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**UNEMPLOYMENT
IN THE
LESS DEVELOPED COUNTRIES**

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ERRATA SHEET

AID Discussion Paper No. 16

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Fred Dziadek

Page 4, lines 16-17 should read:

. . . necessarily lead to a greater employment growth rate. Although employment grew more rapidly in East and South Asia than in Latin America, and this was associated with a greater output growth rate, the larger employment expansion may have been due more importantly to other factors, such . . .

Page 19, line 3 substitute 15% for 10%.

Page A-1, lines 1-4, item 3 (Nigeria) should read:

As shown in Table A-1, unemployment as a percent of the population 14 years and over with "professional qualifications," i.e., those who considered themselves qualified for any type of work in the large towns varied from 17.8% in the Midwestern Region to 10.6% in the Northern Region. Nationwide, . . .

DEPARTMENT OF STATE
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Fred Dziadek

A.I.D. Discussion Papers are circulated for the information of the addressees and their staffs. These papers are intended to serve several functions: to improve knowledge of analytical studies, research results and assistance policies among Agency personnel; to encourage the careful recording and analysis of Agency experience and problems by persons currently engaged in them; and, to share such experience and ideas with interested persons outside of the Agency. These papers are designed to stimulate and serve as background for discussion. They represent the views of the authors and are not intended as statements of Agency policy.

June, 1967

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Unemployment in the Less Developed Countries

I. Introduction

Although difficult to document, there is a consensus that unemployment is both large and increasing in most less developed countries (LDCs). This is true even of many countries which have had fairly rapid GNP growth rates.

Traditionally, unemployment in the LDCs was primarily a rural-agricultural problem which took the form of underemployment. However, in recent years most LDCs have undergone rapid urbanization. While rural underemployment has remained large, much of the increase in unemployment has, therefore, occurred in the large urban centers. There it is manifested as open unemployment as well as underemployment. It is estimated that an open unemployment rate of 10% in LDC cities is not unusual, even during peak periods of activity.^{1/}

As long as the problem was mainly one of underemployment in rural areas, it was generally neglected by the authorities. It could be neglected because the underemployed in rural areas have generally been able at least to eke out a subsistence wage. Moreover, those in the rural areas of LDCs are generally unorganized and do not constitute an effective political force. However, when unemployment spreads to the cities and becomes more open, it also becomes more difficult to ignore. This changed character of LDC unemployment is a major factor in the

1. W. A. Lewis, Development Planning, N.Y.: Harper & Row, 1966, p. 76.
For estimates of unemployment rates for selected LDCs see Appendix A.

TABLE I

GROWTH OF INDUSTRIAL AND MANUFACTURING OUTPUT
AND EMPLOYMENT IN LDCs, 1948-61 (% PER ANNUM)

	<u>INDUSTRY</u>	<u>MANUFACTURING</u>
		A. All LDCs
Output	7.5	6.7
Employment	3.5	3.5
		B. Latin America
Output	5.8	5.7
Employment	2.1	2.0
		C. East and South East Asia, except Japan
Output	7.6	7.8
Employment	3.7	3.7

Source: UN, The Growth of World Industry:
International Analyses and Tables, 1938-1961.

increasing attention being paid by LDC governments and others to employment creation.

In this paper we will attempt to examine the forces responsible for the "new unemployment" and to suggest appropriate LDC policies and U.S. economic assistance policies for dealing with the problem.

II. Employment and Industrialization

One part of the most likely explanation of the unemployment problem is that industry, which is concentrated in the large urban areas, is failing to create enough jobs. It is not that the rate of employment expansion has been low but rather that it has been greatly exceeded by the increase in the supply of labor.

Between 1950 and 1960 for all LDCs the urban population, defined as those living in places of 20,000 inhabitants or more, grew at an average annual rate of 4.6%^{1/}, whereas between 1948 and 1961 employment in industry (manufacturing, mining, electricity and gas), grew at an annual average rate of 3.5%. (Table I). The employment lag was most profound in Latin America where during the same periods the urban population grew at an average annual rate of 5.6%^{2/} and industrial employment grew at a rate of 2.1% (Table I).

Employment has lagged markedly behind the growth of industrial output. As shown in Table I, between 1948-61 for all LDCs, the average

1. Calculated from UN Economic and Social Council, World Survey of Urban and Rural Population Growth, E/CN. 9/187, Mar. 8, 1965.

2. Ibid.

annual rate of growth of industrial output was 114% greater than that of industrial employment, and the growth rate of manufacturing output was 91% greater than that of manufacturing employment. Again, the lag was most profound in Latin America where industrial output expanded at a rate 176% above that of industrial employment, and manufacturing output grew at a rate 185% above that of manufacturing employment.

It may be that industrial output has failed to expand sufficiently. However, the rate necessary to provide an adequate volume of employment may be beyond the capacity of most countries. In many LDCs industrial output is already expanding rapidly. For example, between 1950 and 1960 industrial output grew at an average annual rate of 9.2% in Brazil, 17.4% in Pakistan, 9.9% in the Philippines, 9.6% in Venezuela.^{1/} It is estimated that in Brazil a rate of 12% is needed to absorb only the expected new entrants to the labor force over the next few years. Furthermore, a high rate of output growth per se may not necessarily lead to a greater employment growth rate. Although employment expansion may have been due more importantly to other factors, such as a greater concentration on more labor-intensive products and a slower rise in wages. In Brazil^{2/} and in Venezuela between 1950 and 1960 manufacturing output grew very rapidly (9.2% and 13.0%) but employment

1. UN, The Growth of World Industry, 1938-61: National Tables, ST/STAT/SER.P/2, 1963.

2. The employment rate is for 1949-59.

expanded only moderately (2.6% and 2.1%); while in Peru, output grew only moderately (6.6%) but employment expanded fairly rapidly (4.4%).^{1/}

Perhaps the major reason behind the limited ability of the industrial sector to create new jobs is the nature of the industrialization process in LDCs. In most LDCs, industrialization has taken the form of adoption of fairly capital-intensive production techniques and rapid expansion in the more capital-intensive industries.

