In March 1971, Professor Ranis was asked to prepare a short background paper setting out the main issues that would confront the Bank as it considered adjusting its policies to take more explicit account of problems of employment and income distribution in developing countries. This paper, which was received by the Bank in May, is the result. It is being issued as a Working Paper in the belief that it provides a useful introduction to a complex subject of considerable importance to the Bank.
EMPLOYMENT AND INCOME DISTRIBUTION IN DEVELOPING COUNTRIES

This paper is in three parts. The first section presents a brief survey of the few known facts on developing-country employment and income distribution. Section II tries to summarize the state of our present understanding of the problem. Section III deals briefly with the possible role of the World Bank in this context.

I

With respect to the nature and size of the problem, there is general agreement that the developing countries have not performed too badly during the 1960's, in terms of overall or even per capita income growth. There is also general agreement that such "good" aggregate performance has concealed increasing disparities in regional rates of growth, income inequalities, and other distributional malfunctionings -- with rising unemployment and underemployment rates as a major feature. Even where countries have been growing at 5 or 6 percent annually in real terms and industrial sectors at 10 to 15 percent, the rate of growth of labor efficiently absorbed by the modern commercialized sectors has been in the order of only 2 or 3 percent at a maximum. If we deal with manufacturing only, all developing countries taken together experienced growth of manufacturing output in excess of 7 percent from 1955 through 1965, while the rate of labor absorption was just about 4 percent.1/ The latter especially differs very much by region; for example, industrial labor absorption rates relative to rates of industrial output growth have been higher in Asia than Latin

America (2.5%); moreover, these employment elasticities of industrial output have not only been low but falling everywhere during the past two decades.

With respect to agriculture, Asia stands out as the main labor surplus area suffering most intensively from rural underemployment and poverty; Africa and most of Latin America are more favorably endowed with land and natural resources generally. However, recent evidence seems to indicate that rural Africa is beginning to shorten its fallow period and increase the use of fertilizer, while Latin America similarly is beginning to run up against land shortage problems which can be solved only by the heavy application of capital. Moreover, even where efficient jobs still exist in agriculture, the existence of urban/rural wage gaps seems to lead to problems or urban drift. In other words, the problems of unemployment/underemployment and of associated income maldistribution are relevant to a vast preponderance of the developing countries, certainly to more than 90 percent of their populations. Thus, when the low absorptive capacity of manufacturing is coupled with increasing population growth and the existing backlog of underemployment in the agricultural sector, a review of the 1950's and 1960's leaves us with the unmistakable impression that we have a rather serious socio-political as well as economic problem on our hands.

If we parlay this performance of the past into some sort of estimate of the size and magnitude of the problem in the future, we can only become even more concerned. Even if we should be completely "successful" starting tomorrow in reducing population growth to zero, as a result of family planning efforts, we must anticipate a serious labor force explosion based on the already existing population cohorts over the next 15 years.
No matter what happens on the population front, the labor force in most of the developing countries can be expected to grow at rates of 2½ to 3½ percent annually over that period. Contrast that with 2 - 3 percent absorption rates. Clearly, if developing countries stay more or less on present tracks there is little hope of avoiding increases in the backlog of unemployment -- never mind mopping it up.

And how large is that backlog? There is a good deal of discussion on the difficulty of measuring the extent of either open or disguised unemployment. Clearly the rates of open unemployment which are obtained through employment exchanges or even sample surveys in the urban centers of the developing world are low estimates, mainly because there is an interaction between the supply of jobs and participation rates; people who despair of finding full-time jobs are unlikely to consider themselves openly unemployed, in our sense of the concept. Similarly for the underemployed, both urban and rural. In the absence of official unemployment insurance, people are much more likely to consider themselves "employed", whether they are selling a couple of cups of tea a day in the distributive trades and service sectors of the urban centers, or performing some small tasks around the rural household. The very meaning of being employed, i.e., the intensity of work, the productivity of work, the hours of work, needs to be redefined in terms of non-Western concepts. Open unemployment is largely irrelevant, even in the cities; essentially there are only two states, efficient (income equals marginal product) employment and disguised (income exceeds marginal product) unemployment.

We see little point in arguing whether total developing-country
underemployment and unemployment in existence today is typically 20 percent or 30 percent of the total labor force. We start with the assumption that wherever there are sizeable pools of people who are being supported, through informal social security arrangements of one kind or another, so that their income exceeds their contribution to output, there exists a serious economic and social problem which we may call unemployment. The overwhelming question is bound to be whether and how sufficient efficient employment can be generated to accommodate the projected increases in the labor force, not to speak of mopping up the already existing backlog of the unemployed.

