth as rapid as doubling in 30 years. For a man to be twice as well off as his father was, when his father was doing comparable work, at a comparable age, may be a bit upsetting to the social order.

Certainly, where you get the countries with extremely rapid growth, like Sweden and Japan, many responsible men are seriously worried that the growth is too rapid. You may get some unexpected social consequences in countries where growth is very rapid.

I am not going to offer to make a complete analysis of all the causes at work. I wish I could. But there is obviously a lot of further research needed. I think the best I can do is put the facts before you and indicate one or two points which arise out of them. I might mention that these figures are a bit more up to date than those which I published in the book, "Conditions of Economic Progress," although most of them are there. In this version, they are going to be published in October by the Journal of Business of the University of Chicago.

You may say at first, "Surely a country's productivity and progress depends on the exploitation of its natural resources." And if you have a geographer to lecture to you, as I suppose you do sometimes, he will dwell on little else. He will point out a country's natural resources and explain how they determine its productivity. There may even be some geographers who go on handing out the venerable Victorian fallacy that the industrial growth of a country is dependent upon its geographical resources of coal and iron ore. I never knew a more fallacious proposition.

When people question me on this I point out the very high growth rate and also the very high income level of Switzerland, which has no resources whatever, except a small amount of hydroelectric power and some scenery to attract the tourists. Switzerland has no minerals whatever. It has some of the very poorest agricultural and very limited forest resources, and yet it is one of the world's wealthiest and most successful countries. On the other hand, everything that Switzerland lacks Brazil possesses. Brazil has enormous areas of agricultural land, water, forests, minerals, oil, and hydroelectric power; but doesn't use them, or uses them only extremely partially and inadequately. And, with all due respect for the science of geography--I trained one of my sons to be a geographer, and I think that it is a very important branch of knowledge--you must not let a physical geographer exaggerate the importance of his science. You must be humanists--I am not using the word in a prejudicial sense. You must draw attention to the predominance of the human resources of this world over the material resources. I don't know if that is a heretical doctrine in military science, Mr. Chairman, but it is certainly true in economic science. Some material resources matter, in the sense that it is very difficult to do without them. But a country which

...ce. ...ake the most of ...ntry which puts everything ...an make very inadequate progress on

Perhaps it is not fair to pick out Brazil in this way, because, if I had space to give you a fuller schedule on the South American countries, I could get far worse results from countries like Chile. But generally speaking, I do want to minimize the importance of material resources, and to draw your attention to the much greater importance of human resources, and particularly to the intangibles.

Now, economics very often suffers from what Professor Robbins once described as "the fallacy of misplaced concreteness." Where you are dealing in physics or chemistry--and my own upbringing was as a chemist--I became an economist by accident--you are dealing all the time with concrete objects. At any rate, you are dealing with what you believe to be concrete objects, which are either there or not there, and can be measured. In economics, and in all other human sciences, you certainly have to take account of concrete objects, both natural and man-made, but you must pay much more attention to what is going on inside men's minds.

The three most important factors in economic progress, I am convinced, are not material at all. They are three intangible factors all beginning with the letter "e," namely, enterprise, effort, and education. Enterprise is not quite the same thing as effort, because the word "enterprise" conveys the implication that a man possesses some capital which he is willing to risk in a business venture. This factor has been so marked a feature of American growth and so desperately lacking in many Asian and South American countries. Effort applies alike to proprietors and to wage earners, and we all know what education means. The more I look at this problem--and, I repeat, I have been looking at it for many years--the more importance I find I have to attach to education as an economic factor. Like most of us, I am all in favor of education in itself. After all, everyone in a university has a vested interest in that subject. But quite apart from that, I am offering to sell you education as a factor making for national economic efficiency. Whether that applies in the military art, too, I don't know, but I suspect that it does. I suspect that a well educated army, other things being equal, will do better than an illiterate army.

