
Observations on Some Worldwide Economic Issues of the Coming Years

WASSILY LEONTIEF

In an address last year to a group of American corporate executives, Dr. Henry Kissinger warned his audience of the perils of concentrating all their attention on problems that confront them today, while giving little thought to those they will have to face tomorrow. He is reported to have added that the labor leaders he happened to meet showed a much better appreciation of the importance of not permitting today's concerns to obscure the view of issues that are bound to come up tomorrow. This is not surprising. Those who feel quite comfortable with the present state of things, and who resist change, lack the incentive to look into the future. Those who feel dissatisfied with the *status quo* and press for change must naturally think about the future. Indeed, because of this, they are exposed to the dangers of wishful thinking, a tendency to overlook the hard facts that have to be taken into account while planning for a better world.

In sharing some thoughts with you on the future of the world economy and the economic problems on which organized labor, particularly in the advanced industrialized countries, will have to take a stand, I will endeavor not to emphasize final goals, as much as the practical difficulties that will have to be overcome on the way to the realization of those goals.

Natural resources, protection of the environment, and economic growth

Leaving aside major cataclysms such as atomic war, the three factors that can be expected to dominate the overall development of the world economy in the future, as they did in the past, are population trends, technological change, and the availability of basic natural resources.

The recently completed United Nations report,

The Future of the World Economy, presents a set of alternative projections—each derived from a different scenario—of economic growth from 1970 through 1980 and 1990 to the year 2000. (Wassily Leontief, *et al.*, *The Future of the World Economy: A United Nations Study*, Oxford University Press, New York, 1977.)

Based on a detailed quantitative description of structural, essentially technological, interdependence among all the various branches of production and consumption within each of the fifteen geographic regions into which the world economy was subdivided for this purpose, each one of these projections is comprehensive and internally consistent, that is, balanced from the point of view of both each individual region and the world economy as a whole. The worldwide output of every type of good and service is balanced with the corresponding sum total of regional inputs, and the worldwide exports of each kind of internationally traded good are balanced with the sum total of its regional imports. Moreover, for each region and, consequently, for the world economy as a whole, the projected increase in every type of output is matched not only with the required current flow of raw materials, semi-fabricated goods, energy, labor, and all other current inputs, but also with requisite increases in fixed investment, that is, additions to the stocks of machinery, buildings, and all other types of physical investment.

I dwell on these methodological details only to show that in contrast to worldwide projections based on extrapolation of statistical relationships among a few aggregative variables, the so-called input-output approach employed in this study permits incorporation—both in each of the alternative scenarios and in each of the long-run projections derived from them—of a great amount of sectoral and regional detail.

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This increases the reliability of the results and, what is especially important, facilitates substantive criticism.

One of the principal conclusions of the UN study is that neither a critical shortage of basic natural resources nor the costs of environmental protection should be expected to pose a serious threat to the maintenance of a high, overall rate of economic growth up to the year 2000 and beyond.

