"GROWTHMANSHIP": FACT AND FALLACY

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"People must come to accept private enterprise not as a necessary evil, but as an affirmative good."

—Eugene Black

INTRODUCTION

India, since Independence, has been engaged in an adventure of economic development. At the same time, economic growth is engaging the attention of all countries, both developed and developing. This is a new area in the theory of economics and contributions have been made by eminent international economists. However, there is no conclusive theory of development as such. Even such an eminent economist like Prof. Milton Friedman, of the University of Chicago, pointed out, while addressing a meeting of the Forum of Free Enterprise in Bombay, that with all humility the economists had to accept the fact that there was no standard formula applicable for all countries, under all conditions, for promoting rapid economic growth. He added, however, that one of the important constituents of economic growth is individual initiative and enterprise or what is commonly referred to as the system of free enterprise.

One of the eminent writers on Growth Economics is Prof. Colin Clark. Director of Agricultural Economics Research Institute at the University of Oxford, England. His contributions on the subject, as in many other fields of economics, have been original, refreshing and thought-provoking.

The Forum of Free Enterprise is happy to present to the Indian public this booklet entitled "Growthmanship" Fact & Fallacy. We are grateful to the Editor of *Inter*-collegiate Review in which it originally appeared and to Prof. Clark for giving us permission to reproduce this excellent essay as a Forum booklet.

I hope that students of Indian economics, our planners and governmental authorities will benefit by a study of this publication.

A. D. SHROFF
PRESIDENT

Bombay.

"GROWTHMANSHIP": FACT AND FALLACY

COLIN CLARK*

To judge from the manner and frequency of writing on economic growth now, one might have thought that it was something which had only just begun to occur. This of course is nonsense; economic growth, in a number of countries, has been going on for a very long time. However, we must not fall into the opposite error, and think that economic growth is something which occurs more or less automatically. History shows plenty of examples of countries stagnating or relapsing economically, rather than growing. In the present day world there are at least four countries — Argentine, Chile, Indonesia and Spain — which. for different reasons, are now no better off economically than they were fifty years ago.

Adam Smith, who flrst made economics the subject of systematic study[1] when he wrote The Wealth of Nations in 1776, did have some ideas about economic growth. But it is true that the economists who came after him, for more than a century and a half, had remarkably little to say about the workings of the process of general economic

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1. The distinction of being the first economist should go not to Adam Smith but to Sir William Petty, who wrote in the 17th century. Petty's writings contain some extremely valuable ideas and information. But even his warmest admirers (of whom the present writer is one) would agree that he did not attempt to set out the whole subject in a systematic manner, as did Smith.

growth which was so manifestly going on all around them, preferring to concentrate their attention on how particular industries grew or did not grow, and how particular prices, wages and profits were formed. These were important subjects; but they did wrong to neglect the problem of general economic growth. One of the consequences of this neglect has been that during the last twenty-five years when the world really has begun to think about the problem, there have been so many ill-considered and ill-informed ideas put into circulation. It is to cover some of these ideas that the word "growthmanship"[2] has been employed.

To define our subject matter, growthmanship may be described as an excessive pre-occupation with economic growth, the advocacy of unduly simple proposals for obtaining it, and also the careful choice of statistics to prove that countries with a political and economic system which you favour have made exceptionally good economic growth, and that countries administered by your political opponents have made exceptionally poor economic growth.

Right at the start we can face the central issue of growthmanship. There are many politicians, business men and professors who demand that we go all out for economic growth, even at the expense of persistently rising prices.

A situation of rising prices is very frequently described by the word "inflation"--even by professional economists who ought to know better. The use of this word, in most cases, is erroneous: and we should object to the misuse of words, here and elsewhere, not only out of respect for the purity of the language, but also because such misuse of words may carry dangerously muddled thinking in its train. The word "inflation" means an excessive enlargement of the supply of money. When this happens it nearly always leads to an increase in prices, sometimes very violent. The drastic increases in prices which occurred, for instance, in America at the time of the Civil War, and throughout

2. The present writer does not claim originality for this word, which appears to have originated in the United States. The tracing of its first use might some day form an interesting subject for a minor research project.

the world at the time of World War I, could more or less be described as "inflations" in this true sense of the term. But it is quite wrong to apply this phrase to the increase in prices which took place in nearly all countries in the years following the World War II. Both our practical and theoretical knowledge of economics now indicate to us that such increases in prices are usually the consequences of an exessive general level of demand, which in its turn may arise from a number of causes. It is true that there are a number of countries, particularly in Latin America, where genuine old-fashioned inflation is going on, in the sense of grossly excessive additions every year to the money supply; and the consequences are very serious, and plainly visible for all to see. The slower but nevertheless persistent increases in prices which have been going on Curing the last twenty years in the United States and Europe can not be explained in these terms. Here, the actual increases in the supply of money have played a small part, in comparison with excessive demand. Indeed, when the general level of demand has been allowed to become excessive, a restriction of money supply will probably not serve to counteract it. Therefore the sooner the word "inflation" is banished from general discussion, or rather relegated to the description of those parts of the world to which it is truly applicable, the better it will be for our economic understanding.