I am not referring to scientific and technical education only, although they are very important. I attach almost equal significance to general education. If you ask me to put my reasons into words, the best I can say is this, that general education, even at the simplest levels, gives a man a flexibility of mind which is not possessed by the uneducated man, however admirable the courage and skill of the uneducated man may be. And it is in education that I find the biggest single factor in the growth of Japan.

Since I prepared this table some further information has come in which suggests that we must put the Japanese growth rate of real products per man hour a bit higher. It may be approaching three percent per year. There is no doubt that it is one of the highest growth rates in the world, certainly far higher than the Russian growth rate. To see that, you have only got to look back over a period of 50 years. Japan at the turn of the century was a very, very poor country, almost as poor as China is now, whereas Russia in 1900 was a country which had already made considerable economic advances. Japan, as we know, is also very poor in economic resources. Her agricultural land and minerals are deficient. She has to import coal from the United States. Japan rose to where she is by the efforts of her own people and, of course, by trade. These countries which are poor in natural resources, like Switzerland and Japan, and, to a less extent, Britain and Belgium, must trade. International trade, which is more or less, shall we say? a savory after the main meal for the American businessman, is the very bread of life to the Japanese, Swiss, British, or Belgian businessman. For that reason, any blocking up of the channels of world trade, which is only a minor inconvenience to a wealthy country, is a matter of life and death to some of these countries lacking natural resources.

I am speaking literally, Mr. Chairman. It is an issue on which countries like Japan or Britain are willing to fight. They must. With a very hard-working and enterprising population, and with opportunities for world trade, countries like Japan, inherently very poor, can grow rapidly. I was in Japan last year and I spoke with a number of Japanese economists and politicians and they generally agreed on this conclusion: that the Emperor Meiji, who conducted the Japanese restoration--after the revolution in 1868 he restored the monarchy after many centuries of anarchy--and who began the westernization of the country, made many important reforms, including the beginning of an army, a navy, a civil service, and a modern industrial community. But of all these reforms, none was so important as his introduction of universal education, which

came as long ago as 1886. And it's no joke, where you have to learn an alphabet with close to 3,000 characters. It requires real application. The message which Meiji gave to the simple Japanese peasants in those days was that they had three principal civic duties--to serve in the forces, to pay their taxes, and to educate their children. They did so, and it is to that factor that I attribute, more than to anything else, Japan's economic, and also military growth.

There is a remarkable hesitation on the part of India to educate her population. India has done a number of spectacular things, and undertaken a number of industrial projects--the building up of a very powerful army, the sale of chemical fertilizer to her farmers--a number of quite sensible things, and some rather dangerous things. But India has been remarkably hesitant in educating her population, and for that reason alone I think we can see a comparatively slow economic growth there for a long time to come.

Consider now Africa--I am referring to the newly freed African countries, like Ghana and Nigeria. Starting at a very low level--the Nigerians were slave raiders and head hunters only 50 years ago--these African communities have decided to devote their first call on their economic resources to education--I think, very wisely, because I think that, as a result, they are going to get an economic growth more rapid than that which is being seen in India.

Whether China follows Japan's example and educates her population, we don't yet know, but I think in the long run the rate of Chinese economic growth will depend mainly on education. In any case it will be slow.

I will conclude by saying that these growth rates, of the kind which we can observe, take a long time to establish, but, once they are established, they are set for a generation or two. The rate of economic growth of this country, or of any other country, is in some ways more fixed than we generally think. It is dependent on very deep-seated social and educational factors, and, once a country gets set on a rate of economic growth, it is likely to maintain it.

Thank you, Mr. Chairman.

DR. KRESS: Gentlemen, Dr. Clark is ready for your questions.

QUESTION: Sir, the Russians have said they are going to bury us economically. I wonder if you would care to predict when they will be in a position to carry out that threat.