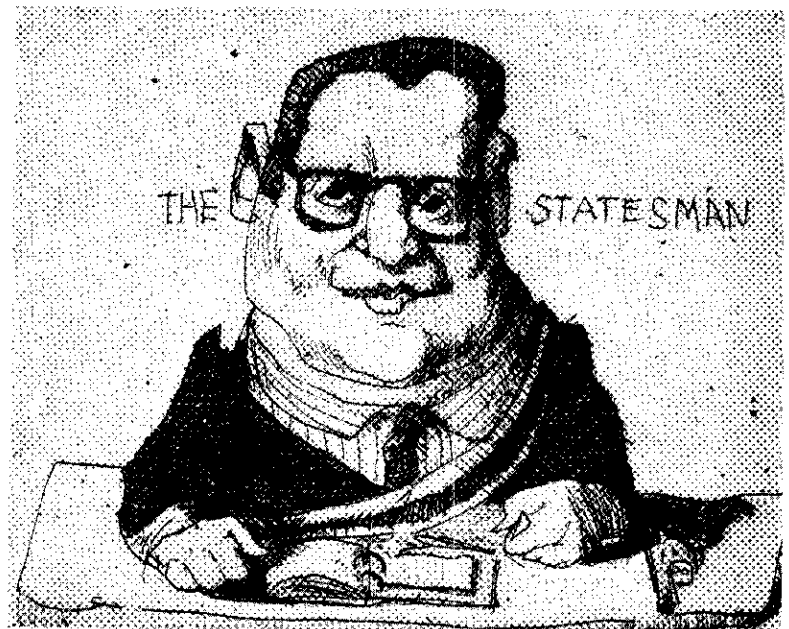
Even under relatively conservative assumptions, the average per capita income—that is, the amount of commodities and services that can be consumed or allocated to investment—will probably be nearly twice as high in the year 2000 as it was in 1970. This estimate is based on the assumption that in the advanced industrialized countries abatement activities will be stepped up to prevent—despite continued economic growth—the emission of the principal types of pollutants from exceeding the level specified (but, incidentally, not yet attained) by the rather stringent U.S. Antipollution Act of 1970. The proportion of total real investment devoted to abatement activities will continue to rise for some time. However, even in highly industrialized countries it will, according to our calculations, hardly exceed 4 percent of the total capital stock. In North America, after reaching 3.4 percent by 1980, this proportion can be expected to decline to 2.5 percent by the year 2000. (As new technologies developed under strict antipollution regulations are gradually adopted, the distinction between abatement expenditures and other production costs becomes, of course, more and more blurred.) Pollution is generated mainly in the course of extracting and processing minerals and in the production and consumption of agricultural and manufactured goods. As per capita income becomes very high, the demand for material goods seems to approach a level of saturation (only the demand for arms seems to be insatiable!), and additional spending is directed more and more toward the outputs of nonpolluting service industries.

The inevitable exhaustion of relatively easily accessible reserves of mineral resources will necessarily lead to a progressive rise in extraction costs accompanied by the expanding use of more and more expensive substitutes. All this does not mean, however, that the physical limits of economic development and growth are about to be reached. A recently completed detailed study of energy production and consumption in the United States, for instance, seems to indicate that a combination of structural adjustments

—not involving the introduction of entirely new, as yet undeveloped technologies—would permit the level of present per capita income to be doubled without a significant increase in the overall amount of energy consumed and without drastic changes in the present life style.

The gap between the developed and less developed countries

While allaying some widespread apprehensions, the same long-run projections lead, on the other hand, to conclusions of a rather pessimistic kind: as long as the volume and direction of international capital flows and of international developmental aid continue to be dominated by the same economic forces and the same political considerations that have governed them up to now, the gap between the developed and the so-called less developed countries will not diminish; in some instances, it might even increase. The outlook is bright only for a few areas that were poor until recently, but that happen to possess oil or other valuable natural resources. The rest of the Third World, containing over 60 percent of the world's total population, but producing and consuming only 15 percent of the global output of goods and services, will continue to fall behind. According to the official UN statistics, in the year 1970 the average per capita income in these areas amounted to only





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one-twelfth of the average per capita income of the developed, industrialized countries. Should the structural and institutional relationships that now govern economic growth in all parts of the world continue to operate in the same way in the future, that ratio might fall to one-eighteenth by the year 2000.

In the face of this disquieting conclusion, it was only natural to ask what it would take to reverse this trend—to accelerate the rate of growth of the less developed parts of Asia, Latin America, and Africa—so that the present income ratio of one-twelfth might be reduced by the year 2000 to, say, one-seventh, that is, nearly cut in half.

In an endeavor to provide a more or less objective, factual basis for answering this question, the UN Report presents a set of alternative projections that show in some detail what changes in the economic relationships between the developed and the less developed countries could make the attainment of such a goal possible.