Using installed electric power capacity per employed person as a measure of capital intensity, Baer and Herve found that there have been sizable increases in capital intensity over time in the various LDCs for which they were able to obtain data, and increases have occurred in nearly all branches of manufacturing.^{2/}

For LDCs as a whole, manufacturing output has expanded most rapidly in the more capital-intensive industries. During the 1948-61 period, the most rapid growth in output occurred in paper and paper products (ISIC 27), chemicals and chemical, petroleum and coal products (ISIC 31-32), non-metallic mineral products (ISIC 33), basic metals (ISIC 34), and metal products (ISIC 35-38); with the exception of metal

1. The Growth of World Industry, 1938-61: National Tables. The employment rate for Brazil is from W. Baer and M. H. Herve, "Employment and Industrialization in Developing Countries," Quarterly Journal of Economics, Feb. 1966, p.91.

2. Baer and Hervé, loc. cit., p. 92.

products, these industries are by U.S. standards considerably more capital-intensive than average.^{1/}

The increase in capital-intensity in the LDCs has not been confined to manufacturing; it has occurred in other branches of industry as well. Even construction, while much less capital-intensive than manufacturing,^{2/} has apparently become more capital-intensive with cranes and bulldozers and other labor-saving machinery being substituted for labor.

In part, these developments reflect the ready availability of capital-intensive technologies. The technologies in many lines of industry in the developed countries are capital-intensive. These are often borrowed by developing countries with a minimum of adaptive changes, however inappropriate this may be to their factor endowments.

They may also reflect export prospects, natural resource endowments, the size of national markets, and the pattern of demand. If, for example, an LDC has important mineral deposits, which may require highly mechanized techniques for extraction and processing, it is reasonable that its output-mix should contain products which are fairly capital-intensive.

1. Calculated from UN, The Growth of World Industry, 1938-1961: International Analyses and Tables, ST/STAT/SER.P/3, 1965.
2. The capital-labor ratio for construction is 30% that of the average capital-labor ratio for manufacturing in Japan. Wu Ta-Yeh, "Capital Intensity and Economic Growth in Underdeveloped Countries," Tsing Hua Journal of Chinese Studies, June 1963, p. 235.

Part of the explanation for the preference for capital-intensive techniques and products is the existence of market imperfections which cause the misallocation of resources. These often have the effect of making capital cheaper and labor more expensive than warranted by their relative supplies.

Exchange rates are often over-valued in many LDCs. Therefore, the cost of imported machinery is too low. Furthermore, there may be restrictions on imports of spare parts, raw materials and second-hand machinery which further stimulate imports of new equipment.

The prevailing structure of interest rates often makes it possible for larger enterprises, especially those of the government, to obtain capital at low rates of interest. Foreign assistance is made available to LDC governments on terms which are well below those obtainable domestically. Larger firms and governments may also have access to world money markets where interest rates are considerably lower than domestic rates. Even domestically, the larger borrowers may be able to obtain finance cheaply because of their size and the acceptability of their collateral. Monetary policies which permit unduly large credit expansions and the existence of low ceilings on bank interest rates have the effect of keeping the price of capital low for the larger borrowers. On the other hand, smaller firms and farmers whose operations are less capital-intensive, have difficulty in obtaining credit, and when they do, it is generally at very high interest rates from money lenders.^{1/}

1. See U Tun Wai, "Interest Rates Outside the Organized Money Markets of Underdeveloped Countries," IMF Staff Papers, Nov. 1957, p. 83.

Because of the poor linkage between the organized and unorganized money and capital markets in LDCs, easy money policies do not generally result in lower interest rates for farmers and small firms.^{1/}

Corporate tax laws frequently include provisions for encouraging capital intensity. Accelerated depreciation and investment allowances (writeoffs of more than the cost of the investment), are becoming increasingly common.^{2/}

Industrial wage rates are relatively high and rising^{2a/}. Not only has this tended to increase capital intensity, but it has also contributed toward increasing under-utilization of plant and equipment and augmenting the flow of labor from rural areas to the cities. Instead of the 50% difference between real wages in the modern sector and real income in subsistence agriculture that W. A. Lewis estimates is what is required to bring labor into industry without at the same time attracting "much more than it can handle,"^{3/} average real wages are

1. U Tun Wai, loc. cit., pp. 94-95.

2. Howard Pack, "Public Finance in Underdeveloped Countries: A Survey of Some Problems," AID 1966 Summer Research Program Paper, pp. 13-14.

2a. The importance of high and rising wage rates in accounting for unemployment is illustrated by calculations made for Puerto Rican manufacturing by Lloyd Reynolds. He found that a change in the wage was associated with an approximately equal proportionate change of employment in the reverse direction. L. G. Reynolds, "Wages and Employment in a Labor Surplus Economy," American Economic Review, Mar. 1965, p. 34.

3. Lewis, op. cit., pp. 77-78.

generally 2 to 3 times higher than those in agriculture.^{1/} Real wages have increased much more rapidly than productivity, although one might have expected them to rise less in the majority of LDCs. It is estimated that in Latin America during the 1950's, average real wages rose 4 to 5% per year while real product per capita rose 1½% per year, and in Africa average real wages increased 4% per year, while real product per capita rose 1% per year.^{2/}

Legal minimum wages and government salaries are often the basis for industrial wage rates in LDCs.^{3/} Increases in both are fairly frequent. Minimum wages are more likely to be based upon average living standards in urban areas than those of the agricultural sector.^{4/}

Despite the inappropriateness of prevailing prices in LDCs, it is questionable whether profitability and reinvestment are in fact positively and directly associated with the degree of capital intensity. Data for Indian smaller-scale manufacturing establishments show: (1) profits per unit of capital are highest for the least capital-intensive group of firms, but there is no clear relationship between profits per unit of capital and capital intensity for the other groups of firms; (2) profits per unit of output are somewhat higher for the more capital-

1. H. A. Turner, Wage Trends, Wage Policies and Collective Bargaining: the Problems for Underdeveloped Countries, Cambridge Univ., 1965, p. 13.

2. Ibid, pp. 13-14.

3. Ibid, pp. 46-49; Reynolds, loc. cit., p. 28; and C. R. Frank, Jr., "Employment and Economic Growth in Nigeria," AID 1966 Summer Research Program Paper, p. 15.

