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Background document

EMPLOYMENT ASPECTS OF INDUSTRIALIZATION

presented by

the International Labour Office

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

1. The primary aim of industrial development is to increase output and income, not to provide jobs. But it is not a matter of indifference whether the path of development is one that leaves many people without work, or one that provides many new jobs quickly, utilizing a country's human potential as fully as possible for development. Governments that have subscribed to the United Nations Charter and to the Constitution of the International Labour Organisation (ILO) have recognized an obligation to do all in their power to provide productive work for those who need it, and the International Labour Conference in 1964 adopted a Convention and a Recommendation concerning Employment Policy which called on Member States to declare and pursue as a major goal an active policy designed to promote full, productive and freely chosen employment.

2. This paper advances six propositions and comments on them. The propositions are:

(a) The industrial sector in developing countries provides directly only limited employment in proportion to the amount of capital invested, but makes a long-run contribution to the solution of employment problems to the extent that it promotes rapid economic growth and development.

(b) If too much weight is given to short-term employment considerations, countries may choose a product-mix and types of technology that do not make for rapid growth.

(c) If too little weight is given to short-term employment considerations, countries may choose a path of development that leaves large numbers of people unemployed or under-employed and fails to make full use of their human potential for development.

(d) Countries have accordingly to determine what their policy towards employment in the context of industrial development is to be; a useful distinction can be drawn in this connexion between relief-oriented employment on the one hand, and production-oriented employment on the other.

(e) The first and major element in a developing country's policy towards employment in the context of industrial development should be to make sure that all labour that can be employed productively in the industrial sector is employed; and steps should be taken to implement this policy.

(f) Some forms of international action may be helpful in this connexion.

3. These propositions will be taken up in turn.

(a) The industrial sector in developing countries provides directly only limited employment in proportion to the amount of capital invested, but makes a long-run contribution to the solution of employment problems to the extent that it promotes rapid economic growth and development.

4. It is well known that in most countries the amount of capital used per job in industry, particularly large-scale modern industry, is considerably higher than in agriculture and services. In India, for example, according to one recent study, average capital per worker (at 1960/61 prices) in "manufacturing and power" and in mining in 1960/61 were, respectively, Rs 3,812 and Rs 2,289 as compared with Rs 732 in agriculture, Rs 2,390 in "trade and service" and Rs 15,470 in transport.<sup>1/</sup> In China (Taiwan) in 1961, average capital investment per person employed in manufacturing industry was \$NT48,000, whereas the corresponding figures were \$NT20,900 in wholesale trade, \$NT2,600 in retail trade and \$NT2,500 in miscellaneous service industries.<sup>2/</sup> In Italy, the "Vanoni plan" estimated the capital directly needed for the creation of new jobs over the period 1955-1964 at 10 million lire per job in industries with heavy capital requirements, 1.5 million lire in other industries and the handicraft sector, and 1.0 million lire in tertiary activities.<sup>3/</sup> It should further be noted that within the industrial sector, the capital per worker tends to vary between different branches of manufacturing and often also between establishments of different sizes.<sup>4/</sup> From the very rough estimates of the growth of manpower requirements in certain key industries in Africa, Asia and Latin America from 1965 to 1975, contained in another ILO paper prepared for the Symposium,<sup>5/</sup> it is clear that these industries can be expected to absorb no more than a small proportion of the projected increase in the labour force.

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1/ Economic Survey of Asia and the Far East, 1965 (Bangkok, 1966), p. 10 (United Nations publication, Sales No.:66.II.F.1).

2/ General Report, 1961, of Industry and Commerce Census of Taiwan.

3/ Elements of a Programme for Raising Income and Employment Levels in Italy over the Ten Years 1955-1964 (Rome, 1955).

4/ Some statistics for Colombia, India, Mexico and the United States are given in: International Labour Office, Employment Objectives in Economic Development, (Geneva, 1961), p. 229, table 3.

5/ Entitled "Skill Requirements for Industrialization" (document ID/CONF.1/31).

5. A major reason for the unemployment and under-employment prevailing in so many developing countries is the very fact that their economies are under-developed in the sense of not yet having developed the knowledge and skills, the institutions, the infra-structure of power and transport and other forms of capital equipment needed to enable full and productive use to be made of their human resources. To the extent that industrialization contributes to economic growth and development, it contributes to the creation of conditions in which employment problems can more easily be solved in the future. (This is not, of course, to say that all industrial projects, even if badly chosen, will necessarily contribute to growth and development. Still less is it to say that well-chosen projects in other sectors are not also needed for growth and development; but this paper is concerned with the industrial sector.)