This second set of projections is based on the same assumptions concerning the available reserves of natural resources and the same assessment of future rates of population growth, and it contains provisions for the maintenance of the same environmental standards that were incorporated in the first. The narrowing, if not closing, of the gap between the less developed and the developed countries could not be accomplished, according to these computations, without dramatic changes in the magnitude and direction of international commodity flows.

Measured in terms of national incomes and the

present levels of external economic transactions of the less developed countries, the shifts referred to above would indeed be very large. But compared with the total output of goods and services in the developed countries, or even the total volume of trade carried on year after year among them, those shifts would appear to be relatively modest—a fraction of a percentage point here, a few percentage points there.

To make the difference between the two sets of developmental scenarios more tangible, let me fill in some of the missing details by presenting the following, entirely imaginary picture. The dramatic rise in the price of oil has brought about a great increase in payments that the less developed oil-exporting countries receive now, and will continue to receive for many years to come, from the advanced industrialized oil-importing countries. While a substantial part of that potential payment surplus is being spent on current imports, permitting the oil-exporting countries to raise rapidly the level of their domestic investment and consumption, a large part of it is being loaned back to the industrialized countries. This permits the latter to maintain a higher level of domestic investment and consumption than they would be able to afford if the costly oil imports had to be paid for by increased exports.

Now, if the trade surplus earned by the oil-exporting countries (that is now being returned in the form of capital investment and loans to the developed industrialized countries) had instead been loaned to or invested in the poor, less developed countries, they, in turn, could spend it on additional imports from the (oil-importing) industrialized countries. The level of these additional imports happens to match closely that of the external trade deficits that—according to projections referred to above—the poor, less developed countries should be able to maintain while slowly catching up with the developed countries.

There are, of course, two things wrong with this picture: it implies that the advanced industrialized countries would, in fact, be willing and able to pay for the expensive imported oil in cash, that is, by increasing exports rather than buying it on credit; and to the extent to which the aid granted to the less developed countries would have to be given in the form of low interest loans or direct grants, the burden of development assistance would, under an arrangement described above, fall largely on the oil-

exporting countries. While the rising oil revenues have benefited them enormously, one must not forget that even according to the most optimistic projections, the level of per capita income in these countries in the year 2000 will be only half that of Western Europe and only one-third that of North America.

Military spending

A major yet untapped potential source of economic assistance to the less developed areas and, one might add, to the backward regions and the underprivileged groups in the developed countries as well, is the \$400 billion worth of labor, capital, and valuable natural resources employed year in and year out in support of military establishments throughout the world.

In the worldwide economic projections to which I referred above, military expenditures are assumed to grow at the same rate as other government expenditures. This is a conservative assumption, since arms limitation agreements that have been negotiated up to now prescribe only specific, already known types of weapons and thus encourage rather than discourage increased spending on the development of powerful but more expensive new weapons and on stepped-up production of conventional arms of unrestricted types.

The opposition to proposals to limit the overall level of military spending does not only stem from skepticism about the practicality of reaching and enforcing these kinds of agreements; it also comes from the powerful, although not necessarily overt, resistance on the part of those whose investments or whose employment would be jeopardized by a reduction in the demand for military goods. This brings me to the second set of questions I would like to raise—namely, the adequacy, or rather the inadequacy, of economic institutions inherited from the past to meet the challenges and grasp the opportunities that the advanced, industrialized societies—the so-called free world—will be facing in the coming years.

The government's role

I have mentioned the practical difficulties involved in shifting resources now absorbed by military production into activities devoted to the satisfaction of civilian demand. The same problems arise when