DR. CLARK: Well, they are progressing backwards at present in relative productivity. There are two other points I might have mentioned about Russia. You can take these figures apart--it requires a more intricate table--to show separately agricultural productivity advances, industrial productivity advances, and then advances obtained by transferring agricultural population to industry. You will find that most of the Russian progress has been in the third class. That is to say, they had a rather unproductive industry, and a very unproductive agriculture. But just by a big shift of population from agriculture into industry they considerably increased national average productivity. Their industrial productivity per person engaged has not advanced very much. Now, they won't be able to continue this population transfer very much longer, for the important reason that their population appears to have stopped growing.

This cessation is something that you don't get your attention drawn to. The Russians are very skillful at diverting attention from embarrasing facts. When they finally, after many years of silence published a population estimate in 1956 of 200 million, that was almost exactly equal to the population of the same area in 1941. I know they had devastating war losses. One French statistician estimated 17 million, or 8 percent of the population. But, even so, the fact that in 15 years there had been no net growth is astonishing. I think it is possible that the 1956 figure was misstated deliberately, because they are going to take a census in 1959 and they want to have a base figure from which to show growth. "How to Lie with Statistics" is an important art in many countries. But, even if the 1956 figure is understated, there is plenty of subsidiary evidence about the check to population growth. I have been through the figures of school admissions, which depend upon the number of births since the war, and they are very, very low. So, if the population growth has been practically checked, their possibilities for economic growth will be checked, too.

QUESTION: That figure on Italy, there, is interesting to me. Will you comment on that? It seems to me that Italy isn't exactly leading the league in anything except that particular figure.

DR. CLARK: Italian economic growth has been astonishing. This is one of the cases where the line is broken. The old, pre-1920 Italy was

badly misgoverned, but had rapid economic growth. Mussolini's period, from 1922 to 1943, was not productive. There was far too much government regulation. But the postwar growth has been astonishing. You can measure it in the first place by the rapidity with which Italian exports are appearing in various markets. You can measure it by the growth of chemicals and other technically difficult industries.

QUESTION: Your curve on a logarithmic scale was a straight line.

DR. CLARK: Yes.

STUDENT: On a linear scale this would be exponential, wouldn't it?

DR. CLARK: Yes.

STUDENT: This to me has rather staggering implications when you think in terms of decades and centuries. Particularly, it means that the difference between the highs and the lows is getting bigger. Would you care to comment on that?

DR. CLARK: Yes, that is so. There may be natural limits to economic growth, but we can't see them. They are very far ahead. Our great-grandchildren 100 years hence may be fantastically wealthy, by our standards. But it is certainly true that the differences between the richer and the poorer countries are getting wider. The world in 1850 was a much poorer place, but the discrepancy between an American and an Indian was much less then than it is now.

QUESTION: I have two questions. The first one is: You made a statement that too rapid growth can be detrimental. Will you explain what you meant by that? The second question is a little unrelated and deals with education, the key part that education plays in growth. How do you account for the United Kingdom growth being at only .9 percent per year?

DR. CLARK: Britain has suffered from having too good an educational system for too few people. The British educational system is almost entirely designed to produce good civil servants, and the result is that you get very good civil servants and professional men, and comparatively poor businessmen. Your first question was on--

STUDENT: Why you believe growth can be too rapid.

DR. CLARK: Oh, yes, too-rapid growth. Well, it is just the national counterpart of the unduly successful man in private life. He gets superficially pleased with himself, and a bit psychologically unsure of himself, and his family relations become strained. There can be counterparts among nations of what you see in the individuals when they have been too successful.

QUESTION: Doctor, could you comment on the socializing of heavy industry, such as coal, steel, rails, and so forth, and the effect on the economic growth?

DR. CLARK: Well, railways are nationalized in almost every country except the United States. It doesn't seem to make much difference. Nationalization of coal has been remarkably unsuccessful in Britain, moderately successful in the Netherlands. Nationalization of steel is not in operation I think, except in the Communist countries. I think the only conclusion you can draw from historical evidence is that some nationalized industries can be successful if they are well run and if political leadership is good; but they are very often unsuccessful.