(b) If too much weight is given to short-term employment considerations, countries may choose a product-mix and types of technology that do not make for rapid growth.

6. The ability of a programme of industrial development to contribute in the long run to the solution of employment problems may be impaired if too much weight is given to short-term employment considerations in the choice of industrial products and techniques. If people are given unproductive work to do, including work of such low productivity that what they produce is worth less than the incomes they receive in return for producing it,<sup>6/</sup> these incomes will have to be found, in part at least, from sources that could have been used for other purposes, including investment. If wages, or subsidies to the self-employed, were paid at the expense of investment, this would tend to slow down growth. As was pointed out in a recent ILO report:

If a policy of employment creation is allowed to check the rate of growth, it is very doubtful whether it can make for welfare. Furthermore, since growth creates employment, it is very doubtful whether such a policy could make for a lasting net increase in employment.

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<sup>6/</sup> For example, making things in cottages by hand methods that have to be heavily subsidized to compete with more efficient machine production. (It may of course be conducive to long-term growth to protect or subsidize an infant industry during an initial phase if it is expected, in time, to be able to stand on its own feet.)

This is not the same thing as to say that it should necessarily be an objective of policy to strive for the highest possible rate of investment with a view to maximizing the rate of growth. The price of relative abundance for the next generation might well be tighter belts and a more unequal distribution of income in this generation (because many people would be left under-employed) than a country would wish to have. But most developing countries feel that to attain their social objectives, they need a rate of growth not slower but faster than at present, and for this purpose need a high rate of investment, even if it is not the maximum rate.<sup>7/</sup>

7. The important questions in deciding what industries should be set up (the choice of products) and what techniques to use (the choice of methods) seem to be, not how many jobs will be directly provided in the short run, but how much income will be generated directly and indirectly in the long run, and how much of this will be ploughed back for further investment. It is the answers to these questions that determine the increase in output of consumer and capital goods generated by an investment project, and the magnitude of the demand for labour to make the goods, though this depends also upon the techniques of production.

(c) If too little weight is given to short-term employment considerations, countries may choose a path of development that leaves large numbers of people unemployed or under-employed and fails to make full use of their human potential for development.

8. It is not a matter of indifference whether the path of growth and development is one that provides many new jobs quickly or one that leaves many people for many years with no productive work to do. The problem of finding useful and productive work for school-leavers and others who need it is causing a great many governments a great deal of anxiety on social and political grounds. Commenting on the view that high capital-intensity is desirable in developing countries as a source of profits and therefore of savings and investment, Professor Arthur Lewis has observed:

Unfortunately, that policy would be feasible only if the labour surplus remained disguised and could therefore be ignored; it is not practicable when the unemployed are roaming the streets and burgling your houses. Most developing countries have to give the highest priority to providing employment now rather than to maximizing consumption or income or employment in ten years' time. <sup>8/</sup>

<sup>7/</sup> International Labour Office: Employment and Economic Growth (Geneva, 1964), p. 134.

<sup>8/</sup> Lewis, W. Arthur. "A Review of Economic Development". Richard T. Ely Lecture in: American Economic Review - Papers and Proceedings, May 1965, p. 14.

Nor is this necessarily a matter of subordinating considerations of economic efficiency and long-term social welfare to considerations of short-term social welfare. For there are reasons for thinking that, often, fewer jobs are provided than would be advantageous even from a strictly economic point of view (see paragraph 10 below).

(d) Countries have accordingly to determine what their policy towards employment in the context of industrial development is to be; a useful distinction can be drawn in this connexion between relief-oriented employment on the one hand, and production-oriented employment on the other.

9. Developing countries cannot afford a policy of providing jobs as a form of relief regardless of the value or lack of value of what is produced. But to the extent that countries can provide productive jobs in the sense of jobs yielding products whose value exceeds their costs, they can avoid having to choose between measures to increase employment and measures to increase production and real incomes; the same measures will serve both purposes. Creation of production-oriented employment is quite a different matter from creation of relief-oriented employment. And if an intelligent and vigorous search is made for ways of providing productive work for those who need it, it is likely that in all countries, neglected and unnoticed opportunities for making productive use of under-employed manpower will be found.

10. For several reasons, it is likely that less labour is employed in the industrial sector (and in other sectors) of developing countries than would be desirable from the point of view of production and growth alone, without giving any weight to employment considerations. If these factors making for excessive capital-intensity in the industrial sector in developing countries could be corrected, the role of industry as a direct provider of jobs could be considerably greater than it is. These reasons include:

(a) A possible preference for modern capital-intensive labour-saving industries and technology on grounds of prestige as distinct from economic advantage. 9/

(b) Asymmetry of promotion of the use of capital and labour respectively. This has at least two facets:

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9/ This, of course, is not to deny that there are good economic reasons for selecting some capital-intensive industries and technology in developing countries.