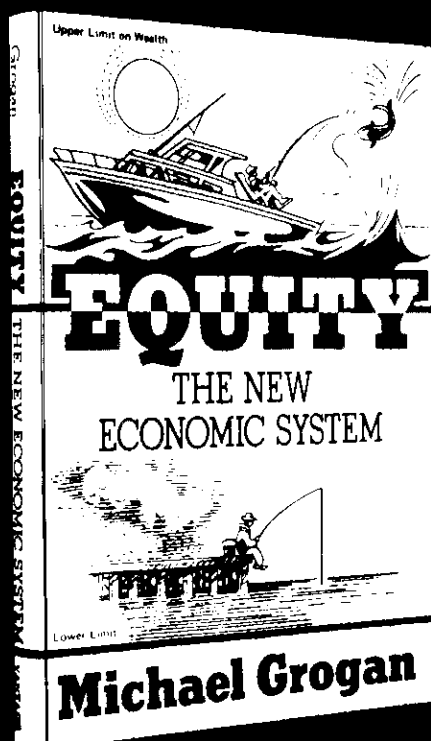
domestic industry is threatened by foreign competition. Workers employed in the old, well-established shoe plants in New England are now losing their jobs because cheaper shoes are imported from Italy, Taiwan, and Korea.

The international division of labor, made possible through the steady expansion of international trade, certainly contributes greatly to more efficient utilization of economic resources, particularly labor, and consequently to better satisfaction of human needs in all parts of the world. But it does so at a price. To those who have to pay the price, it exceeds by far their small share in the potential benefits that such “structural adjustment” might bring to the national economy and to that of the world as a whole. A family whose breadwinner loses his job in a shoe factory or munitions plant and has to look for new employment can find little consolation in the fact that this contributes indirectly to increasing, in the long run, the average per capita national income, say, by fifty cents. It is not surprising that workers turn to the government for protection of their jobs. Joining hands with the managers and stockholders, they often succeed in preventing, or at least in retarding, “structural adjustments” of this kind. It has to be admitted that in the long run this means a slowdown in economic development and growth.

Thus, modern society is faced with a dilemma that can be solved only by further extension of governmental responsibilities for the management of the national and even of the international economy. Proponents of unrestricted free enterprise ignore the fact that whenever their advice is followed, government intervention is not avoided; it simply takes a different form—that of violent suppression of social unrest resulting from ruthless operation of the proverbial “invisible hand” of private competition or, one might add, of private monopoly. The question that confronts the advanced capitalist countries is not whether government's role in the operation of the economic system should be expanded or contracted, but rather, how, while expanding, that role can be rendered more effective.

According to prevalent academic doctrine, a proper combination of fiscal and monetary policies should be capable of securing steady economic growth with reasonably full utilization of productive capacities, high levels of employment, and stable prices. After many years of trial in many countries and under a great variety of circumstances, practical

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experience with the application of this approach has proved disappointing. Neither the Keynesian nor the so-called monetarist prescription seems to work.

In the meantime, new problems—energy, environment, chronic unemployment—are added to the old, and governments, relying less and less on simplistic, general solutions, endeavor to meet them one by one. The advantage of this piecemeal approach is that it enables policy-makers to acquire firsthand practical understanding of the operations of every part of the complex machine of the modern, industrial economy—an understanding that those who center their attention on aggregative variables usually lack. The cardinal weakness of such a procedure is that, in the absence of overall coordination, action taken to alleviate one problem is likely to aggravate another. In the United States, we often witness what amounts to cutthroat competition between the different departments of the central government—not to speak of self-defeating rivalry among local governments. This frustrating experience necessarily leads to a demand for systematic overall coordination, which is another word for planning.

Coordination on a national scale is national planning. This certainly is the most difficult, most ambitious task a society can undertake. Its technical aspects involve capabilities to gather and analyze masses of detailed data, to draw up feasible scenarios and devise means for their practical implementation—capabilities that even the most advanced countries began to acquire only in recent years.

Even more problematic are the political implications of democratic economic planning. A well-prepared, realistic, internally consistent—that is, feasible—scenario is bound to display, for everyone to see, not only the sought for, desirable effect of every major policy decision, but also its undesirable repercussions; and these, more often than not, will have to be borne by groups other than those who can count on benefiting from the policy. This obviously will not facilitate political agreement. But the unavoidable battles about real issues between conflicting interests will at least be fought on firm ground. In contrast, a close examination of major policy proposals that become objects of heated public disputes at the present time would show that many, if not most, of these proposals were built hastily on shaky ground and would not work out in practice.