QUESTION: Dr. Clark, I would like to ask two questions. First: How many years are these percentages based on? Second: When do you estimate that Russia will reach the trend line, when it will come back from 8 percent down to 2 percent?

DR. CLARK: The evidence in most cases goes back for about 50 years. I don't think in any case that I have used less than 30 years. The best judgment I can get on the Russian trend line comes from an old friend of mine called Naum Jasny who lives in Washington. He is one of the last survivors of the Russian emigres. He was an official who fled the country after the revolution. He thinks we are just now at the turning point. You can't pin it down to precisely a year. He sees clear evidence of a slowing down in 1956 and probably some further slowing down in 1957.

QUESTION: I don't believe you said, Dr. Clark, exactly what those figures are, whether they are a conglomerate of many measures or whether they are productivity per hour or bushels of grain, or exactly what they are.

DR. CLARK: They are per man hour, and they are of "real national product," which is a composite which has to be measured by an index-number method. It is the product of all goods and services. They are percent per annum growth rate, in per-man-hour product of all goods and services.

QUESTION: We are inclined, I think, to try to relate individual enterprise with this growth rate. Arguing against that, of course, would be the high figures we see for both Sweden and USSR. Can you help us on that?

DR. CLARK: Well, first of all, in Russia, the Communist direction of the economy can achieve a very rapid and rather harsh transfer of peasant population into industry, and that has been the main factor in Russian growth. The efficiency of Russian industry has not grown very much. I agree with your proposition on the whole, that free enterprise and the free market do make best for economic growth. But that is compatible, in a country like Sweden, with having such industries as railroads and hydroelectric power nationalized. The rest of the Swedish economy however is free market.

QUESTION: I think it would be interesting if you could comment on the potential growth rates of, say, Israel and Egypt, or the new Arab Republic as it now exists. Do you have any figures on which you can base such an estimate?

DR. CLARK: Egypt has some information, but it is very poor. Some economic progress has taken place in Egypt in the past which we can judge just from the census. There has been some transfer of population into industry, and a certain growth in industrial productivity. The position of Egypt is not as hopeless as some people suppose when they look at its population growth. The rate of potential growth of Israel, on the other hand, I'd say is less than is commonly claimed. Israel suffers from an overpowerful trade union movement, and featherbedding and similar devices have been imported into Israel to an extraordinary degree.

QUESTION: Dr. Clark, certain of the Russian satellites had reputations as enterprising nations before the war. I wonder if you could comment on the effect of Russian dominance on the economic growth of these countries.

DR. CLARK: I do not think Russia has satellitized any country which had a high rate of economic growth before the war. Poland and

Czechoslovakia had moderate, not high, rates of growth. Yugoslavia had a moderate growth rate, which she has still preserved.

QUESTION: Doctor, looking at the figure on Germany, it would seem that the three principal factors you mentioned are not lacking in Germany. They rate high in all three. Yet it is difficult to reconcile this rather low rate against their astounding recovery. Is it a case where they are doing what they ought not to do? How do you reconcile it?

DR. CLARK: The German figure is still a bit uncertain. You see, the "astounding recovery" of Germany depends upon the principle which I demonstrated. It's just that the German economy had been reduced to a very low level, and for that reason alone, for some years, the rate of growth can be very high. When, however, you measure German productivity not against that of the 1930's the advance is seen not to have been so brilliant. Germany has suffered from a considerable measure of overorganization. The interference with the free market by cartels in Germany is much more serious than anything you find in a country like Sweden--even though Germany is always talking about free enterprise, and Sweden is always talking about socialization. I think German economic progress will depend on their ability to shake off their cartels, and also their high rates of taxation. Germany is just at a turning point now. She has clearly come to the end of the period of easy gains. She's running into labor shortages and rising costs, just like the United States.