- (i) The fact that the managers or directors who decide how much labour to employ may be, or may be advised by, engineers from industrially advanced countries whose training predisposes them to regard "labour-saving" and "efficient" as virtually synonymous terms, while in countries where labour is plentiful and capital scarce, it would be more appropriate to identify efficiency with the saving of capital;
- (ii) The fact that labour-saving ideas are more often than not embodied in saleable pieces of capital equipment, sales of which are assiduously promoted; "replacing capital with labour, however, may take more than a purchase [of equipment] - the manager might have to be converted to the subtleties of efficient organization, a far more taxing achievement". 10/
- (c) Related to the last point, there are the difficulties of handling a large labour force, and lack of experience of the problems of doing so. 11/
- (d) The fact that it is easier to reproduce existing designs than to work out afresh the technical problems of designing a production process; the vast bulk of technological research is carried out in industrially advanced countries with a view to solving problems encountered in those countries, and the most appropriate technology for countries in which unskilled labour is plentiful and capital is scarce may simply not be known.
- (e) The fact that "up-to-date" modern equipment may be imported under foreign aid programmes in which donor countries require that equipment be purchased from them (aid "with strings").
- (f) Tax incentives to reinvest profits; benefits are obtained if machines are bought, but not if workers are hired.

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10/ Strassmann, P. Technological Change and Economic Development, Cornell University Press (Ithaca, N. Y.), chap. V. The author illustrates the point by referring to one of many United States exporting firms which "has a large sales force abroad armed with ingenious literature to coax entrepreneurs into adding instrumentation to their plants. In Mexico, the company conducts training courses in the use of instruments sold. That kind of salesmanship is laudable. But who provides it for the unskilled worker?"

11/ Strassmann (loc. cit.) quotes as a by-word among industrialists in a Latin American country the saying, "menores obreros. menores problemas" (fewer workers, fewer problems). He points out that both entrepreneurial hostility and benevolence towards labour tend to yield the same reaction: mechanization. "The hostile entrepreneur sees each worker as a potential troublemaker and wants fewer of them. The benevolent manager does not like to run a sweat-shop, exploiting his men's poverty with back-breaking antiquated methods." Nobody would advocate the retention of dangerous or unhealthful jobs, but dangerous or unhealthful features of jobs can often be eliminated by providing relatively inexpensive equipment without abolishing the jobs themselves. Plagued by breakdowns and lack of spare parts, many maintenance engineers in under-industrialized countries must have been tempted to develop a slogan: "Fewer machines, fewer problems".

(g) The fact that the "private cost" (money cost to the entrepreneur) of employing capital may often be less, and the private cost of employing labour greater, than the real cost to society of doing so. (This point is taken up in paragraph 26 below.)

11. It is believed that there is so much to be done in developing countries in making sure that the employment of labour does not fall short of the level that would make for optimum growth that attention can, and should for the present, be concentrated on this problem. The present paper, accordingly, does not attempt to go further than this or to discuss whether, and in what circumstances, it might be reasonable to forgo a certain amount of growth in exchange for a certain amount of short-term employment by accepting a path of development (as determined by decisions regarding the product-mix and the choice of techniques) that would not be optimum from the point of view of growth, but that would provide more jobs more quickly than the growth-optimum path would do.

(e) The first and major element in a developing country's policy towards employment in the context of industrial development should be to make sure that all labour that can be employed productively in the industrial sector is employed; and steps should be taken to implement this policy.

12. This calls for lengthier and more extensive comment than the very brief treatment accorded to the first four propositions.

13. In the light of what has been said above, the first and major element in a country's policy towards employment in the context of industrial development seems non-controversial. It would seem that every Government, and especially Governments facing a problem of surplus labour, would wish to do all they can to make sure that as much labour as can productively be employed is employed in the industrial sector (and, of course, in other sectors).<sup>12/</sup> What are the possibilities of providing a larger number of productive jobs in the industrial sector of developing countries?

14. So far as this is a matter of choice of products or of technology - including, where appropriate, the installation of equipment that is second-hand, or not of

<sup>12/</sup> In most countries, surplus labour will probably have, for the most part, to be absorbed outside the industrial sector, but the scope and opportunities for this are not examined in the present paper. See Employment and Economic Growth, op. cit., chap. VI.

the latest design - the subject has been covered in another ILO paper for the Symposium.<sup>13/</sup>

15. But finding ways of using more labour to save scarce capital is not only, perhaps not even mainly, a matter of installing less costly equipment which needs more labour to operate it. Less attention has perhaps been given to the scope for productively using more labour in conjunction with given equipment. There are three possibilities that are worth looking into in this connexion.