With respect to income distribution, data are even more difficult to come by. We know that personal income is distributed more unequally in developing countries, taken as a whole, than in developed countries, taken as a whole, and that this is true in both the agricultural and non-agricultural sectors. The reason is mainly a more unequal distribution of assets plus less redistribution through tax and expenditure policies. Moreover, it is not clear whether or not income distribution within the developing countries has markedly worsened over time, while it is abundantly obvious that the sensitivity to disparities, in either the interpersonal or inter-regional dimension, has risen sharply. The safest over-time statement on the factual side is that income distribution within the developing countries has probably worsened somewhat. One source of this increasing income inequality seems to be the increasing size of the wage gap between the subsis-

1/ Somehow added together, either as the full-time unemployment equivalent or, more reasonably, as the total "dead weight" difference between marginal products and wages (or income shares) in both sectors.
tence (mainly agricultural) and the commercialized (mainly non-agricultural) sectors. As the non-agricultural sector increased in relative size and since that sector has within itself greater income inequality, the overall distribution of income within the developing countries has probably tended to worsen for both these reasons -- with some clustering toward the middle ranges.

It should be noted that when there exists a good deal of unemployment in a developing country, combined with a relatively narrow and personalized social security system, with very little tax-cum-expenditures-induced redistribution, unemployment, high income variance, and unequal income distribution all tend to be closely related. Moreover, in addition to this obvious relationship at the lower end of the poverty spectrum, they are likely to be related through the effects of income distribution on output mixes. The more unequal the distribution of income, as the argument runs, the more capital and import intensive the demand of consumers beyond the subsistence level. If there are good empirical reasons to believe that goods and services enjoying a high marginal income elasticity of demand by the rich tend to be characterized by more capital-intensive technology, policies ensuring a more equal distribution of income will affect employment favorably by permitting a more labor-intensive output mix. Thus, while mortality and illiteracy rates have fallen across the board, income distribution has probably not improved for a number of reasons and regional income distribution has undoubtedly worsened. There is hardly a developing country which does not exhibit at least a pale version of the North-East Brazil, East Pakistan regional disparity problems.
Before we can discuss the nature and scope of possible solutions to the above set of problems it is necessary to summarize the present state of our understanding as derived from research and experience to date. We know that unemployment in the developing countries is by and large not caused by Keynesian deficiencies in effective demand, but by supply conditions, i.e., shortages of factors complementary to unskilled labor, such as capital, skilled and managerial labor and entrepreneurial capacity. A second general point which is emerging more-and-more clearly is that growth and employment must be viewed as of one piece and that the common (at least implicit) assumption that they must be competitive regardless of the policy setting is likely to be wrong. Finally, we have increasingly come to recognize that our analysis -- and therefore the policies which follow from the analysis -- must be sensitive to the type of developing economy we are talking about, e.g. India, a large domestically-oriented economy, must be analyzed differently than Taiwan, a small, open economy, as well as to a country's current phase of development in historical perspective, e.g., Taiwan in the fifties differs from Taiwan in the sixties.

The garden variety of developing countries may be characterized as open and labor surplus in which the main problem is to reallocate underemployed labor and saving from the large agricultural hinterland to the small fully-employed non-agricultural sector, with the help of trade. The time phasing is relevant with respect to both changes in the underlying resource endowment conditions and the changing appropriateness of alternative policy packages.
The first or import-substitution phase is normally fuelled by raw material and other agricultural and land-based exports, plus foreign aid. Here the typical policy package consists of exchange controls, import licensing, budget deficits, overvalued exchange rates, and low interest rates - usually resulting in a substantial spurt in industrial growth, accompanied by the discouragement of agriculture and exports, relatively low domestic savings, low rates of technological change, and low rates of efficient industrial labor absorption. Unemployment and income distribution, regional or personal, are neglected. The main objective is to force resources into infrastructure and the large-scale industrial sector, while buying time for industrial-entrepreneurial maturation.

The well-known severe distortion of relative factor and output prices during this period yields unnecessarily capital-intensive techniques and output mixes. On the issue of industrial employment, maximum utilization of the factor endowments - specifically, maximum use of surplus labor - has to take a back seat, as long as capital and imports are under-valued and receipt of an import license or a bank loan per se bestows large windfall profits and becomes the major objective of entrepreneurial activity. The tools employed in the pursuit of industrialization during this phase ipso facto create barriers between the endowment and prices so that developing countries obtain larger industrial outputs at the expense not only of lower industrial employment but also of lower output and employment in the economy as a whole.