Many years ago, late one night, I accompanied a friend of mine to his apartment. He took out a bunch

of keys and tried in vain for a long time to insert one in the lock. "Maybe you are using the wrong key," I said; "Yes, I know," my friend retorted, continuing his futile attempt to unlock the door. This is what often happens with economic policies. We know deep down that a certain measure cannot possibly attain its avowed goal, but nevertheless we continue to fumble with it in the dark.

Among the major economic issues with which advanced capitalist countries continue to fumble are income and employment policies. The general direction of evolution in that field seems to be pretty clear. It reflects a gradual realization of the fact that neither of these problems can be solved separately. Nor can they even be understood separately from the problems of prices and investment, from questions of international trade and international migration, or from any of the other major economic problems of the day.

Even when general political conditions are favorable to national economic planning as they were, for instance, in France after the end of the last world war, when the first so-called indicative five-year plan was inaugurated, planning is likely to fail due to a lack of the necessary technical capabilities. Even now, thirty years later, no western capitalist country, except possibly Norway, seems to have a statistical organization that can provide the steady flow of comprehensive and detailed information needed for the construction of alternative scenarios—each of them concrete, detailed and, above all, feasible—from among which policy-makers could choose one with confidence that it would work.

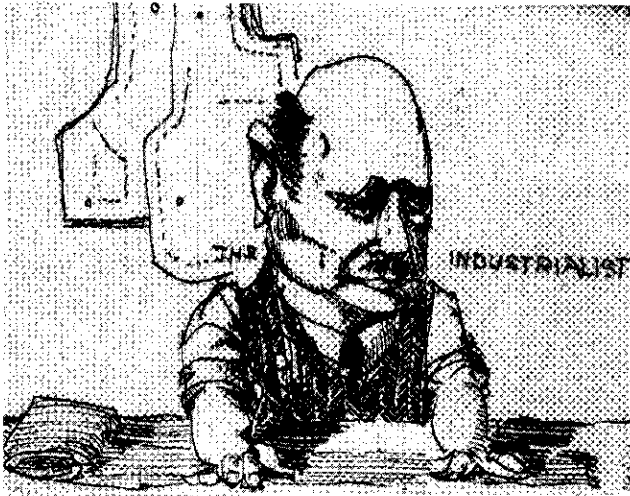
The United States, a country in which the concept of national economic planning is viewed in many influential circles with great suspicion, if not outright fear, has nevertheless developed, in recent years, greater technical capacity for handling large-scale planning problems than any other big capitalist country, or any socialist country. Not only major private enterprises, but many departments of the federal government, as well as some state and local governments, make use of large-scale planning models. Even congressional committees concerned with energy, environment, natural resources, or transportation base some of their deliberations on formal quantitative models and scenarios prepared by their staffs. Statistical and other data-gathering activities of the government are systematized and expanded, often in close cooperation with private business, and only

occasionally with some resistance on its part. This is particularly important since, at least in the United States, it is the lack of basic factual information—not of computing facilities and certainly not of theoretical treatises on planning methodology—that sets limits to the practical applicability of the planning approach. The gap between what is theoretically thinkable and what is actually possible, however, is gradually being narrowed.

The indifferent performance of the centrally planned socialist economies has often been invoked as evidence that national planning cannot work. The planning methods actually used in these countries have been, until recently, rather primitive. But still more important is the fact that having dispensed with the use of the profit motive—the driving force that in capitalist countries turns the wheels of the entire economic machine—the socialist countries have not yet succeeded in discovering or creating another equally workable and resilient source of propelling power. Hence, they find themselves in the position of a vessel equipped with sophisticated steering gear, but a weak and not very reliable engine. Even if the vessel is kept on the right course, it can only move slowly. Those who have had the experience of steering a boat on choppy seas, moreover, know that when it goes slowly it can't obey the rudder as well as when it advances at a good speed.