16. The first one is more intensive staffing to reduce the idle time of machines. The more costly a machine, the more important it is to keep it continuously working, even if this means that some of the men operating it are less than fully employed. A major reason for low productivity in many developing countries seems to be the high proportion of idle time of many machines. The optimum degree of intensity of staffing existing equipment, as well as the optimum choice of equipment, depends on the ratio of wage rates to interest rates. A research worker who visited glass-bottle factories in Mexico and Puerto Rico found that in both factories:

The mechanism for stacking hot newly moulded bottles on to a conveyor going into a cooling oven was often out of order. In Mexico, two men with tongs were always on hand to supplement the machine. In Puerto Rico, with wages almost four times as high, such standbys were uneconomical and the glowing bottles went down a reject shoot until the mechanism was replaced or repaired.<sup>14/</sup>

17. On at least one occasion, an ILO productivity team, investigating a textile plant in Pakistan, recommended the taking on of more workers in order to increase productivity.

18. The second way of getting more output and providing more employment with given equipment is to prolong the life of the equipment by better maintenance. This can perhaps be regarded as a variety of more intensive staffing.

19. Third, there is the possibility of organizing multiple shifts.<sup>15/</sup> If an expensive machine can be worked for twenty-four or even sixteen hours a day,

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<sup>13/</sup> Entitled "Progressive Industrial Technology for Developing Countries" (document ID/CONF.1/B.17).

<sup>14/</sup> Strassmann, op. cit.

<sup>15/</sup> For details, see M. Kabaj, "Shift-work and Employment Expansion", in International Labour Review, vol. 91, No. 1, January 1965.

instead of eight hours, there will be a considerable increase in output and employment in relation to annual capital costs - interest and depreciation. This would be true even if the length of life of the equipment depended strictly upon the number of hours it had been in use, and nothing else. In this case, there would be no saving on depreciation by substituting three shifts for one, but interest charges would be cut by two thirds. At the other extreme would be a case in which the effective life of a machine depended entirely upon its age, and not at all upon how intensively it was used; this is the case with any machine that becomes obsolete while it is still in perfect physical condition. In this case, two thirds of the depreciation as well as two thirds of the interest charges would be saved. In the more usual case where the effective length of life of a machine depends partly upon its age and partly upon how intensively it is used, the saving would be somewhere between these two limiting cases.<sup>16/</sup>

<sup>16/</sup> An example may make the argument clearer. Suppose that the demand for a certain product can be met either by (a) installing three machines and working them eight hours a day or by (b) installing one similar machine and working it twenty-four hours a day. Suppose the machines cost \$100,000 and the rate of interest is 8 per cent. In case (a), the length of life depends only on intensity of use, and it is assumed that a machine will last nine years on a one-shift system, but only three years if used continuously on a three-shift system. In case (b), length of life depends only on the age of the machine, and they are assumed to last nine years whether used on a one- or three-shift system. Annual capital costs are made up of interest charges plus depreciation, the latter being estimated by dividing the initial cost of a machine by its length of life in years. The savings under a three-shift system, compared with a one-shift system, would be somewhere between the following limits:

	<u>3 machines</u> <u>and one</u> <u>shift</u> <u>(1)</u> \$	<u>1 machine</u> <u>and three</u> <u>shifts</u> <u>(2)</u> \$	<u>Saving</u> <u>(1)-(2)</u> \$
Cost of machine(s)	(300,000)	(100,000)	
<u>Case (a)</u>			
Interest	24,000	8,000	
Depreciation	<u>33,333</u>	<u>33,333</u>	
Annual capital cost	<u>57,333</u>	<u>41,333</u>	16,000
<u>Case (b)</u>			
Interest	24,000	8,000	
Depreciation	<u>33,333</u>	<u>11,111</u>	
Annual capital cost	<u>57,333</u>	<u>19,111</u>	38,222

20. There would seem to be much scope for extending multiple shifts in industry in developing countries, if the various difficulties in the way of doing so - which probably are particularly great in smaller firms - can be overcome.<sup>17/</sup> Since they seem to offer such a promising way of getting more output and providing more badly needed jobs with the same amount of capital, the reasons why multiple shifts are not more widely used are worth investigating.