QUESTION: Dr. Clark, a great many economists talk about the problems of capital accumulation as being limiting factors to economic growth, particularly as it applies to the underdeveloped countries. You have Brazil on your chart there, but you haven't said very much about the underdeveloped countries. Would you comment on this please?

DR. CLARK: I think this preoccupation with capital accumulation is just a sign of materialistic thinking, which is not confined to Marxians. There are many anti-Marxians also preoccupied with capital. Capital, of course, is a necessity, but it is far from a sufficient condition for economic growth. Many of the most important economic developments in recent years have indeed been capital-saving rather than capital-requiring.

I meant what I said, for poor countries as well as for rich, that enterprise, effort, and education count for much more than capital. A

country which is possessed of those factors and lacks capital will be able to scrape enough together, like Japan, or as India could if she tried. It is a serious mistake to think of capital accumulation as controlling economic growth. It may lead you to ridiculous conclusions.

QUESTION: Dr. Clark, the United Kingdon there has a very low rate of growth. I wonder if the Government is concerned about that, and, if so, what measures have been taken to improve it.

DR. CLARK: Britain's principal problem, apart from the eccentricity of the educational system, is exessive taxation. In 1945 I published an article indicating that 25 percent of net national income was about the safe economic limit for taxation. Very few countries have kept within that limit. If you move the figure up to 30 percent, as the United States has done, the result is you get a creeping inflation of prices. If you move the figure up to 36 percent, as Britain has done, you pretty well wear down the whole economy.

QUESTION: Do you have a figure, Doctor, for China, or could you comment on the position of China?

DR. CLARK: What little evidence we have seems to indicate that in the last 100 years China's economic growth has been backwards. It is very doubtful whether there has been much population growth in the last 100 years, either. Take no notice of what you are told about China having a population of 600 million, growing 12 million more per annum. At any rate, if anybody quotes those figures, ask him where he got them from. Trace them back to their origin, which you will find is very nebulous. I think China will make some progress, but very slow. I think the population growth may be 1 percent per annum, but not 2 percent, and I very much doubt whether there are 600 million Chinese.

QUESTION: If we don't have valid figures from China, what validity do you assign to the figures which you have for Russia?

DR. CLARK: Well, I have spent a very long time digging in them. I published a critical book on Russian statistics back in 1939, and have been working on them ever since. They require a great deal of cross-checking. We can get some information.

QUESTION: Doctor, you are in an excellent position to observe the impact of foreign aid programs, particularly financial assistance to the

countries to which we have been providing this assistance. Would you care to express your opinion as to whether the American taxpayer is getting his dollar's worth in these programs?

DR. CLARK: Probably the country I know best which has received aid has been Pakistan. I spent some time there preparing an economic report, and I spent more time with the Army officers than I did with civilians.

In Pakistan the United States has a very firm and loyal ally. I was taken up to some of the military posts on the Russian frontier, which are very interesting.

I think there are a number of other examples which you can select, where the United States has some very firm allies. The Pakistanis naturally resent the attention which the United States and Britain are paying to India, which they regard as a most unscrupulous neighbor--and I rather share their views. India has a very powerful army, after all these talks about peace.

At the other end of the scale, I'd say that giving money to countries like Britain and France is the worst form of international "pork-barrel." Wealthy European countries should not seek help from the U. S. Treasury.

Intermediate is the case of Japan. Japan does not ask for direct subsidies. What she does ask, in effect, is the right to sell equipment to U. S. forces in the Pacific, for dollars. I think that it was a statesmanlike decision on America's part to give Japan not subsidies, but this particular trading right until she has caught up her balance of payments. It will be only another year or two until Japan can stand on her own feet.

DR. KRESS: Doctor, we have come to the end of our time period. You have given us a great deal of information and it will be useful throughout the year. Thank you very much.

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