As long as no substitute for the profit motive has been found, national economic planning can be expected to be effective only to the extent that it succeeds in harnessing the profit motive without unduly weakening or even paralyzing it.





Organized labor's role in a "mixed" economy

With the government taking on greater responsibility for the conduct of national and international economic affairs, organized labor, in order to safeguard its interests, will have to take a more active and direct part in the formulation and implementation of all aspects of national economic policies. Its concerns must extend far beyond the conclusion of bilateral agreements with the employers (negotiated with a single company, or on an industry-wide or even economy-wide basis), lest what is gained in money wages be lost through inflation or, say, an unanticipated energy crisis. It is very doubtful that inflationary pressures can be brought under control and that a full and productive utilization of the labor force can be secured by any measure that falls short of comprehensive national economic planning. In democratic countries, the exercise of explicit political choice among alternative scenarios and implementation of appropriate economic policies must, as I mentioned earlier, necessarily involve hard, long, and highly technical negotiations among all interested parties. In order to work, a "social contract," to use the new, fashionable term, must comprise much more than a wage freeze combined with price control—an emergency device that, while it might forestall a sudden crisis, is bound to generate serious structural maladjustment in the long run.

To marshal telling arguments in political debates over economic policies is one thing; to possess systematic knowledge of technical economic and finan-

cial problems confronting each industry and every part of the country within the framework of the national and, if called for, the entire world economy, is quite another. Such knowledge is now in the possession of private business. To be able to participate effectively—not only nominally—in the formulation and implementation of national economic policies, trade union leadership will have to acquire that knowledge too. Some of this information can be acquired only from or through government. The gradually spreading inclusion of workers' representatives in the management councils of private firms, even while it has only a marginal influence on company policies, offers the trade union organization an excellent opportunity to acquire first-hand understanding of the operating characteristics of the various sectors of the economy.

Income policies in the age of automation

If one were asked to single out the force that has contributed more than any other to the phenomenal economic growth of the last two hundred years, one would answer, technological change. It was, however, the newly invented power loom that deprived thousands of English weavers of their jobs about one hundred and sixty years ago. Today the American Telephone and Telegraph Company is installing automatic switching equipment that will permit it to handle the anticipated increase in the volume of long-distance calls and reduce the number of long-distance operators.

The fact that machines do displace labor cannot be questioned. But many economic theorists (Karl Marx was not one of them!) hastened to point out at the time of the Luddite Rebellions that this displacement did not mean that the total demand for labor and total employment had to diminish. An equal or even larger number of new jobs, these theorists claimed, would necessarily be created in the machine-building and subsidiary industries. But is this so?

The answer to that question is of crucial importance for the understanding of the economic, social, and political problems faced by labor in times of accelerated technological advance. That answer is "No." New machines, new technology introduced because it cuts production costs can indeed reduce the total demand for labor, that is, for the total number of jobs available in all sectors of the economy taken together at any given price of labor—in other

words, at any given wage rate.

To use a somewhat crass and even shocking analogy, new machines can reduce the total demand for human labor for the same reason and essentially through the same process that, a generation ago, led to the replacement of draft horses by trucks, tractors, and automobiles. To argue that workers displaced by machines should necessarily be able to find work building those machines makes no more sense than to expect the horses displaced by mechanical vehicles to have been employed, directly or indirectly, in various branches of the expanding automotive industry.

Moreover—and this is particularly important in the context of the present discussion—the transition from a horse-driven to a motorized economy was accomplished quite smoothly, despite the fact that the demand for oats, harnesses, and new stables was drastically cut. The flows of “purchasing power” simply changed their direction under the prodding of impersonal market forces, and so did the commodity flows. The output of goods and services required for the sustenance of horses declined, while the output of steel and gasoline, not to speak of automobiles, went up. The economic system adapted itself to the new technology quite smoothly and if the operation of blind market forces imposed some hardships on oat growers and harness makers, in a perfectly organized system capable of anticipating the impending shift and preparing for it, the transition could have been managed without the slightest hitch. If horses could have been organized and had been able to vote, this, of course, would have been quite a different story.