In fact, the situation is becoming clearer to us already. The advocates of growthmanship certainly do have unduly simple proposals of obtaining economic growth, just by stimulating demand all round. When demand becomes excessive in relation to current capacity to produce, then prices rise.

But why not let prices go on rising? There are a number of objections, from the purely economic point of view. But taking precedence of all these are considerations of justice. There are a large number of people with fixed—or comparatively fixed incomes—who have certainly done nothing to deserve the vicious injustice of having the real value of their incomes persistently eroded away by rising prices. They include many of the poorest in the

community, pensioners, widows and others. It is true that some old people and widows may own stocks or real estate, and be able to administer their properties so as to avoid any loss of real income through rising prices. But it is only those of a certain degree of sophistication, and with sufficient financial reserves to make possible the taking of risks, who can do this. It is the poorest who must perforce put their savings into insurance policies, savings banks and the like. Any economist or politician who deliberately commits himself to a policy of continually rising prices, and who fully understands the consequences of what he is doing is guilty of one of the meanest of all possible actions, namely, deliberately robbing the savings of the poor and the old.

Some will say that satisfactory rates of economic growth have usually been observed to have been accompanied by rising prices. Some such cases can be discovered; but to enunciate this as a general rule indicates a very selective treatment of the evidence. Satisfactory rates of economic growth were obtained in the nineteenth century by many countries, at times of stationary or even declining prices. Conversely, in much of Latin America, rapidly rising prices are accompanied by very poor rates of economic growth.

It is very difficult for any country, as things are now, to avoid some rise in prices; the contagion is bound to spread across its frontiers in its import and export trade with other countries; but there are a limited number of countries. such as Switzerland, Belgium and Japan which have maintained very satisfactory rates of economic growth in recent years, while keeping their rate of price increase substantially below that of their neighbours. (It is highly significant that these are countries where the proportion of national income taken by government expenditure and taxation is considerably lower than elsewhere.)

The economist or politician who offers to trade away price stability in return for an expected higher rate of economic growth may end up by finding that he has lost both.

Economists have long shown a regrettable tendency to devote their attention to the problems of the recent past,

at the expense of those problems which most urgently concern the contemporary world. The near-collapse of the American banking system in 1907, and the violent price inflations which accompanied World War I, both found economists unprepared. So economic thought in the 1920's and 1930's was largely concerned with banking policy and price stabilisation, when what the world urgently needed then was some remedy for unemployment and business depression. In 1935 Lord Keynes wrote The General Theory of Employment, Interest and Money advocating proposals which, had they been put into effect at the time, although rough and ready, would have done a good deal to mitigate the severe unemployment and business depression from which the world was then suffering (though the economic nationalism and additional barriers to international trade which the author advocated would have done considerable harm). But with the coming of World War II, this phase of extreme unemployment and business depression was over probably never to return, and many of Keynes's proposals became inapplicable. In the years after World War II, the world's urgent economic problem—even in the United States—was not unemployment and trade depression, but scarcity of capital equipment and inventories. During this period however most economic thought, was violently Keynesian, persistently devising measures against the supposed threat of another great general depression. Keynes himself, in the last months of his life[3], protested against the vulgarisation of his ideas—"turned sour and silly, mixed with ancient errors"—by the "Keynesians".

The period of capital shortage came to an end in the United States about 1955, in other countries a few years later. But we still have with us a great deal of economic thought and writing based on the assumption that capital shortage is still the world's really urgent economic problem. This was the background which led to the formulation of "growth models". These are systems of algebaric equations, setting out to explain how the process of economic growth takes place, based on the implicit assumption that capital is the critically scarce factor, and that

3. "Economic Journal", June 1946.

any improvement in the supply of capital therefore is bound to lead to further economic growth in a more or less determinate manner.

The earlier "growth models", particularly those designed by Sir Roy Harrod in Oxford in 1939 and Professor Evsey D. Domar of Johns Hopkins University in 1946, were at any rate formulated in a period when there really was a critical shortage of capital. These and later models were accompanied by much apparently sophisticated analysis of the "multiplier" (whereby capital investment could lead to additional consumption) and the "accelerator" (whereby additional consumption could lead to additional capital investment). These are still widely taught, though we now know that these relations are much more intricate, and involve longer time lags, than is shown by the form in which they are generally presented.

So the idea is still with us that the key to economic progress is to be found in further capital investment. (The word "investment", as used in economics, is confined to the actual construction of plant, buildings and equipment, and the accumulation of inventories, which is by no means the same as the ordinary meaning of the word, namely the purchase of stocks, bonds, etc., which may or may not result in actual physical investment.)

First the designers of "growth models", and now governments and economists all over the world, have concerned themselves with the "capital-output ratio", i.e. the amount of additional output which is to be expected from each unit of capital invested.

That is easy to determine, the reader may say. The average return on capital is a little over 5 per cent. It follows that the "capital-output ratio" should be a little under 20.

But this reasoning is fallacious. A capital investment of $100 should, it is true, add $5-10 to the income of those who invested it. But that is not all that it has done. It has added a good deal to the labour incomes of those who work with it too. On the average, in the United States and in other advanced industrial countries, about 75 per

cent of the net product of industry goes to. labour (defined in the broad sense, including salary earners and working proprietors); and when there is an addition to national product; labour will take about three-quarters of this too. So it has been found that an addition to capital of $100 adds to national product some $25 or more for each subsequent year, of which about three-quarters goes to labour; so the "capital-output ratio" is four or less.