4. Turner, op. cit., p. 58.

intensive groups than for the less capital-intensive groups; (3) reinvestment per unit of capital is highest in the least capital-intensive group, but there is no clear relationship for the other groups.^{1/} Data for Karachi textiles, leather and leather goods, light engineering, and plastic firms, representing 80% of Karachi's industrial capacity, show: (1) profits per unit of capital vary inversely with capital intensity; (2) profits per unit of output are highest for the least capital-intensive group of firms, but there is no clear relationship for the other groups; (3) reinvestment per unit of capital is highest for the group of firms with the next-to-highest average capital intensity; the reinvestment ratio for the most capital-intensive group is less than half that of the next highest capital-intensive group and only slightly greater than that of the least capital-intensive group.^{2/} More research needs to be done, however, before definite conclusions can be reached.

While unemployment of unskilled labor is large and increasing, there is at the same time a shortage of skilled labor. Modern industry requires a substantial number of craftsmen. For example for Jamaica it has been estimated that mining requires that 25% of the work force be skilled; manufacturing requires from 15 to 25%; communications requires 10%; and construction requires 50%.^{3/} The proportions are probably not too dissimilar in other LDCs.

1. Wu Ta Yeh, loc. cit., pp. 221 and 223.

2. G. Ranis, "Investment Criteria, Productivity, and Economic Development: An Empirical Comment," Quarterly Journal of Economics, May, 1962, pp. 300-302.

3. Lewis, op. cit., p. 226.

III. Employment in the Services Sector

Faced with limited employment opportunities in industry, many of those who migrate to the cities and are unable to find jobs in industry, attempt to obtain employment in the services. It is not surprising, therefore, that there has been a large expansion in the labor force attached to the services sector. Thus, in Latin America, the labor force in the services sector (exclusive of construction and utilities), increased at an average annual rate of 4.1% between 1950 and 1965, compared to 1.2% for agriculture and 2.8% for industry, and its share in the labor force rose from 24 to 30%.^{1/}

But this does not mean there has been a commensurate expansion in productive employment in the services. In the case of Latin America, it is likely that a substantial proportion of the rise in the services sector's labor force represented an increase in underemployment. During the 1950-65 period output per member of the labor force in the services sector declined at an average annual rate of 0.3%.^{2/} The increase in underemployment ascribable to the decline in productivity alone may be estimated as equivalent to about 8% of the sector's labor force.

There is a new school of thought which believes that expansion of employment in the services sector may well be the solution to the employment problems of the developing countries. According to Walter Galenson, who wrote the seminal article expounding these ideas, this

1. Calculated from UN Economic Commission for Latin America, "Structural Changes in Employment Within the Context of Latin America's Economic Development," Economic Bulletin for Latin America, Oct. 1965, pp. 163-187.

2. Calculated from Ibid.

expansion will occur mainly as a result of the growth of manufacturing. Under conditions of modern technology, manufacturing will not be a major source of new employment but it will generate the demand leading to an expansion of employment in the services sector.^{1/}

To support his hypothesis, Galenson does four regressions. He correlates employment changes in manufacturing with those in services for 25 countries and finds that for every percentage increase in manufacturing employment, there is an associated rise of 0.6% in services employment ($R^2 = 0.70$). He also correlates changes in manufacturing output with changes in services employment for 16 countries and finds a much weaker relationship; for every percentage increase in manufacturing output there is an associated rise in services employment of 0.2% ($R^2 = 0.54$). Finally, he correlates manufacturing employment changes with those in commerce and miscellaneous services for 21 countries and finds even poorer relationships; while there is a rise of 0.6% and 0.7% in commerce and miscellaneous services employment, respectively, for every percentage increase in manufacturing employment, the R^2 is only 0.29 for commerce and 0.32 for miscellaneous services.

Upon closer examination of the data, it is doubtful whether Galenson has been able to support his hypothesis. For one thing, the majority of the countries included in his regressions are developed

1. Walter Galenson, "Economic Development and the Sectoral Expansion of Employment," International Labour Review, June, 1963, pp. 505-519.

countries. Of the 16 countries he used for the correlation of manufacturing output with services employment, nearly all are developed. Furthermore, he found that services employment expanded by 1% regardless of change in manufacturing output or employment. In addition, expansion of employment in services, although absolutely larger than expansion of employment in manufacturing, increased less percentagewise than manufacturing employment. It is also questionable to what extent the data purporting to show employment in services actually do represent numbers of employed or are mainly residual estimates of the labor force attached to the services sector.

Finally, Galenson dismisses the likely possibility that many of those in the services sector, because of prevailing low productivity levels, are actually underemployed. He states that: "If people are engaged in activities which enable them to support themselves, it seems difficult to argue that they are not gainfully employed, no matter what one may think of the nature and intensity of their tasks. . . who is to say that seven hours spent in watching a dial which controls an automated line is a fuller day's work than ten hours of walking about in a hot sun seeking to sell trinkets to unwilling and elusive customers. The productivity of the two occupations may be quite different, but comparative productivity does not provide a criterion for degree of employment except in some general and not very meaningful sense."^{1/}

1. Ibid, p. 516.

This view amounts to the denial of the existence of disguised underemployment. Although difficult to measure, there is no doubt that disguised underemployment does exist and is widespread in developing countries. This form of unemployment is mainly a function of comparative productivity. While there are differences of opinion as to what the standard of efficiency for any activity should be and comparative productivity data are hard to come by, an assessment of employment in developing countries must take into account the volume of disguised underemployment.