To the extent that import substitution is a necessary historical phase one should, of course, distinguish between good and bad forms of it, e.g., tariffs are better than quotas, and cases of flexible, i.e. downward-
trending, protective regimes are better than inflexible or rigid regimes. The main point here, however, is that the record of the last two decades is a poor basis for judging the inevitability of a conflict between employment and output objectives; it may be seriously misleading with respect to the future, given the policy package which obtained in most of the developing world during the 1950's and 1960's and, in fact, continues to dominate in most. Especially in the labor-surplus economy context, it is easy to document the possibility of increasing both total employment and output and moving towards a more equitable distribution of income at the same time. But this is likely to occur only as the country moves into a second, export-promoting phase with the help of a new policy package.

The latter phase is characterized by the shift from a raw-material to an unskilled labor-based pattern of development, mainly via the exportation of labor-intensive, non-traditional industrial products. To permit the economy to be thus responsive to a changing endowment picture, a different policy package is required, entailing substantial readjustments in the previously distorted relative prices (exchange rates, interest rates, internal terms of trade). Budget deficits are reduced, inflation curbed and more people get into the act as markets are rediscovered. Exports and agriculture are no longer discriminated against. Technological change and employment come to the fore.

The empirical record of countries like Korea and Taiwan over the past decade (and that of Japan historically) indicates that once direct controls in various markets are replaced by a more market-oriented allocation (e.g., tariffs and close-to-equilibrium exchange rates for quantitative re-
trictions, plus liberalization etc.), the whole structure of the economy and its performance in relation to output and employment generation can change rather dramatically. The agricultural sector can begin to play its proper historical role of generating productivity increases and surpluses which, when successfully channeled into the commercialized non-agricultural sector, can provide employment opportunities for the surplus unskilled labor force. A more broadly-based industrial development pattern, with indigenous labor-using technology, and output mixes assuming a much greater importance, begins to take over. In consequence of the new policy package, the reallocation of agricultural workers in both Taiwan and Korea (as well as historical Japan) proceeded at a much more rapid clip, leading to a decline from 56 percent of the labor force in Taiwan's agriculture in 1953 to 40 percent in 1968, and from 65.9 to 52.5 percent in Korea over the same period.\footnote{In these cases this meant absolute reductions in the size of the agricultural labor force. Few other LDC's did as well -- most continuing to exhibit import substitution symptoms. All LDC's taken together reduced their agricultural working populations from 73.3 percent to 70.7 percent of the total during the 1950's and at approximately the same rate in the 1960's -- with agriculture having to absorb most of the increase in the labor force.} Meanwhile the increase of manufacturing employment rose from 4.3 percent annually in 1955-1965 (import substitution) to 8.2 percent annually in 1966-1968 (export substitution in Taiwan. In Korea, the rate of annual labor absorption by the industrial sector reached 13.3 percent during the middle sixties.

At the aggregative performance level, Korea's overall growth up to the early 1960's, was just about enough to keep up with population growth, while saving rates were negligible or even negative. As a consequence of substantial devaluation in 1964, import liberalization, and, in the following year, a major interest rate reform (i.e., a doubling of rates), a major trans-
formation took place. Not only were domestic savings allocated more efficiently, as the huge gap between low official and astronomical curb rates was eroded, but the total volume of savings increased dramatically, to the 15 percent range in recent years. Exports which had grown at annual rates of less than 15 percent have been growing at 30 to 40 percent ever since. Per capita incomes, rising at 1.6 percent annual from 1955 through 1966, are now growing at rates of 8 to 10 percent. A similar story can be told for Taiwan. Thus, all the current talk, based largely on a review of performance in the import-substituting 1960's, of having to "dethrone the GNP" in favor of employment may be quite premature; it is much more sensible to consider building a "better", more labor intensive, throne for the GNP.