One way of meeting the threat of potential technological unemployment is the creation of new jobs and the maintenance of old ones through increased investment, in other words, through economic growth. But this possibility has definite limits. How fast would the economy, and with it the volume of investment, have to grow in order to keep the number of long-distance telephone operators from decreasing in face of the fact that each of them will soon be able to handle ten million instead of one thousand telephone calls? The rate of investment required to accomplish this end might turn out to be so high that very little would be left for current consumption. In the pursuit of full employment through a greater and greater volume of productive investment, the society ultimately would find itself in the position of the proverbial miser who deprives himself of the bare necessities of life while depositing more and more in an already

swelling savings account, and this despite his steadily increasing annual income. That is exactly what might happen in the long run under the relentless pressure of technological advance, if the forces of unrestricted cutthroat competition were permitted—let’s hope they will not be—to govern the operation of the labor markets and the conditions of employment.

Opponents of the trade union movement argue that if wage rates had not been maintained on what they call an artificially high level, the introduction of labor-saving equipment would have been retarded and the number of available jobs increased. There can hardly be any doubt that without trade union action the level of (real) wages would be lower and the conditions of work harsher. It is, however, doubtful whether the introduction of labor-saving equipment would have been retarded very much by the availability of “cheaper” labor: How much would the wages of telephone operators have to be cut in order to prevent the installation of modern, automatic switching equipment? If the wage rate had fallen, say, by 10 percent and the total employment had increased, as a result, by 5, there would still have been a net 5 percent loss in total labor income.

There is, of course, a problem (in case total labor income is effectively maintained by union action) of sharing income directly or indirectly between those who are employed and those who are not. Spreading the work through reducing the number of working hours per week and of working days per year provides an answer to this question. Increasing leisure—while everyone is assured of a steady job—can contribute greatly to the general welfare in a developed society. This has been the case in the past and it certainly can be in the future.

If technological advance continues, and let us hope it will, thus permitting substitution of more and more capital for labor not only in mining, manufacturing, agriculture, and transportation, but in the service sectors as well, the traditional union action of the type I mentioned above is bound to become less and less effective: even the most powerful monopoly cannot maintain its income, not to speak of increasing it, if the demand for its product, the supply of which it controls, tends to fall.

Thus, in the long run, the ability of large masses of the population to benefit from technological advance will depend more and more on the direct transfer of property income derived from the ownership of capital and natural resources. In a utopian society

in which everyone would combine the function of laborer with that of owner of capital and land—as some of the prosperous farmers in the United States and other countries actually do—technical advance involving substitution of machinery for labor would present no problem. The share of family income entered on the labor account would gradually diminish, but that accruing to its capital and rent account would increase. Moreover, the total income, derived from these two different sources, would grow.

In a complex modern society, whether capitalist or socialist, the distribution of income among groups performing different economic functions and consequently occupying different social positions, will continue to be a major problem. So will the maintenance of sufficiently strong and steady incentives for purposeful, effective economic performance on the part of every member of the society, whatever his role and responsibilities might be.

It has to be admitted that conditions favorable to the attainment of one of these twin goals—efficiency

and distribution judged to be equitable—are likely, to some extent, to make the attainment of the other more difficult. A satisfactory solution of both problems will necessarily be in the nature of a compromise.

What is true of the domestic economic order applies, of course, to international economic relationships as well. No country, however self-sufficient and strong, will be able to solve its national economic and social problems without regard to the economic and social problems facing other countries. The oil crisis brought this realization home with a jolt. It is, however, the rising, practically irresistible tide of international migration that poses a new, unprecedented challenge to trade union leadership in the developed countries. In the long run, only an accelerated rate of economic growth in the less developed areas will enable that leadership to meet the challenge. If international economic planning is ever to become a reality, the international labor movement must play a leading role in it.

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