IV. Employment in Agriculture and in Rural Areas

Another major part of the explanation of the new unemployment problem is that labor is moving out of agriculture and rural areas too rapidly. Urbanization has progressed at a very rapid pace in many LDCs. In general, the urban population has grown more than twice as fast as total population. In major cities an annual rate of population increase of 8 to 10% is not unusual.^{1/}

One reason for the rapid rural-urban migration has already been touched upon in another context above - the abnormally large differential between wages in urban and rural areas. Other attractive forces include centralization of industry and the greater availability of water, transportation, electric power, schools and medical services

1. F. H. Harbison, "The Generation of Employment in Newly Developing Countries," (mimeo draft), p. 17.

TABLE II

AGRICULTURAL WORKERS PER 100 HECTARES OF
ARABLE LAND, 1960

Argentina	4.9
Chile	11.8
Jordan	14.7
Tunisia	18.5
Iran	22.2
Spain	22.7
Mexico	24.4
Venezuela	31.2
Israel	33.3
Turkey	38.5
Poland	41.7
Colombia	52.6
Greece	52.6
Yugoslavia	55.6
Costa Rica	71.4
Brazil	71.4
India	83.3
Pakistan	83.3
Philippines	83.3
Thailand	111.1
Taiwan	166.7
UAR	166.7
Japan	250.0

Source: "Changes in Agriculture in 26 Developing Nations 1948 to 1963" Foreign Agricultural Economic Report #7, U.S. Dept. of Agriculture.

in large urban centers. In part, the latter attractive forces are the result of concentration of development expenditures in the large urban centers.

The "push" factors responsible for the too-rapid migration of the labor force from rural areas are mainly those connected with the slow growth of agricultural production and employment opportunities in relation to increased population pressure. Often, even in LDCs where agricultural production has increased rapidly, following the pattern of industry, cultivation has been fairly capital-intensive and gains have been concentrated in large-scale commercial farms.^{1/}

The rapid rural-urban migration would appear to be more important than the failure of industry to provide enough jobs in the explanation of unemployment. Industrial employment, which is predominantly urban-based is already expanding at a remarkably high rate. Thus, the 3.5% average annual rate of expansion of LDC manufacturing employment in the postwar period compares favorably with the 3.3% rate of U.S. manufacturing employment during its industrialization period (1870-1920).^{2/}

1. Mexico is a good example. Thus, "to a remarkable degree growth of farm output in Mexico has been concentrated in the semi-arid regions in the north where large-scale commercial operators rapidly expanded production of cotton and wheat as major irrigation made possible expansion of the cultivated area. These enterprises were both technically progressive and highly mechanized." B.F. Johnston, "Agriculture and Economic Development in Japan: Its Relevance to the Developing Nations," AID 1966 Summer Research Program Paper, p. 65.
2. U.S. manufacturing employment rate calculated from N. Potter and F.T. Christy, Jr., "Employment and Output in the Natural Resource Industries, 1870-1955," Studies in Income and Health(NBER), Vol. 25, 1961, p. 121.

V. Population Growth

The third and last major part of the explanation of LDC unemployment is the generally high rate of population growth. Many LDCs have population increase rates of $2\frac{1}{2}\%$ or more and in many instances these rates appear to be increasing. In contrast, with a few exceptions in the case of those with large unsettled areas, the presently advanced countries never had to cope with rates of population increase of this order of magnitude during their development.^{1/}

Even if birth rates could be significantly reduced, unemployment would still be a problem for many years to come. In part, this is because those presently unemployed will be unaffected. Furthermore, the growth of the labor force for some time to come will be dependent upon past birth rates. In addition, rapid urbanization, one of the root causes of unemployment, is only indirectly linked to general population growth.

VI. Policy Recommendations for LDCs

There are many who accept the views of Galenson and Lebenstein that the main goal of LDCs should be to maximize future output per capita rather than present output and employment, and that capital intensity must be maximized in order to achieve this goal. Their argument essentially is that capital intensity increases the proportion of income

1. Harbison, op. cit., pp. 32-33.

going to profits. As a result, savings for reinvestment will be higher and there will be a greater rate of growth.^{1/}

There are a number of weaknesses in this argument. Profits may not necessarily be saved. Taxation can be a source of savings. As we have already seen, it is questionable whether the share of profits in output and the reinvestment rate are positively and directly associated with capital intensity; it may well be that appropriate factor prices would lead to negative correlations. Thus, policies which attempt to maximize present employment may even increase the rate of growth.

More important, however, even if the evidence were to bear out the Galenson-Leibenstein thesis, maximization of future output should not inevitably be the main goal of LDCs. If living standards are already low and unemployment is widespread, maximization of present output and employment may be deserving of greater priority.^{2/} Furthermore, the political and social consequences of a large and growing volume of unemployment, particularly if increasingly manifested in the large urban centers, may be much greater than those from a reduction in the growth rate.

While it is likely that unemployment is large in most LDCs,^{3/} a reordering of development priorities in individual LDCs should be based

1. W. Galenson and H. Leibenstein, "Investment Criteria, Productivity, and Economic Development," *Quarterly Journal of Economics*, Aug 1955, pp. 343-370.
2. Lewis, op. cit., p. 62.
3. See Appendix A for estimates of unemployment rates for selected LDCs.

upon a quantitative assessment of unemployment. A "limited information" procedure for estimating the urban unemployment rate is given in Appendix B. If the urban unemployment rate, including underemployment, is 10% or more, then alleviation of unemployment should be a primary goal.

The analysis in the preceding sections suggests that while unemployment is increasingly manifested in urban areas, its causes are mainly rural in origin. With industrial employment already expanding at an average annual rate of 3.5% and agriculture typically accounting for more than 2/3rds of the labor force, the solution to unemployment, therefore, would seem to lie more in creating opportunities in rural areas for containing the labor force than in efforts for substantially expanding urban-based industrial employment, although the latter should not, of course, be neglected.^{1/}

It is imperative that most LDCs adopt an agricultural strategy which will not only increase output, but will also create employment opportunities. Given these objectives, the most appropriate strategy for agricultural development would appear to be one patterned after the Japanese development experience.^{2/} The essence of the Japanese

1. This generalization is more applicable to East and South East Asia (excluding Japan) than Latin America. In the former region industrial employment expanded at an average annual rate of 3.7% between 1948 and 1961 and agriculture and related activities accounted for about 70% of the labor force around 1960, while in the latter, during the same periods, industrial employment grew at an average annual rate of 2.1% and agriculture accounted for 47% of the labor force.
2. The discription of the Japanese experience in the text is based upon B Johnston, op. cit., pp. 1-89.

approach is that it consisted of the widespread adoption by the great majority of its farmers of techniques and inputs which are complementary to labor and land. The impressive record of Japanese agricultural performance is mainly attributable to the adoption of labor-intensive cultivation techniques which involve the use of improved seed varieties, fertilizers, pesticides, fungicides, water and simple tools in combination with land and labor. Until fairly recently reliance on capital inputs was very limited.