This central point can perhaps be best illustrated in terms of the conflict usually cited between industrial labor productivity, which is assumed to be a good thing, and employment, also a good thing. If one wants higher labor productivity, one must permit employment to fall; if one wants full employment, one can only get it at the price of lower labor productivity. That statement is not only unexceptionable, but also tautologically true. As output per worker goes up, the number of workers per unit of output always falls; and it looks as if the so-called conflict we often hear about is established. However, it is important to recall that we are usually talking about an economy in which we have a relatively small commercialized non-agricultural sector, engaging perhaps 10 or 20 percent of the labor force, surrounded by a large ocean of subsistence agriculture, plus "soft" portions of the non-agricultural sector, i.e., services, distributive trades, etc., characterized by underemployment. The question then arises
as to whether the level or rate of increase of labor productivity on that small island is really a meaningful criterion in terms of any possible objective of the economy. If, for the sake of illustration, we choose the most advanced modern technology cooperating with a few hundred workers, for our industrial island, this would, of course guarantee tremendous labor productivity. Alternatively, if we spread the same capital over several thousand workers in the form of much less glamorous, labor intensive types of capital structures, labor productivity (or per capita income) of workers on the island would be much lower, but there would now be many more of them, as more of the underemployed could be put to productive work. As a consequence, the total output and employment generated in cooperation with the scarce capital stock in the economy as a whole, i.e., overall per capital income is much higher, even though the productivity of those who are employed is much lower. This remains true, as long as the labor surplus condition persists. Once the reallocation of workers from the non-commercialized to the commercialized sectors has proceeded at a sufficiently rapid clip to outpace population growth and ultimately to dry up the reserve army of the underemployed, labor is no longer a surplus commodity but is competitively bid for like any other factor of production, with the major social problems now approaching those of the mature economy.

The unnecessarily low responsiveness to the factor endowment of both technology and output mix during the import substitution phase makes itself felt in a number of ways. In spite of the overhang of a reserve army of underemployed, we know that industrial real wages, for example, are often several hundred percent above the reservation price of unskilled labor
in agriculture. We note that this wage gap phenomenon is mainly caused by a combination of government and union pressure for redistribution and is most marked when the large scale industrial sector, in particular, makes substantial profits on the basis of raw material exploitation, especially if foreign ownership is involved. The larger the wage gap, of course, the more likely the premature inflow into the urban areas, with people becoming disguisedly unemployed in the cities while waiting for the few well-paying jobs. With the commercialized non-agricultural sector often employing as little as 10 percent of the total labor force, if the total labor force grows at close to 3 percent, labor absorption by this sector has to be at the rate of at least 30 percent if unemployment is not to rise. With high, exogenously-pulled wages, it is not surprising that, even where the organized industrial sector has been growing rapidly, the rate of labor absorbed has been much below this rate, and falling, in most of the developing countries.

Some theoretical work by Todaro seems to indicate that industrial job creation may be counter-productive if it induces even more people to drift into the cities ahead of employment opportunities, as the expectation of getting a job is raised.1/ But we should keep in mind that this model makes more sense in Africa where productive employment opportunities in agriculture may still be relatively more abundant -- and that it unequivocally sees a rising wage gap, not compensated for by changes in labor quality (e.g., as turn-over rates decline) as the major culprit.

The same is true of the effects of over-valued exchange rates and artificially low interest rates, which bias production towards import and capital intensity. Especially in a small LDC for which trade is necessarily

important, the continuation of an administered price policy makes it difficult for the factor endowment to be reflected along the economy's production functions in terms of either technology choice or output mix. Only the at-least-partial lifting of the veil between factor endowments and relative prices will permit an economy to take advantage of its resources at any point in time, as well as ease its movement from one phase to another, i.e., from a raw material to an unskilled labor-fuelled phase and, ultimately, to a skill and technology-based phase of development.

Critical to the unemployment problem as viewed in the context of a two-sector developing economy, are thus (1) the initial extent of discrepancy between factor endowment and factor use, i.e., the extent of unemployment; (2) the relative pressure of population growth over time; (3) productivity increases in agriculture which are possible in the short-term, even in a natural-resources-poor economy; and (4) the extent of factor-price distortions, including the size of the wage gap between the two sectors. Let us proceed now to summarize relevant research results, at a somewhat less aggregative level.

In the industrial sector, first of all, we know that there exists tremendous variance in capital productivity by industry across countries and what is even more relevant - across different scales within the same industry in a given country. It seems very clear that substantial substitution possibilities exist, for a given quality output and given quality factor inputs, contrary to the opinion of many policy makers, engineers, and technicians.