Many builders of "growth models" have made the mistake of estimating this figure too high. It was true that, on the evidence available until about ten years ago, it did appear to average 4, but now, for many countries, it is known to be considerably lower. In other words, our estimates of new capital requirements for economic growth can be revised downwards considerably from those that we held previously.

But many "growth model" advocates have made a worse mistake, which no one familiar with economic theory should have made. We may be able to ascertain fairly accurately the average capital-output ratio prevailing in a country at the present time. But we are quite wrong in assuming that the marginal capital-output ratio i.e. the ratio prevailing for ***additions*** to output and capital, will be the same as the average. It may often be very much less.

It used to be held that the capital-output ratio should increase as an economy advances. It is clear that the capital-labour ratio has increased; but some of the nineteenth-century economists, particularly the leading Austrian economist Eugen von Bohm-Bawerk, thought that the capital-ontput ratio must be continually increasing too. Like other doctrines once held but long since abandoned by the economists of Western Europe (a Labour Theory of Value was part of the doctrine of Adam Smith) this idea of the necessity of an increasing capital-output ratio became fossilised in Communist doctrine, and has led to great waste and misdirection of economic resources in Soviet Russia. In the preparation of all its economic plans the Soviet Government has proclaimed as a cardinal principle that the output of capital goods must be raised more ra-

pidly than the output of consumption goods. While this may have been the right policy on certain occasions of extreme capital shortage, its indefinite continuance in recent years has led to Soviet Russia accumulating increasing quantities of under-utilised capital equipment. It is very interesting to see that Academician Arzumanian, a leading Soviet economist, was permitted to attack this principle categorically in a 10,000 word article in ***Pravda***.

It was not, however, until the 1930's that the idea of increasing capital-output ratio was seriously criticised by Western economists. Doubts were thrown on it by the American banker-economist Karl Snyder (author of controversial book called ***Capitalism*** the Creator, who seemed indeed rather surprised at his own findings) and the Swedish economic historian Gardlund, who found that in certain Swedish industries the capital-output ratio was then not very different from what it had been eighty years earlier.

A good deal of additional information is becoming available in this important field of capital-output ratios, and the specialist reader may consult the proceedings4 of the 1957 Conference of the International Association for Research of Income and Wealth. But some very important ideas on this subject were put forward at the 1953 meeting of the same organisation by Professor Everett Hagen of the Massachusetts Institute of Technology, which subsequent experience has confirmed. He showed that countries with a comparatively sparse population spread over a wide area (e.g. Australia, Brazil, Norway) tended on that account to need rather more capital per unit of output than compact countries like the Netherlands (this important feature of the Netherlands economy had indeed been noted by Sir William Petty in the seventeenth century). Countries generously endowed with natural resources tended to require less capital than those who had to make their living the hard way, by manufacturing. In a comparatively early stage of its economic growth, a country has to make large provision for "social overheads,"

4. **Published by Bowes** & Bowes, Cambridge. England.

"indivisibles," "infrastructure" or whatever we care to call it, mainly roads, railways, harbours and other elements in the transport system, power supply, government buildings, the initial stages of industrialisation and so on. While these are being constructed, the capital-output ratio must rise quite rapidly. But once they have been constructed, further increases in population and production can take place with comparatively small additional capital requirements. The burden of "social overheads" is spread over a wider base, and the capital-output ratio falls. At a more advanced state of economic growth, as in the United States, a large proportion of the total demands of consumers is for services, most of which require a lower capital-output ratio than manufacture. Moreover, when we come to think of it, a great many of our technical and organisational improvements are more capital-saving than labour-saving : e.g. the saving of additional railway trackage by automatic signalling, of rolling stock through higher average speeds, of cables by communications satellites, of inventory by better accounting and control procedures.

But Professor Everett Hagen has also made another very interesting point, namely that countries with rapid population growth require, on that account, less capital per unit of output than do more slowly growing countries. This is for a rather unexpected reason. In every country, some mistakes in investment are made, both by public authorities and by private investors. But in a rapidly growing country the prospects for being able to retrieve these errors, and to find some alternative use for the mis-invested capital, are much better than in a slowly growing country. Rapid population growth, in Professor Everett Hagen's remarkable phrase, "absolves a country from almost all the consequences of errors in investment".

A favourite exercise with many writers on economic growth (and the present writer must admit to having 'cried it himself during the 1940's) is to take a country's percent per annum rate of population growth and multiply it by the supposed capital-output ratio. Thus if a country's rate of population growth is 2% per annum, and the capital-output ratio is supposed to be 4, the conclusion appears to

follow that annual capital accumulation must be at the rate of 8% of national product if capital is to be provided to equip a growing population merely at the same rate as their predecessors. Such exercises, apart from their mistake in nearly always taking the capital-output ratio too high, also commit the error of assuming that the marginal capital-output ratio is the same as the average, in spite of the several good reasons given above for thinking that it is not.