The potential for expanding employment opportunities in agriculture by adoption of labor-intensive cultivation techniques with yield-increasing inputs is staggering. This may be seen by comparing the labor/arable land ratio for the countries shown in Table II with that of Japan. If, for example, India's ratio of 83 workers to 100 hectares of arable land were increased to 150^{1/} (60% of Japan's ratio) by 1985, after allowing for the absorption of existing disguised unemployment (assumed to be 25% of the number of agricultural workers in 1960), there would be a net increase in agricultural employment of nearly 75 million between 1960 and 1985 which would absorb some 63% of the increase in the total labor force, projected at the rate of the 1950-1960 population increase.

The requirements for implementing this type of labor-intensive development include the following:

-
1. Richard Ward thinks that a ratio of 175 workers per 100 hectares is feasible. See R. J. Ward, "Think Piece on Potential Gains from NESAP Agriculture Sectors," AID paper (unclassified), p. 4.

1. more infrastructure, such as access roads to major highways, irrigation and flood control works, and land reclamation projects,
2. adequate rural community services, such as schools and hospitals;
3. expansion of agricultural credit facilities,
4. more warehouses and processing plants,
5. greater availability of fertilizers and other inputs which are complementary to land and labor,
6. more intensive and widespread agricultural education, including extension programs,
7. freeing of product prices,
8. more agricultural research,
9. land reform aimed at inducing large landowners to dispose of their holdings of idle but cultivable land.

Surplus labor in rural areas could be mobilized for the construction and maintenance of rural public works and community development. In addition to their direct employment effects, such projects would also stimulate the development of agriculture and rural-based industry. Programs of this type have been successfully put into operation in several countries. In Morocco, for example, between mid-1961 and the end of 1964, this type of program absorbed about 25% of estimated rural underemployment; in Tunisia, the direct employment impact was even substantially higher.^{1/}

1. J. P. Arles, "Manpower Mobilisation and Economic Growth: An Assessment of Moroccan and Tunisian Experience," International Labour Review, July 1966, pp. 17-18. For Tunisia Mr. Arles states: "Estimating the number of working days 'authorized' under the programme at 50 million, it can be considered that rural underemployment was practically absorbed. But these figures are not completely reliable." (pp. 18-19).

Expansion of rural-based industry and services is another potential source of absorbing rural manpower. Accelerated agricultural development should stimulate the growth of industries which process agricultural products and which can supply agriculture with the requisite physical inputs.

Among physical inputs, fertilizer, in the opinion of many, is the most important because it offers the best hope for rapid increase in agricultural products. On the basis of FAO experience, substantial yield increases of at least 50% are often possible with the single input of fertilizer.^{1/} Yet fertilizer is still little used.

Establishment of fertilizer plants is economically feasible in the larger LDCs.^{2/} However, often even where established, fertilizer plants which have the capacity for meeting domestic agricultural requirements fail to bring about significant increases in fertilizer use. This is mainly due to the high cost of fertilizer. For example, in India the cost of fertilizer is 50% higher than in the U.S.^{3/} Inadequate distribution facilities (transportation and storage) are the principal reasons for the high cost. Improvement in distribution would not only increase

1. D. Hapgood, editor, Policies for Promoting Agricultural Development, Cambridge: MIT, p. 21.

2. For example, the lower limit for economic production of nitrogenous fertilizer is about 30,000 tons of nutrient per year. (UN Food and Agriculture Organization, The State of Food and Agriculture, 1966, p. 125). On the basis of the recommended minimum requirement of 30 lb. of plant nutrient per person per year, a country would have to have a population of at least 2 million.

3. Policies for Promoting Agricultural Development, p. 22.

the use of fertilizer but would also directly increase employment (in the distribution activity). Even in smaller countries, where establishment of a fertilizer plant is not economically feasible, improved distribution facilities would enhance the use of imported fertilizer and also directly increase employment.

The production of small pumps, sprayers, dusters, threshers, and tools and implements for use with animal draft power are further examples of agro-industries which would stimulate the growth of agriculture, and could also directly provide employment for rural manpower. The manufacture of such implements generally does not entail significant economies of scale and hence are suitable even in smaller countries. Furthermore, their production would also make available equipment which is better suited to the needs of agriculture in the LDCs than that which is normally available on import markets.^{1/}

Of course, expansion of agro-industry and services does not imply that this will occur in rural areas. Improvement of rural infrastructure and communities and upgrading the skills of the rural labor force through education would definitely make it more attractive for such industries to locate in rural areas. Perhaps appropriate tax incentives could be used to further enhance the attractiveness of basing agro-industries in rural areas.

Rural development of the type outlined here will obviously require massive public and private investment. The latter is not likely

1. The State of Food and Agriculture, 1966, p. 126.

to eventuate unless the former is forthcoming.^{1/} To some extent the necessary resources can come from the rural areas themselves, but it is both unfair and unrealistic to assume that rural areas can carry the major burden. In many LDCs rural production is already heavily taxed by explicit or de facto taxes on exports and by tariff protection and import restrictions, and the revenues are used primarily for strengthening urban areas. In Ghana, Nigeria, and Uganda, for example, a substantial part of the proceeds from agricultural exports has been diverted by marketing boards or by export taxes to financing urban infrastructure and industrial expansion. Even more widespread have been the policies of LDCs to protect domestic industries by tariffs, import restrictions and multiple exchange rates. These have often had the effect of turning the terms of trade against agriculture.^{2/} What is required is an increase in urban taxation and a more equitable distribution of government expenditures.

Employment opportunities in urban as well as in rural areas might expand if a system of "shadow prices", which approximate those reflective of true factor scarcities, were substituted for prevailing factor prices. Calculation of shadow prices poses some difficulties, but implementation poses even more formidable problems. However, unless they are implemented, their calculation becomes a mere academic exercise, since decisions will continue to be made on the basis of prevailing prices.