Taking the static case first, in a study of Karachi industry in the 1950's, medium-sized firms stood out as the most efficient in terms of their ability to utilize or "stretch" scarce capital most effectively, even though at lower

levels of labor productivity. Similar studies have been made in Colombia and India, all indicating that firms of medium size, relatively labor-intensive in response to the lower wage levels faced, turn out to be among the best static allocators of capital. Recent evidence, for example, in the production of light engineering goods, including pumps in the West Punjab during the middle 1960's-- not to speak of Granick's evidence on metal working in the Soviet Union-- indicates that even the manufacture of light capital goods is subject to a substantial amount of flexibility with respect to the use of labor. Except in continuous-process industries, or in industries near the crude-raw-material-processing end of the production spectrum, there has been a persistent underestimation of the technology choice available and persistent over-estimation of the dominance of capital-intensive choices, where a range exists.

Construction, both in highways and housing, is well-known as the sector with the greatest technical flexibility, and most opportunity for labor-intensive techniques to be employed, often as part of a machine-paced production process. It should also be noted that construction is characterized by the predominance of unorganized labor with relatively little bargaining power, few tenure rights and relatively low wages. The substantial flexibilities encountered in this sector, once relative prices become less distorted, should be viewed as more generally instructive.

The service sector which, of course, includes both modern, capital-intensive banking and transportation, as well as traditional labor-intensive personal services, and distributive trades, has been growing by leaps and


bounds in most developing countries. As is well known, most of this growth is in the "soft" or supply-of-labor-pushed (rather than the "hard" or elasticity-of-demand-pulled) areas, leading to the displacement of rural by urban, disguised unemployment.

With respect to the agricultural sector, there is increasing evidence in work on India by Mazumdar,1/ Colombia by Berry,2/ Brazil by Cline,3/ and West Pakistan by Falcon and Gotsch,4/ that small and medium-scale farms are characterized by superior efficiency in the use of land. In virtually all of these studies, it seems clear that the larger farm size, the lower the output per unit of scarce resource, i.e., the less intensively the land is being utilized. Economies-of-scale arguments which are sometimes summoned to support large-scale units in industry have less play here.

We next turn to dynamic arguments. There is a substantial school of thought, led by Galenson and Leibenstein,5/ and again with a good deal of support among engineers and policy makers, to the effect that, even though there may be static flexibility in both technology choice and output mixes, for moving in a labor-intensive direction, such production functions yield larger wage bills relative to profits, and consequently lower rates of sav-


ing and capital formation. While the evidence is by no means unequivocal on this subject, it can be said that the Galenson/Leibenstein hypothesis has not stood up well to empirical tests. This is because the large output per unit of capital generated in the medium and small scale firms is likely to swamp the unquestioned tendency for given profits to yield a higher level of savings than do given wages. Unless you make some rather unusual assumptions about the elasticities of substitution, total profits will increase more as a consequence of substitution in a labor-using direction. In a study of Karachi industry as well as in studies conducted by the U.N. Industrialization Programme, the relative effect in terms of the final impact on saving within the firm, of allocating capital to the more labor-intensive medium and small-scale enterprises, were found to be not only positive, but substantial.

There is another, even more important, sense in which dynamic considerations enter in a central fashion, and that is via the adoption of labor-saving versus capital-saving innovations, especially as a country moves into the export-promotion phase and market prices begin to approximate their equilibrium levels more closely. If, for example, in spite of the overhang in underemployed and unemployed labor, the real industrial wage is high and rising, i.e., we have an increasing wage gap, the incentive for adopting labor-saving innovations from the shelf of technology is enhanced. On the other hand, if wage restraint is exercised, i.e., the expectation is for real wages not to drift upward very much, the incentive to innovate in indigenous-labor-using directions, on top of the imported technology, is substantially strengthened.

Many officials and scholars share the view that most technological change, especially in the non-agricultural sector, must take place abroad and must be labor-saving. If developing countries, in fact, had only a very narrow set of initial technological choices open to them and only a very limited capacity to do anything major in the way of local adaptations, this would mean, in the extreme, that a recipient is always forced to import the latest model from the most advanced of the mature countries -- a most unrealistic case -- and is unable to make any capital stretching changes "on top of" the import in response to a substantially different factor endowment -- an equally unrealistic case. As the history of Japanese development and the contemporary records of Korea and Taiwan indicate, indigenous capital stretching capacity can be of the greatest importance once the policy setting has turned more favorable and permitted the economy to try to absorb -- and export via incorporation into labor-intensive industries -- its relatively abundant resource.

With respect to the industrial sector in particular, indigenous capital stretching may be of three kinds: (1) relating to the machine proper; (2) relating to the production process as a whole, but emphasizing the importance of activities within the plant and peripheral to the machine; and (3) relating to the production process as a whole, but emphasizing plant size and differential processing arrangements at various stages.