One economist who has applied this idea in a big way, and attracted world-wide attention to his results, is Professor Walt Whitman Rostow (formerly of the U.S. State Department); with his doctrine of the "take-off into sustained economic growth".[5] But the "take-off" is a half truth, at best. It does appear to be true, in very general terms, that countries at certain stages of their history do experience some acceleration in their rate of economic growth; but it does not come nearly so rapidly or violently as Professor Rostow, indicates : and the dates which he specified for the "take-off" in some countries will not stand up to criticism. Professor Rostow's fellow economic historians all seem to agree that the facts have to be very much forced to make them fit this theory. His idea that all countries, at the time of the "take-off", quickly raise their rate of net capital accumulation from 5 per cent to 10 per cent of national product is a purely theoretical idea, without any evidence to support it; indeed it seems most unlikely that this has happened, particularly over the short period of a decade or two which Professor Rostow hypothecates. The idea of the take-off is one which must be used very sparingly and cautiously, if at all.

While it is quite clear that a certain amount of capital investment is a necessary condition for economic growth, it shows a very weak logical sense to contend, as so many economists have done, that it is a *sufficient* condition, or that economic growth in any desired quantity can be obtained simply by investing more. There may be a good deal in the refreshingly original ideas expressed by Profes-

5. First systematically enunciated in "The take-off into self-sustained growth," Economic Journal, 1956.

sor Hirschman of Yale[6] who contends that the scarce and limiting factor in undeveloped countries is not saving but enterprise. "An economy secretes abilities, skills and aptitudes needed for further development roughly in Proportion to the size of the sector where these abilities are already acquired and where these aptitudes are being inculcated"; and once efficient, able and enterprising business leaders have begun to appear, they do not find too great difficulty in obtaining the necessary amount of capital (so long as the government does not tax the business sector too heavily).

Let us return now to the problems of the more advanced industrial countries. Throughout Europe, although there may be demands for greater economic growth, unemployment is very low. Americans, on the other hand, have had to watch their percentage of unemployment creeping up, subject to the business cycle, but with each succeeding peak higher than it was before, so that it now stands at over 5 per cent even in the good phase of the business cycle. Must this not mean, many Americans ask, that our rate of economic growth has not been sufficient to keep pace with the rate of growth of our labour force? Would not some increase in the rate of economic growth put right the greater part, if not all, of our unemployment problem?

There is a principle of business so simple and obvious that it is sometimes in danger of being overlooked in the formulation of government policy, namely that it is no use planning to produce more goods if you cannot sell them. It is government policy, and it may be more so in the future, to increase the spending power of the market, by tax remissions and in other ways. A large part of the total of unemployment however is among men formerly attached to steel, coal, textiles and similar industries, or men who work in ancillary industries and services in districts primarily dependent on these industries. Market research makes it clear, if common sense has not already, that when Americans receive an increase in their spendable incomes, through tax remission or in any other way, they are going

6. *The Strategy of Economic Development,* 1958.

to spend little if any of this increase on steel, textiles, etc. It is improvements in engineering technique which have checked the demand for steel, so that steel sales now are hardly any higher than they were ten years ago, when the rest of national product was much lower. And people are not going to buy larger physical quantities of clothing, blankets, etc., even though they may spend more money on more carefully styled clothes. Certain industries, and districts, are going to remain depressed however much demand in general is increased, even if it is forced up to the point of creating definite labour shortages in other industries.

Apart from these specially depressed industries and areas, there is a serious problem in all other industries too, which has been forcefully pointed out by Professor (now Congressman) Clarence Long, namely, that industry now demands much more skill and education on the part of its workers than it did even a short time ago. There' are a very large number of men who never acquired any skill higher than that described by the words "operative" or "process worker" who have been displaced by mechanisation, but who lack the skill to embark upon new work. For an increasing number of processes also, now employers prefer women, who may not be any better educated, but whose labour is considerably cheaper. There are also a very large number of unemployed coloured men, for the above and for other reasons. An all around increase in demand might soon lead to dangerous and cost-raising shortages of particular types of labor, engineers, technicians, building craftsmen and so on, while still leaving a large body of the less skilled men unemployed.

On the other hand, there is no need to paint a completely pessimistic picture. Most American economists will agree that a slight increase in the average rate of economic progress is desirable and that it would serve to reemploy a certain proportion of those now unemployed—opinions differ as to how many. But it would be agreed by nearly all that such an increase must be planned very cautiously, and kept within definite limits.

Had this text been written a year earlier, it would have been necessary to devote some space to the then very

widely held belief that the rate of economic growth in Soviet Russia was extremely high; and this constituted a justification for "economic planning." It is not surprising that the Soviet leaders should have made such a claim, scanty and inaccurate though the evidence was on which it was supposed to be based. What was surprising and saddening was to see how almost all economists and politicians in the Western countries believed it, most of all the Central Intelligence Agency of the (United States Government. It is within the last three years that the publication of three large studies, by Professors Bergson and Nutter and Doctor Jasny respectively convinced everyone, including finally the C.I.A. itself, that this idea was mistaken, and that the rate of growth of productivity in the Soviet Union was in fact, in the long run, probably lower than in the United States; so that instead of rapidly overtaking the United States in productivity, which had hitherto been supposed to be the case. the Soviet Union was in fact gradually falling further behind."