1. Harbison, op. cit., p. 26.

2. Johnston, op. cit., p. 55.

In general, the least effective implementation measures are direct controls, such as the licensing of machinery and the fixing of prices and wages by decree or law. The inadequacies of bureaucratic machinery for administering direct controls and the ingenuity of people in getting around them are well known. Hence, the main reliance for implementing shadow prices should be on indirect measures, such as monetary, fiscal and foreign exchange policies and minimum wage regulations.

In choosing indirect measures to implement shadow prices, those measures which are either very costly in terms of their budgetary burden or which tend to perpetuate price distortions should be avoided. An often proposed measure which should be avoided for both these reasons is a subsidy to industrial wages sufficient to make it profitable for employers, including the government, to use labor-intensive production techniques.

There are various indirect measures which would improve the allocation of resources without tending to perpetuate price distortions and which are not costly. The cost of capital for larger borrowers may be increased by tighter monetary and fiscal policies, devaluation and removal of tax incentives for investment, such as accelerated depreciation and tax writeoffs for new plants or equipment. At the same time, the cost of capital might be reduced for smaller, more labor-intensive enterprises and farms by making their loans re-discountable at the Central Bank, by the adoption of more liberal lending policies towards them by development banks and other lending institutions under government control

or influence, by the creation or expansion of credit institutions which specialize in loans to smaller firms and farms, and by the removal of restrictions on imports of second-hand machinery. Urban wages could be held in check by a tighter rein on government salaries and by basing minimum wages mainly on agricultural incomes.

Industry in LDCs is too dependent upon the capital-intensive technologies developed by and for the advanced countries. Some \$7,500 million of equipment is imported annually by the LDCs which is designed primarily for the needs of the advanced countries.^{1/} Yet little engineering and scientific research for developing labor-intensive and capital-saving technologies appropriate to the needs of the LDCs has been undertaken.^{2/} LDC governments should encourage their own development agencies and research institutes to undertake this type of research. They should also press for the establishment of an international agency which could become the focus of research and a repository of information.^{3/}

Development of small-scale industry should be encouraged. In general the labor-absorptive capacity of smaller firms is substantially greater than that of larger firms because capital-intensity is in part a function of size of output. However, small-scale industry may be

1. J. E. Stepanek, Technologies Appropriate for Industry in the Developing Countries, UN Economic and Social Council, STD/5/RPCA/IND/1, Mar. 9, 1966, p. 8.
2. E. Staley and R. Morse, Modern Small Industry for Developing Countries, N.Y.: McGraw Hill, 1965, pp. 288-290.
3. A similar recommendation is made by ILO experts. See ILO, Employment and Economic Growth, Geneva, 1964, pp. 150-151.

appropriate not only in small countries but also in some activities in large countries where markets are fragmented by inadequate distribution facilities. Other advantages of small-scale industry include mobilization of local savings which would otherwise not be productively used, better utilization of handicraft skills, and a shorter gestation period. Provision of adequate credit facilities and establishment of a small industry advisory service for assistance in selecting lines of activity and production and management counselling would help to promote its growth.

Training of unskilled labor could help to alleviate unemployment as well as to help reduce the shortage of skilled industrial workers. It is now recognized that the quickest and most efficient training is on-the-job training.^{1/} Yet, on-the-job training and apprenticeship programs are scanty in most LDCs.

Government enterprises could undertake training programs and pay wages to trainees equivalent to the minimum wage of unskilled labor during the course of their training. The number and scope of on-the-job training programs in private industry could be increased if the employers were offered appropriate tax incentives. The tax incentives need not be very large because businessmen themselves presumably are directly interested in increasing the number of skilled workers on their payrolls. While such programs may be costly, the often-suggested alternative of expanding

1. F. H. Harbison, "Human Resources Development Planning in Modernising Economics," International Labour Review, May 1962, pp. 445-448 and C. A. Anderson and M. J. Bowman, "Commentary on AID Educational Manpower Programs in Africa," prepared for AID, pp. 78-92.

vocational schools is likely to be even more costly and less efficient. In many instances, training in vocational schools is of poor quality, in part because potentially competent instructors find it more remunerative to work in industry and also because it is difficult to tailor curricula to the occupations which trainees later enter.

It is clear that population-control policies are very much needed in most LDCs; many LDC governments have attempted to pursue such policies. Perhaps now with the availability of the intra-uterine coil and improved oral contraceptives these policies will be more successful than they have been. Again, however, it should be noted that even successful population-control policies will have little if any impact on those presently unemployed, those likely to become unemployed in the near future, and urbanization. Hence, a strong population-control policy is no substitute for policies which are directed toward alleviation of the other causes of unemployment.

In order to design adequate policies for alleviating unemployment, and to monitor the effectiveness of these policies the government should conduct at frequent intervals labor force surveys. These should yield statistically valid information on employment and unemployment (including underemployment), by sector (i.e., industry, services and agriculture) and by regions (including urban v. rural).

VII. The Role of U.S. Economic Assistance

With few exceptions, reduction of unemployment has not been a primary goal of U.S. country assistance programs. However, it

is likely that because of U.S. and other foreign economic assistance, employment in LDCs is greater than what it would have been otherwise. Perhaps a substantial increase in the levels of assistance would enable many LDCs to increase employment as well as to accomplish other objectives, but it is unrealistic to assume that aid increases will be forthcoming.

Therefore, it is necessary to decide whether alleviation of unemployment should be a primary goal of U.S. assistance, and if it should, how should assistance be redirected to accomplish this goal.

The first requirement is an assessment of the extent of unemployment in individual aid-recipient countries. If the estimated urban unemployment rate, including underemployment, is 15% or more, then the country has a serious unemployment problem.^{1/} Reduction of unemployment, then, should be one of the main economic goals of U.S. foreign assistance. U.S.-supplied resources and U.S. influence on LDC policies should be redirected toward employment creation.

The following are some suggestions for increasing the effectiveness of U.S. economic assistance for achieving this goal:

1. Greater use of program loans.

The most important advantage of program loans is that they enhance the ability of the U.S. to negotiate for a comprehensive set of self-help measures. Partially in recognition of the leverage potential of program loans, AID has increasingly resorted to program loans in recent years. Thus, eight of the nine major U.S. aid-recipients

1. See Appendix B for a suggested "limited-information" procedure for estimating the urban unemployment (including underemployment) rate.

receive program assistance; for most of these countries, program assistance is much greater than the total amount of project aid. However, the total number of countries receiving program assistance is still very small.