With respect to the machine proper, the simplest, most important example of capital-stretching seems to be one which relates to the utilization of machinery in place, mainly by adjusting shifts and speeds of operation relative to the country of origin. For example, triple shifting plus the speed-up of machines, does not "wear them out" in nearly the same proportion, and, when accompanied by more attention to repair and maintenance,
can be very important in quantitative terms. The average work week per machine in the textile industry of historical Japan amounted to at least two or three times that encountered in the U.K. and U.S. at that time. Sometimes, along with the higher speeds, cheaper raw materials can be used and compensated for by additional unskilled labor in handling the extra quality-controls and repairs necessitated. As late as 1932, weekly man hours per 1,000 homogeneous spindles ranged from 330 in Japan to 1965 for the U.K. and 143 for the U.S.

With respect to machine-peripheral operations, the handling, transporting and packaging within the plant by human instead of mechanical conveyors or belts can also be very important. Activities which may look inefficient and wasteful to the untrained eye often constitute highly efficient, sometimes machine-paced, capital saving adaptations. For example, in the production of Korean plywood, what at first appears as a production process very similar to that carried out in the U.S. on inspection turns out to be full of important variations on the basic theme. In the U.S., machinery is used to detect defective pieces of lumber, and the entire side is then discarded. In Japan, defective pieces of lumber are located and cut out by hand. In Korea, the defective area, (e.g., a knothole) is located and patched by hand.

The same is true for marked international differences in the same electronics process, especially in assembly operations. For example, in Korean subsidiaries, the same process, with wage rates ten times lower than their equivalent in the U.S., shows a 20-percent greater utilization of the capital stock. Feeding and packaging on the assembly line are done by hand instead of automatically and, with the greater speeds of operation due to faster operator pacing, additional labor is deployed in testing, inspection and repair.
The third type of capital stretching innovation, i.e. of the plant-saving variety, is often characterized by the coexistence of different historical stages of production in the same industry or even firm. For example, in textiles, spinning may be done at the large-scale factory level, with purchasing and marketing similarly enjoying economies of scale, while weaving is performed in extensions of the rural household, courtesy of the putting-out system. Even in the most modern industries, sub-contracts are common with respect to specific preparatory and finishing processes. Since plant comprises close to 60 percent of total investment in plant and equipment in most of the developing countries, the deployment of labor-intensive machinery, e.g., looms, over a large number of scattered mini-plants can be substantially plant-saving while substantial additional amounts of labor can be harnessed in satisfying demands for the additional transportation and handling requirements.

The point is sometimes raised that any two-dimensional discussion of industrial capital-labor substitution possibilities may be misleading since it does not take into account shortages of supervisory, skilled or managerial labor which, if included, would tend to yield greater capital intensity. No doubt, such information, if available, should be included in any analysis. But it is not clear why this should necessarily affect results in any particular direction; and Turnham finds "little empirical evidence one way or the other."

With respect to technology change in agriculture, the Green Revolution, where it has occurred, is likely to be land-saving and labor-using in nature, even though all of the returns are by no means in. Results of 50
percent more workers demanded in rice, and 33 percent more in wheat, after
technology change which shortens growing seasons and increases the possibil-
ities for double and triple cropping, have been recorded. In Taiwan, for
each 1 percent increase in the double-cropping index a 1 percent increase
in labor inputs demanded has been reported. Under such circumstances, the
mechanization of agricultural operations as a wholesale solution is not
likely to be a sensible course of action. But selective mechanization,
even though it increases the capital-labor ratio in one process, e.g., land
preparation, may well permit double cropping on the same land and thus yield
a reduction in the overall capital-labor ratio, and thus constitute an exam-
ple of a land-saving innovation. Most of the evidence collected by experts
like Ruttan and Johnston\(^1\) indicates that the largest potential for agricul-
tural technological change in developing countries is of the chemical/ferti-
lizer variety at the intensive margin, rather than of the mechanical/machin-
ery variety at the extensive margin.

III

Given the problem as defined here, and given the analytical frame-
work and findings which have been uncovered to date, the solutions are by no
means easy. Nevertheless, one can enumerate a number of policy conclusions
and simultaneously refer to the possible role of the World Bank in that con-
text.