We are still not in a position to give any simple answer to the question of how economic growth is caused. The present writer has been working in this field since interest in the subject began, in the middle 1930's and has written three separate versions of a long book entitled *The* Conditions of Economic Progress; but it still seems to him that real research into the subject is only beginning. We can however reach some negative conclusions, and dismiss some over-simple explanations. If we wish fully to understand how economic growth occurs, we shall probably have to go outside the boundaries of economics itself, and bring in considerations from sociology, politics, law and history.

"Economic growth has taken place in the dissimilar circumstances of England, the United States, Canada, Japan, Soviet Russia, South Africa and Nigeria. Economists have no special insight enabling them to reduce these different

7. Testimony to this effect was submitted by the present writer to a U.S. Senate Committe in 1960 and published in 1961 under the title "The real product of Soviet Russia" (U.S. Committee on the Judiciary). This however rested on much less substantial evidence than the three books cited above.

historical experiences in straightforward causal relationships between simple economic magnitudes. The economic development has been accompanied, among other things, by a heightened spirit of enterprise, by capital formation, by improvements in production techniques and by improvements in the economic qualities and productive capacity of labour. But it seems impossible to isolate any one of these as the inevitable prime mover in the process of economic development and change."[8]

Most research in recent years has pointed in the direction of attaching greater importance to human factors in bringing about economic growth, rather than a mechanical application of formulae about capital or natural resources. The human factors which matter in determining whether any particular people is likely to be able to attain economic growth or not are sometimes called the three E's—energy, enterprise and education. Governments can play a substantial part in providing education. Enterprise, with a few exceptions, is something which governments cannot provide; it is something which must come from individuals, and the best that governments can do is to refrain from taxing or regulating it too severely, As for energy, or the willingness to work hard, this is something which lies deep down in the character of the people, and has little to do with governments, except that this, too, can be destroyed by prolonged misgovernment.

The preoccupation with capital, and particularly certain types of capital at that, as the crucial factor in economic development betrays (if we look at it more closely) a profound materialism of outlook. It is not surprising that it is found among Communists, and those who have been influenced by Communism. The late Mr. Nehru made a speech9 on this subject which was very revealing: "A number of textile mills is not industrialisation. It is playing with it. Industrialisation is a thing that produces the machines. It is a thing that produces steel."

8. Bauer and Yamey, *The* Economics of Underdeveloped Countries, Cambridge University Press, 1957.

9. Quoted in Freedom First, Bombay, October 1960.

A slightly hysterical note can be detected, as these costly economic fallacies are propounded. The present writer, at a conference of economists in India in 1961, was asked whether he favoured the building of more steel mills in India. His reply, that this was a problem in comparative religion, was received with sardonic amusement. But this intense preoccupation with the single commodity steel indicates that steel plants are of sufficiently striking and sinister appearance to serve as temples for a new materialistic religion. The worship of steel began in Soviet Russia. It is unusual for the leader of a country to change his name, still less to change it to "Steelman", as Stalin did. Now the idea is spreading. As the Washington wits say, any newly developing country has four really urgent needs—a steel mill, a national airline, a six-lane highway and an invitation for the President of the country to address the Washington Press Club.

So far as there is a solid economic idea behind all this muddled and emotional thinking, it is that the country needs to be able to make its own capital equipment. This however implies the further remarkable superstition that much greater profits and monopoly powers arise out of the manufacture of capital equipment than out of the manufacture of consumption goods; which is not the case. Someone should have explained to Mr. Nehru and all the rest that some of the wealthiest countries, such as Switzerland, do not manufacture steel at all, finding it more economical to import it; and that even very large and wealthy industrial countries find that specialisation in the production of complex modern equipment is desirable, and that it is better for them to import a substantial proportion of their capital goods. Steel is a particularly bad product to take because technical improvements in engineering are so rapidly reducing the demand for it. Before long, the world is going to be littered with unwanted and obsolete steel mills, built at great sacrifices by poor countries suffering from emotional political leadership, with money which could have done far more good if it had been devoted to other industries.

We have been brought nearer to an understanding of the relative importance of capital and human factors in economic growth by an important piece of research undertaken by Doctor Aukrust,[10] of the Norwegian Government's Statistical Bureau. Norway appears to have collected more thorough and precise information than any other country not only on the level of real national product back to the year 1900, but also on the inputs of labor and capital. So this gives him a long series of years for analysis. However, a year-by-year analysis, the routine procedure for an econometrician, would be worse than useless. The results would be greatly influenced by the phases of the business cycle, with the very varying degrees of utilisation of capital which go with it. If we want to analyse the productivity of capital we must average the figures in five-year groups, to smooth out the transitory influences of the business cycle.

Doctor Aukrust's results were striking. A 1 per cent addition to the labour force, all other things being equal, i.e. without any improvement in capital skill, organisation. etc., would raise national product by only 3/4 per cent. A 1 per cent addition to the stock of capital, all other things again being kept equal, would raise national product by only 0.2 per cent.[11] Analysis of results for individual industries showed that Norway appeared to have suffered from over-investment in all industries except shipping. On the other hand, with labour and capital inputs unchanged, improvements in the intangible factors—education, skill, organisation, etc.—were raising productivity at the rate of

10. English text published in Productivity *Measurement Review*, Organization for European Co-operation and Development, Paris, February 1959.