Explicit performance commitments are increasingly being required by AID as conditions for granting program assistance. Some of these, such as monetary ceilings, exchange reform and import liberalization are also relevant to alleviating unemployment. Additional performance commitments which would further the goal of reducing unemployment include the removal of tax incentives for substituting machinery for labor, the removal of prohibitions against imports of second-hand machinery, ceilings on government salaries, minimum wage regulations based upon rural living standards, and most important, the allocation of more budgetary support to agricultural and rural development.

2. More assistance to agriculture.

Since agriculture is one of the President's three new initiatives in U.S. economic assistance, more resources are already being devoted to agriculture and more are planned for coming years. Wherever possible, negotiations for agricultural assistance should relate to the total development efforts in this area, rather than negotiations on a piecemeal basis which consider each form of assistance separately. The new vehicle of the sector loan would seem to be a desirable umbrella for covering most forms of agricultural assistance. Specific performance commitments conducive to the development of a widespread labor-intensive agriculture should be attached to these sector loans.

The construction of rural infrastructure would be stimulated if the U.S. could negotiate more PL 480 Food-for-Work Programs. Major programs have helped to finance the construction and repair of roads, schools, irrigation works, and other public works in rural areas in Korea, Morocco, and Tunisia.

3. On-the-job vocational training.

As with agriculture, education is also one of the new initiatives, and it is receiving more emphasis in AID programs. Most of U.S. aid which has been thus far extended for vocational education has been aimed at strengthening formal vocational schooling. However, as previously indicated, this is not a rapid nor efficient way of upgrading the skills of the industrial labor force. Assistance in this area should be redirected towards extending on-the-job vocational training.

4. More project assistance to rural-based industry.

5. More project assistance to small-scale industry.

6. More loans for local cost financing.

The U.S. should attempt to encourage LDCs to undertake more projects which are relatively labor-intensive by increasing the amount of its local cost financing. LDCs would, of course, have an incentive to present the U.S. with more labor-intensive projects if a substantial proportion of local costs were financed by the U.S.

In FY 1966, lending for local cost financing accounted for 18% of AID's project loans. As a result of the implementation of the

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President's new initiatives, it is likely that this proportion will rise. But U.S. loans for local cost financing should also extend to projects outside of the area of the new initiatives.

7. Technical assistance for the establishment and maintenance of labor force surveys for providing current data on employment and unemployment.

8. Research on technologies appropriate to the needs of LDCs.

The U.S. should make research grants available to LDCs and American universities and research institutions for this purpose. It should also press for the establishment of an international center which could become the focus for research and a repository of information in this field.

APPENDIX A

UNEMPLOYMENT RATES IN SELECTED LDCs

Unless otherwise indicated, unemployment does not include underemployment.

I. Africa

1. Egypt

From 1957-1960 unemployment as a percent of the labor force remained around 4-5%. It declined to 3.2% in 1961 and 1.8% in 1962,^{1/} primarily as a result of the enforced reduction in the nominal work week in nationalized industries (from 48 to 42 hours).^{2/}

2. Morocco

In 1960 (census) 9.4% of the labor force was unemployed.^{3/}

3. Nigeria

As shown in Table A-1, unemployment as a percent of the population 14 years and over with "professional qualifications", i.e. those who considered 17.8% in the Midwestern Region to 10.6% in the Northern Region. Nationwide, the average was 12.6%. The figures understate the open employment rate since the labor force is smaller than the population 14 years and older who are qualified to work.

II. Asia

1. Ceylon

In 1959-1960 unemployment accounted for 10% of the labor force. The urban unemployment rate was 14% and the rural unemployment rate was 10%. The unusually high rate of rural unemployment is due primarily to the relatively higher proportion of the rural workers who are wage earners.

Eighteen percent of those working less than 40 weeks in rural areas indicated that they were available for extra work and 12% of those in urban areas.^{4/}

2. India

According to Plan estimates, unemployment increased from 3.5 to 5.1% of the labor force between 1956 and 1966. Underemployment, defined as those who had some work but were willing to take up additional work, constituted 10-11% of the employed in 1961.^{5/}

Table A-2 summarizes the available data on urban unemployment. What is surprising is that urban unemployment was less than 5% in 1958/59 in even the largest cities, and that between 1955 and 1958/59 the unemployment rate declined. It is likely that the extent of unemployment is

1. International Labour Office, Yearbook of Labour Statistics, 1965.
2. B. Hansen and G. A. Marzouk, Development and Economic Policy in the UAR, Amsterdam: North-Holland, 1965, pp. 134, 279, 298.
3. U.S. Department of Labor, Labor Developments Abroad, October, 1964.
4. International Labour Office, Employment and Growth, 1964, pp. 23 and 29.
5. These are estimates based upon figures contained in the second, third and fourth Five-Year Plans.

TABLE A-1

RESULTS OF 1963 UNEMPLOYMENT SURVEY
IN LARGE TOWNS OF NIGERIA

Region	Estimated Total Population 1963	Per cent of Population Covered in Survey	Population 16 Years or Over in Survey	Unemployed 14 Years or Over in Survey	Per cent Unemployed	Estimated Total Unemployed
Lagos	577,000	0.5	1,744	270	15.5	50,776
Northern Region	731,810	1.5	6,870	741	10.6	45,539
Eastern Region	527,600	1.2	5,719	655	17.6	60,723
Western Region	1,564,140	0.7	6,591	664	11.6	86,336
Mid-Western Region	155,180	1.0	385	158	17.8	16,080
All Regions	3,555,730	0.9	19,809	2,488	12.6	259,454

Source: Reproduced from C. R. Frank, Jr., "Employment and Economic Growth in Nigeria," 1966 AID Summer Research Program Paper, Table 14.

very much understated by the figures in the table. This is because a large proportion of the employed are in services, where underemployment is generally higher and because the labor force participation rate is low. Certainly the magnitude of the trend is exaggerated and perhaps also the direction of the trend is misrepresented by the figures because the proportion of those employed in the services rose, the labor force participation rate declined, and the Plan estimates indicate a rise in the national unemployment rate.