\(^1\) See, for example, B.F. Johnston and J. Cownie, "The Seed-Fertilizer
1969, and Bruce F. Johnston, "The Japanese 'Model' of Agricultural
Development: Its Relevance to Developing Nations" in Ohkawa, Johnston,
and Kaneda (ed.), Agriculture and Economic Growth: Japan's Experience,
Princeton University Press, 1970; also Vernon W. Ruttan, "Two Sector
Models and Development Policy", in Clifton R. Wharton, Jr. (ed.),
Subsistence Agriculture and Economic Development, Aldine Publishing
Co., 1969.
At the most general level, but nevertheless the most important, it seems clear that there exists a unique and useful role for administered pricing in the early import-substitution phase, if, in fact, this phase can be kept in bounds both in terms of the type of tools used and the time span over which it is permitted to dominate the scene. We all know the formidable obstacles in the way of a gradual termination of hothouse conditions once the bona fide objectives of such policies (i.e., infant industry protection and infrastructural construction) have been satisfied -- partly emanating from the industrialists who have become accustomed to windfall profits, and partly from civil servants who have become accustomed to power and to the additional incomes which grease decision-making during this phase of development.

Governments and those who aid governments have an obligation, at this level of generality, to ensure that policy changes do occur in spite of these formidable obstacles, and not only in response to developing-country economies scraping bottom in terms of an increasingly dismal performance on both the output and employment fronts. In brief, persuasion, gentle pressure, and aid-balloonings to ease the transition towards a more market-determined regime, both in terms of output mixes and in terms of technology choices, cannot be avoided.

There can be little doubt that what is required are program loans explicitly related to the transition from one policy package to another. Enriching cost-benefit analyses on projects to take the employment dimension into account cannot do the job in isolation. In fact, it should be candidly admitted that donor concentration on projects, specifically the foreign-exchange component of projects, often works in just the opposite direction, i.e., induces import and capital intensity. A very liberal interpretation
of local-cost financing at a minimum and the liberal use of program lending
preferentially represent important ways in which the foreign exchange made
available to a country can be spread more widely. At the same time, it is
infinitely easier for donors to argue policies which permit changing endow-
ments to be reflected more clearly in productive activities when their own
contributions are clearly non-distorting.

On the specifics of changing from administered to a more market-
oriented pricing structure, we need not reiterate what is fast becoming the
conventional wisdom - i.e., a preference for tariffs over quotas, uniform
tariffs over individually negotiated ones, downward-trending tariffs over
fixed tariffs, exchange rates which are adjustable over fixed pegs, import
liberalization (which makes importation available to small industrialists)
over rigid licensing, and at-least-partial allocation of credit through high
interest rates over discretionary lending to only the established signatures
by the banking system.

On the wages front, no one in his right mind expects it to be a
politically feasible act to reduce real wages; nevertheless, it is clear that
wage restraint is of the essence if the underemployed who are outside the
presently employed and unionized pool -- and thus disenfranchised -- are to
have any chance to share the benefits of employment. A de-emphasis on ILO-
type minimum-wage legislation, overtime for night work, and other social wel-
fare regulations which encourage the permanency of workers (converting them
into fixed costs) can be viable, even today, once properly understood -- for
example, in the case of the Tri-partite Agreement in Kenya.\(^1\)

The so-called rural/urban wage gap is especially important and sub-
ject to policy advice, especially in Latin America and Africa. If a high-

\(^1\) Between Government, employees and labor, June 1, 1970. See Africa
Diary 1970.
profit, possibly foreign-owned, natural-resource-based industry constitutes a political embarrassment to a developing-country government, this embarrassment should be met not by government pressure to increase wages -- which wage increases usually spread to other sectors not exploiting natural monopolies (like the civil service) -- but by distributing what are considered socially-undesirable profits through taxation or the renegotiation of royalty arrangements.

Specific policies which are common practice and should be opposed by aid-giving agencies, include, in the commercialized or industrial sector, accelerated depreciation in place of tax holidays, labor legislation discriminating against night work and double-shifting; labor laws making it difficult for employers to fire workers -- all leading to increased capital intensity.

Moreover, there should be encouragement (e.g., through temporary subsidies) of sub-contracting, especially into the rural areas, in order to take maximum advantage of the local labor supply and dispersed entrepreneurial and saving capacity. More attention has to be directed to the "connectivity" of the agricultural and non-agricultural sectors in most developing countries. Such "connectivity", both physical and institutional, is very much in evidence in all of the relatively few "success" cases; it is important not only from the point of view of minimizing output and employment conflicts by economizing on both private and social (urban) capital requirements, but also has very important incentive-related advantages with respect to agricultural productivity change which we cannot spell out in this context.