11. The capital-output ratio in Norway in recent years, measured at Norwegian prices, has been about 3.5, so the marginal rate of return on a capital investment should average 20/3½ or 5.7 per cent. (This capital-output ratio of 3½ is much lower than the figure given in the main table, where all capital stocks have been valued at U.S. prices; in Norway, and for that matter in most other countries, building costs are lower, relative to U.S. costs, than are the costs of most other goods, and services; so valuation of capital stock at U.S. prices makes it appear larger.)

1.8 per cent per year, the greater part of the whole observed increase in productivity.

Similar results, though not quite so precise, were obtained by Professor Solow for the United States.

In considering the following table, it must be remembered in the first place that these capital figures exclude not only consumer durables, but also residences. In most countries the order of magnitude of the value of the stock of residences is about one year's national product, so the full capital-output ratio, including residences, will be higher by this amount than that given in the table.

TABLE I

Capital, national product and labour input

		Capital, excluding land, residences, consumer durables	*Net national product at market prices*	*Labor input billions of manhours per year*	*Capital output ratio*
		$ billions 1950 purchasing power			
Argentina	1935	27.2	5.42	10.99	5.01
	1940	29.3	6.65	12.01	4.42
	1945	29.4	7.00	14.08	4.20
	1950	35.1	8.89	14.03	3.95
	1955	39.3	9.81	15.57	4.00
Australia	1947	15.2	7.95	6.66	1.91
	1956	22.1	10.72	7.34	2.06
Canada	1910	14.4	6.46	7.58	2.23
	1929	22.1	10.1	9.92	2.19
	1947	33.9	17.8	10.24	1.91
	1955	52.8	22.7	10.92	2.33
	1959	62.3	26.5	11.99	2.35
W.Germany	1913	50.0	19.3	33.9	2.59
	1929	60.3	20.8	36.4	2.90
	1939	72.0	31.6	41.5	2.28
	1948	51.0	20.8	34.9	2.45
	1955	77.6	42.8	49.5	1.82
India	1949-50	45.3	26.9	277.4	1.72
	1959-60	61.5	35.7	315.6	1.72
Japan	1905	7.5	7.8	58.1	0.96
	1913	13.0	11.0	60.6	1.18
	1919	16.7	14.1	61.5	1.18

TABLE 1—*Contd.*,

		Capital, excluding land, residences, consumer durables	*Net national product at market prices*	*Labor input billion of manhours per Year*	*Capital output ratio*
	1924	25.0	15.5	64.7	1.61
	1930	31.1	22.5	64.3	1.38
	1935	41.1	26.35	71.6	1.56
	1951	35.7	27.2	65.8	1.31
	1955	50.7	36.3	78.5	1.40
	1959	68.4	50.1	86.4	1.36
Norway	1900	3.85	0.65	2.93	5.92
	1929	7.60	1.39	2.85	5.45
	1939	9.10	1.92	3.07	4.75
	1948	9.33	2.36	3.24	3.95
	1954	12.38	2.84	3.38	4.35
	1958	15.64	3.63	3.12	5.03
United Kingdom	1929	81.0	37.6	44.1	2.15
	1938	91.0	44.0	47.6	2.07
	1953	104.5	56.1	53.4	1.86
	1959	134.2	65.3	55.5	2.06
U.S.A.	1899	125.9	50.4	78.7	2.50
	1909	188.8	85.7	95.8	2.20
	1919	249.4	108.9	97.8	2.29
	1929	335.9	149.3	112.2	2.25
	1939	331.3	155.8	100.0	2.13
	1949	411.4	240.7	127.1	1.71
	1955	501.5	322.8	133.0	1.56
U.S.S.R.	1928*	}	48.9	155.0	}
	1940	} 34.4(*a*)	79.9	205.1	} 1.11(*b*)
	1940	} not	79.9	205.1	} not
	1948	} known	78.4	199.7	} known
	1948	}	78.4	199.7	}
	1953	} 54.5(*a*)	105.9	214.9	} 1.98(*b*)
	1953	}	105.9	214.9	}
	1956	} 53.6(*a*)	119.5	229.8	} 3.95(*b*)

* Adjusted to present boundaries.

(*a*) Increases in capital between these years.

(*b*) Increases in capital per unit of output between these years.

Some readers may at first sight be surprised to learn that the value of a country's stock of housing is only about

one year's income. But young men buying houses, with the prospect of many years of earning income at an increasing rate before them, still find it unwise to spend more than two years' income on a house (for if they do, the annual payments, including taxes and maintenance, may rise to over 20 per cent of their income). A great many older people live in depreciated houses with appreciated incomes. In fact the ratio for the whole of the United States is now below one year's income as the depreciated replacement value of the present stock of residences.

In looking at figures for the 1930's it must be remembered that almost every country suffered severely from unemployment and also from under-utilisation of its stock of capital at that time. The capital-output ratios for this period may appear anomalously high because of this under-utilisation.

The capital-output ratios seem to be exceptionally high in Norway and the Argentine, both sparsely populated countries, requiring a very expensive transport system. Canada, which has to produce and transport agricultural and forest products and minerals over great distances, and also has many industries dependent on huge supplies of electric power, is also a capital-intensive country, and indeed appears to be one of the few countries where the capital-output ratio is increasing. Japan clearly has been remarkably economical of capital, even more than India.