3. Pakistan

In 1955, according to a special manpower survey, unemployment in the large towns constituted 10.3% of the labor force in East Pakistan and 6.4% in West Pakistan.^{1/} It is estimated that the national unemployment rate, including underemployment, was 20% of the labor force in 1965.

4. The Philippines

During the period 1957-63, according to labor force surveys, the unemployment rate fluctuated between 7.5-8.5%.^{2/} In November, 1958, the unemployment rate in agriculture was lowest (3.2%) and highest in construction (13.2%); the unemployment in manufacturing was about double that of agriculture (6.1%).^{3/}

In April 1966, visible underemployment, defined as those employed but working less than 40 hours per week who want additional work, constituted 33% of those working less than 40 hours per week in agriculture and 41% of those working less than 40 hours in non-agricultural activities. Invisible underemployment, defined as those working more than 40 hours per week who want additional work, accounted for 20% of those working more than 40 hours per week in agriculture and 14% of those working more than 40 hours per week in non-agricultural activities.^{4/}

III. Latin America

1. Caribbean Countries

In British Guiana, Trinidad, Jamaica "and some of the islands of the Caribbean" unemployment is of the order of 10-20% of the labor force.^{5/}

2. Chile

Unemployment as a percent of the economically active population rose from 3.6% in 1952 to 7.1% in 1960 (census dates).

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1. International Labour Review, October, 1962, p. 379.
 2. U.S. Department of Labor, Labor Developments Abroad, October, 1965.
 3. International Labour Review, October 1962, p. 386.
 4. U.S. Department of Labor, Labor Developments Abroad, October, 1965.
 5. Employment and Economic Growth, p. 24.

TABLE A-2

URBAN^{1/} UNEMPLOYMENT IN INDIA

A. May - November 1955

	<u>Unemployment Rate</u> (% of Labor Force)	<u>Labor Force</u> <u>Participation Rate</u>	<u>% Of Gainfully Employed</u> <u>in Services^{4/}</u>
All Urban	5.31	34.26	44.52
Largest Cities ^{2/}	8.30	38.30	60.44
Cities with Population of 300,000 or more ^{3/}	5.95	33.61	50.65
All other	4.67	33.78	40.14

B. July 1958 - June 1959

All Urban	3.59	32.95	46.60
Largest Cities ^{2/}	4.58	36.00	62.43
Cities with Population of 300,000 or more ^{3/}	3.93	31.77	54.46
All Other	3.35	32.74	42.66

SOURCE: India National Sample Surveys - Reports 62 and 85.

1/ Urban - cities with population of 5,000 or more.

2/ Largest Cities - Bombay, Calcutta, Delhi, and Madras.

3/ Also capitals of former part A & B states, excluding Shillong.

4/ Services includes trade and commerce, transportation, storage and communications, and miscellaneous.

The unemployment rate in Santiago in 1960 (census date) was 8.3%.^{1/} Labor force survey figures for Santiago show a rise in unemployment from 7.0% in October, 1955 to 9.5% in June, 1958; a decline to 5.1% in 1961; and a rise to 6.1% in March, 1965. It is likely that the unemployment figures understate the open unemployment rate because the census rate was 1% point higher than the survey rate for the comparable date (June, 1960). It is also likely that the trend is actually upwards because the proportion of the employed work force in services rose from 40 to 45% between 1958 and 1963.^{2/}

3. Honduras

In April, 1961, (census) unemployment accounted for 7.8% of the economically active population.^{3/}

4. Panama

Between 1950 and 1960 unemployment rose from 9 to 11% of the labor force (census).

Using a different definition of unemployment which gives a larger volume of unemployment than the census definition, labor force surveys for metropolitan areas show a rise in the unemployment rate from 9 to 12% between 1963-1965.^{4/}

5. Puerto Rico

Unemployment as a percent of the total labor force declined from 14.3% to 11.0% between 1955 and 1965.^{5/} In light of "Operation Bootstrap" and the very large migration of Puerto Ricans to New York City, it is surprising that the unemployment rate is still so high. Also the magnitude of the decline is exaggerated because 67% of the gross new employment created during this period was in the services sector.^{6/}

6. Venezuela

The unemployment rate is estimated at 15% of the labor force in recent years.^{7/}

1. B. H. Herrick, Urban Migration and Economic Development in Chile, Cambridge: M.I.T., 1966, pp. 64-65.
2. Yearbook of Labour Statistics, 1965.
3. U.S. Department of Labor, Labor Developments Abroad, November, 1963.
4. A.I.D. Capital Assistance Paper: Panama Special Program, (unclassified).
5. Calculated from Yearbook of Labour Statistics, 1965.
6. Employment in agriculture decline during the period.
7. F. H. Harbison, "The Generation of Employment in Newly Developed Countries" (mimeo), p.1.

APPENDIX B

SUGGESTED PROCEDURE FOR ESTIMATING THE URBAN EMPLOYMENT RATE

This is a "limited information" procedure which assumes that current data on industrial employment are available and that there have been at least two postwar censuses of population (including information on the economically active population.)

1. Determine the rate of growth of urban population between the most recent census years. (For this purpose, urban areas are defined as those with population of 20,000 or more.)

2. Determine the rate of growth of the economically active population (or labor force) outside of agriculture between the most recent census years.

3. Determine the rate of growth of the economically active population in construction and services between the most recent census years.

4. Multiply the economically active population outside of agriculture as given by the most recent census by a factor which represents the proportion of the non-agricultural labor force in urban areas. In the absence of relevant individual country information, it is suggested that a factor of .85 be chosen. This represents our estimate of the likely urban concentration of the non-agricultural labor force in the typical LDC.

5. Project (4) to the current year by applying the rate of growth of urban population. The result is the estimated urban labor force.

6. Multiply the most recent census data on economically active population in construction and services by (a) a factor which represents the proportion in urban areas and (b) a factor which represents the proportion which is not openly unemployed and underemployed. In the absence of relevant individual country information it is suggested that for (a) a factor of .85 be used and for (b) a factor of .75 be used.