In the agricultural sector, aid agencies like the Bank should lean against subsidies for tractors and other heavy equipment in the guise of low duties, and/or low excises on domestic production -- in addition to the over-
valued exchange rates which favor their importation in the first place -- threatening uneconomic and wholesale mechanization in the wake of the Green Revolution. Moreover, land reform may well be necessary where latifundia and other large holdings prevent the intensive use of land and other scarce inputs.

At the individual project level, anywhere, we, of course, agree in principle that the Little-Mirrlees guide to cost/benefit analysis,1/ or any other less sophisticated method of arriving at partial-equilibrium decisions, can benefit from greater sensitivity to the employment problem. This can be done through more thorough-going shadow price adjustments for both capital and unskilled labor as well as possibly for skilled managerial and technical personnel. But since, in the kind of mixed economy we are likely to be talking about, most "projects" in either the industrial or agricultural sectors are really carried out by thousands of medium and small-scale entrepreneurs, maintaining the proper mix of macro policies is much more to the point.

One obvious other area is in the potential for trade in labor-intensive industrial goods, as developing countries move en masse towards export promotion. This means not only support for temporary preferences but, perhaps more importantly, the need for a more sensible and thorough-going adjustment of assistance policy in the developed countries. If all the developing countries, in fact, began to take the policy advice offered, and accelerated their growth, exports, and employment on a broad front, rear guard actions by the politically-powerful labor-intensive "sick" industries

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in the advanced countries can be expected to become more and more bitter. In fact, it could be argued with some conviction that, from the point of view of efficiency as well as political feasibility, the best aid program might be one spent in large part in the domestic economies of the advanced countries, in return for a lowering of quota and tariff barriers on the relevant commodities.

Related, and equally obvious, is the need for donors to encourage developing countries to turn their attention from traditional markets among advanced-country trading partners to potential new markets in other developing countries. Clearly, the advanced countries are not going to be willing, or able, to absorb much of the potential increase in labor-intensive products which could be generated by a really vigorously-growing developing world. But we need only recall the constantly-changing structure of comparative advantage, production and trade in the 19th century to realize that the understandable fascination - even obsession - with the traditional-country trading partners may be as serious a mistake as the reluctance to move to export promotion. Trade among the developing countries accounts for only 3 to 4 percent of world trade. Market diversification, as well as product diversification, is called for.

Finally, aid givers, especially the Bank, might give consideration to what contribution can be made to greater rationality in the process of technology transfer and adaptation. In addition to the Bank's influence in terms of overall science and technology policy, (which is directly related to the increased market orientation of the economy referred to earlier -- permitting indigenous talent to come forward and be tested) there may be room for international institutes to help devise labor-using adaptations and
modifications. There is a frequently-heard complaint that modern labor-
using technology just does not exist and does not therefore constitute a
viable option. Moreover, there is a good deal of resentment of the notion
of second-hand obsolete machinery being forced down the throats of the devel-
oping countries. What should be emphasized is the need for devising modern
but labor-using production functions. Only 2 percent of the world's expen-
diture for research and development is spent in the developing countries;
but that is perhaps as it should be if late-comer advantages are to be rea-
ized. Perhaps in selected areas (e.g., shoe manufacture) it might be pos-
sible to support international research institutes for the express purpose
of stimulating local adaptations in these areas. In this fashion, it may
well be possible to achieve economics of scale and avoid duplication of
effort with every developing country attempting to devise a capital-stret-
ching technology.

In summary, I do not believe it makes sense to talk in simple terms
of having to increase the growth rate in order to take care of the employment
and income distribution problem. Nor is it possible, as has been shown over
the last two decades, to carry on business as usual and to have a "supple-
mentary" strategy, either rural public works or labor-intensive industrial
work projects, to pick up the backlog of unemployment left in the wake of the
"primary" strategy of development. What is instead required is a strategy
which permits substantial gains in output by means of a much more favor-endow-
ment-sensitive strategy. Before we rush into public works projects or even
the administratively difficult subsidization of labor-intensive technology, we
should endeavour to do away with existing discrimination in favor of capital
intensity. If we took that first step in simply clearing the boards and
making the allocative game a fair one, we would be going a long way in the
direction of solving the problem. This may sound somewhat pollyannish,
especially from a card-carrying member of the dismal science. But evidence
from 2 or 3 of the more successful development cases indicates it may never-
theless be true.