One cannot fail to be impressed by the remarkably low capital-output ratio in the United States, with the prospect that the marginal ratio may be even lower than the average. It is in fact substantially below that of many European countries.

There have been widespread statements in Britain, from a great variety of sources, to the effect that the low level of British productivity is due to inadequate capital investment; it has been said that if British industrialists had invested at the same rate ,as American or German industrialists, productivity would have been much higher. This view was thoroughly demolished by Professor Barna.[12] He showed that the capital-output ratio in manufacture

12. The *Banker*, April 1957 and January 1958.

was in fact much the same in the United States, Germany and Britain, He also showed that. between 1948 and 1956, the amount of investment in manufacture in Britain was actually more than in Germany (populations of the two countries being approximately the same). The main difference was that "the investment pattern of Western Germany is more appropriately adapted to the changing needs of world trade . . . we put some of our money on the wrong horses." It is enterprise and managerial skill which matter, not the volume of capital investment.

The final section of this essay might be described, in a certain sense, as an anti-climax. After Dr. Aukrust's careful analysis of the Norwegian figures, and the extensive figures for other countries quoted above, it is going to be very difficult for anyone seriously to contend that increased investment is a sure way of increasing the rate of economic growth.

However, there are many people, in responsible positions, who do not reason in this way. They reason in a simpler manner altogether. The procedure is to construct what is sometimes called a 'League Table', ranking countries according to the percentage of their gross national product which they devote to investment; and then to set out to show that their position in this table is related to their rate of economic growth.

There are very many examples which could be quoted of this form of reasoning. We may take for discussion one publicised[13] by a highly responsible person, Governor Nelson Rockefeller no less, a spokesman for the Liberal[14] wing of the Republican Party. Governor Rockefeller sets out his claim that 'high investment and rapid economic growth go hand in hand' in the form of a diagram.

The diagram relates average per cent per annum rate of growth of real gross national product 1950-57 with 'Percentage Investment in Gross National Product'. The period over which this investment is measured is not stated; in the table below which follows it is calculated for the period 1950-56.

13. Published by Governor Rockefeller *inter alia* in Governor's Conference on Automation, June 1, 1960 (State of New York). It has been very widely quoted elsewhere.
14. Liberal in the American sense of the word, i.e. favouring more state regulation and expenditure, or the exact opposite of European liberalism.

TABLE II

	Gross domestic investment as of gross national product mean of 1950-56	Rate of growth of real gross product 1950-57 % per year	Rate of population growth 1950-57 % per year	Real product per head 1950 divided by 1938
Argentine	19.8(a)	1.7	2.1	1.68
Australia	29.3(b)	2.6(c)	2.4	1.48
Austria	21.4	6.4	0.1	1.15
Belgium	16.1 R	4.0	0.5	1.13
Brazil	15.9 R	5.9	2.4	1.15
Canada	24.7 R	4.7	2.8	1.61
Ceylon	10.9	3.5	2.5	(d)
Chile	9.9 R	3.1	2.3	1.04
China (Taiwan)	17.3(a)	7.5(e)	3.7	(d)
Denmark	18.9	2.5	0.7	1.10
Finland	25.4(g)	5.6(f)	1.1	1.20
France	18.2 R	4.6	0.7	1.31
West Germany	23.5 R	8.4	1.0	0.74
Greece	16.4	7.8	1.0	0.81
Guatemala	12.1	4.6	3.0	(d)
Honduras	15.6	5.0	3.1	(d)
Ireland	14.6	1.1	0.4	1.26
Italy	20.3 R	5.5	0.5	1.25
Japan	27.5 R	8.3(c)	1.3	0.85
Luxembourg	23.3	6.3	0.8	(d)
Mexico	17.8(i) R	4.7(h)	2.8	1.58
Netherlands	23.8 R	4.5	1.2	1.09
New Zealand	23.8	1.5(c)	2.3	1.31
Norway	31.1(j)	3.2	1.0	1.19
Puerto Rico	18.2	4.0	0.4	1.81
Sweden	20.6	3.7	0.5	1.37
United Kingdom	14.8 R	3.3	0.3	0.96
United States	18.2(k) R	3.6	1.7	1.60
Venezuela	23.9 R	10.9	3.0	(d)

(a) 1951 to 1956.
(b) Investment figures inflated by inclusion of private motor cars.
(c) My estimate.
(d) Not known.
(e) 1952 to 1957.
(f) 1952 to 1957: price change of consumption assumed applicable in other sectors.
(g) Excludes investment in stocks of commodities.
(h) 1950 to 1955.
(i) 1952 to 1956.
(j) Investment figures inflated by inclusion of repair work.
(k) Investment figures understated through exclusion of public investment.
R 'Rockefeller Countries'.

Governor Rockefeller's data appear to have been obtained from the United Nations annual reports on National Accounts Statistics. The above Table covers all the countries for which useful data can be obtained (supplemented by independent calculations of the rate af growth of real product in Australia, New Zealand and Japan).

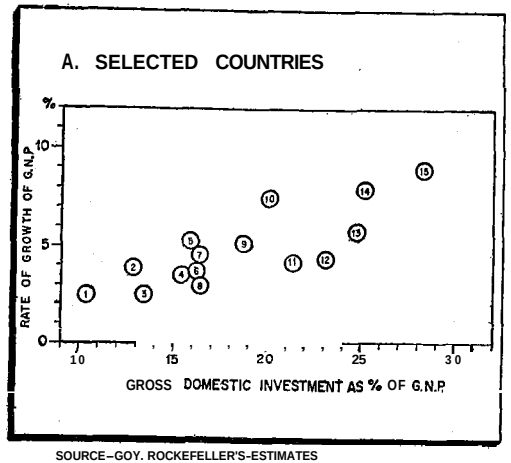
Two other columns show further facts which should have some bearing on rates of growth. That Germany and Japan, for instance, in 1950 still had real national products well below the 1938 level is, quite apart from anything else, a reason for expecting unusually rapid growth after 1950. Conversely, in the United States and some other countries, where natonal product by 1950 was already very much above the 1938 level, we should naturally expect only a normal rate of growth after 1950.

The fact that Canada and the Latin American countries have high rates of population growth also gives us some grounds for expecting higher than normal rates of growth of real product in those countries; conversely with the low rates of population growth in Britain and Belgium.

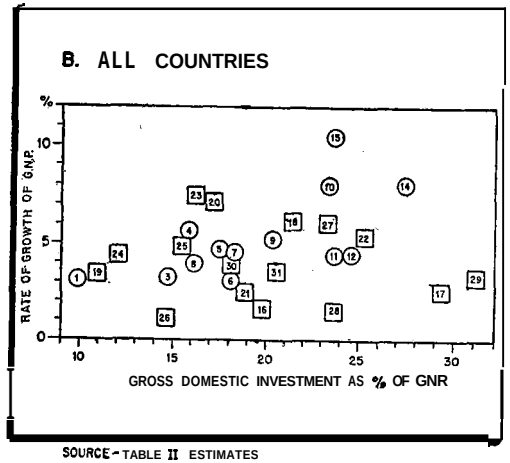
In Chart A, the countries selected by Governor Rockefeller are shown in the positions which he gives, even though the data in the table differ (in Venezuela in particular, which does a lot to help establish his apparent relationship, the rate of investment has been much lower than he claims.) The other countries for which information is available, not included in Governor Rockefeller's diagram, are shown in Chart B. It is particularly interesting to see that the Scandinavian countries, Australia, New Zealand, Argentina and Ireland, all countries with a considerable measure of government regulation of economic affairs, have thereby achieved a high rate of investment—but have unusually little economic growth to show for it.

The inclusion of these other countries in Chart B knocks Governor Rockefeller's conclusion to pieces: it might almost suggest that a high rate of investment goes with a low rate of economic growth. Was their exclusion accidental, or a skilful piece of growthmanship? Or, if Governor Rockefeller is not responsible for these conclusions, has he been relying too much on his expert advisers?

NATIONAL INCOME AND INVESTMENT
(AVERAGE % PER ANNUM)



SOURCE–GOY. ROCKEFELLER'S–ESTIMATES



SOURCE – TABLE II ESTIMATES

KEY TO CHART

Rockefeller Countries (in circles)

1. Chile
2. Panama
3. U.K.
4. Brazil
5. Mexico
6. U.S.A.
7. France
8. Belgium
9. Italy
10. Germany
11. Netherlands
12. Canada
13. U.S.S.R.
14. Japan
15. Venemela

Additional Countries (in squares)

16. Argentine
17. Australia
18. Austria
19. Ceylon
20. China (Taiwan)
21. Denmark
22. Finland
23. Greece
24. Gauatemala
25. Honduras
26. Iceland
27. Luxembourg
28. New Zealand
29. Norway
30. Puerto Rico
31. Sweden

SUMMARY AND CONCLUSIONS

Economic theories and 'models' of growth, formulated during the post-war period of capital shortage which attributed growth to investment, are now out-of-date.

It is more correct to say that capital is created during growth than that growth is a creation of capital.

The principal factors in economic growth are not physical but human. Human factors develop steadily but slowly.

Attempts by governments to force the pace may waste capital and end by retarding development.

Economists have gone wrong by misapplying in a period of over-employment, a theory designed by Keynes to maintain employment by investment in a period of chronic unemployment.

Even economists who have allowed for full employment have gone wrong by exaggerating capital as a source of growth.

We must not neglect the wisdom of the classical economists who saw that the agents of production are land, labour, capital and enterprise; neither economic theory nor recent experience provides support for the view that one factor takes absolute precedence over the others.

Dependable statistics of investment and growth are difficult to collect and even more difficult to interpret.

The best available figures suggest that the amount of capital required per unit of output can fall: this does not support the fashionable view that growth of output depends on further investment.

Recent evidence from a number of countries suggests that additions to investment have yielded disappointingly small additions to output. the conclusion therefore seems to be that the rise in productivity has been predominantly due to 'human factors': better knowledge, organisation, skill, effort, education, enterprise.

International 'league tables' ostensibly designed to show that high investment and rapid growth go hand in hand do not bear examination.

The views expressed in this booklet are not necessarily the views of the Forum of Free Enterprise.

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"Free Enterprise was born with man and shall survive as long as man survives."

—A. D. Shroff

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