21. One important reason no doubt is that night work creates difficulties for many workers and disrupts their normal living cycle. Housing conditions for industrial workers in developing countries (and also in developed countries, for that matter) are generally not conducive to rest during the day, and transport and other facilities needed by workers on night shifts may be lacking. These difficulties may be reduced if a two-shift instead of a three-shift system is worked - for example, with work starting at 5 a.m. and stopping at 9 p.m. Other difficulties may be eased by initiatives taken by employers (perhaps in co-operation with local government authorities) in matters relating to canteens, transport and housing. Even so, workers who have a choice between working an ordinary day shift and working an early or a late or night shift on equal terms are likely to prefer the ordinary day shift. But for many workers this is not the choice; the choice is rather between working an early or late or night shift (at least intermittently, if shifts are rotated), and not having a job at all. These workers would clearly be better off and would be able to make their contribution to the development of their countries if a systematic effort were made to overcome the obstacles in the way of operating a multiple-shift system, and the savings in capital costs leading to higher profits would make it possible to offer premium payments for working night shifts.

<sup>17/</sup> D.N. Dhar and H.F. Lydall found that only twenty-five out of 206 small enterprises in India worked two shifts, mostly with the owner's son or brother in charge. See their The Role of Small Enterprise in Indian Economic Development (New York, Asia Publishing House, 1962), p. 56. Strassmann (op. cit.) found that, in a sample of industrial firms in Mexico, 18 per cent of small firms, 35 per cent of medium-sized firms and 65 per cent of large firms operated multiple shifts. But 81 per cent of the firms operating multiple shifts did so for compelling technical reasons, such as keeping furnaces going overnight.

22. A second reason for the limited resort to multiple shifts is undoubtedly a shortage of various types of key personnel. Supervisors are, no doubt, among the most important key personnel.<sup>18/</sup> Who is to look after a second or third shift, particularly in a small family business? In countries where there is little or no industrial tradition, labour unaccustomed to the discipline and rhythm of industrial life needs much supervision, and it is often difficult enough to find suitably qualified supervisors even for one shift a day.
23. Process-planners may be another category of key personnel in short supply. The processing of materials and the production of components in different departments of a plant need to be co-ordinated so that there are neither bottlenecks nor surpluses that cannot easily be stored. If the different departments get out of step under a one-shift system, the management can, perhaps in an emergency, organize an occasional second shift in one department so as to enable it to catch up. There is no easy remedy under a continuous-process system; if one department falls seriously behind, the whole plant may be brought to a standstill.
24. Yet again, maintenance and repair are much more difficult with continuous processes. Under a one-shift system, breakdowns can be repaired and routine maintenance can take place during intervals between shifts. With continuous operations, preventive maintenance has to be dovetailed into the cycle. Carelessness or mistakes leading to breakdowns may involve a stoppage of the whole works and be much more costly than under a one-shift system.
25. Thus, for various reasons, multiple shifts are liable to involve considerable difficulties for management. The difficulties of operating a two-shift system, say sixteen hours a day, are less than those of operating a three-shift system. It is true that the advantages are also less, but very substantial savings could still be obtained, and a two-shift system may be a practicable alternative to a single shift in conditions in which three shifts are not feasible at all. It has been shown that a two-shift system would permit the disadvantages of night work for workers to be largely eliminated or at least greatly reduced.

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<sup>18/</sup> Described by Strassmann, op. cit., as "perhaps the greatest bottleneck in economic development".

26. These are some of the opportunities (other than those associated with choice of products and technology, which are discussed in another paper)<sup>19/</sup> for providing more employment in the industrial sector in ways that will promote, rather than impair, economic growth. For the various reasons examined thus far, less employment may be provided in the industrial sector of developing countries than it would be remunerative (both to an individual entrepreneur and to society as a whole) to provide, at least if certain difficulties could be overcome. But there is the further point that employment that it would be socially worthwhile to provide - in the sense that what would be produced would have a value greater than its cost of production to society as a whole - may not be remunerative to private entrepreneurs.

27. To quote from another ILO publication:<sup>20/</sup>

"In a market economy, employers must closely compare returns and costs measured in terms of money.... However, the pricing system will promote economically rational decisions if, but only if, money costs accurately measure real costs, so that what an employer has to pay to employ labour or borrow capital reflects their true scarcity or abundance.

"But there can hardly be said to be an organized market or a market price for capital in many developing countries. Finance may be made available from public sources or with a government guarantee for some privileged types of investment in the modern sector at rates of interest lower than would have had to be paid in an open market, while usurious rates may be payable in the traditional sector. While rates of interest for certain types of borrowing may fail to reflect the true scarcity of capital, wage rates on the other hand may fail to reflect an abundance of unskilled labour. Wages have to be looked at from two points of view - as an income and as a cost. As an income, wages in developing countries are often barely, if at all, sufficient to enable even urgent needs to be met....

"But if there is much unemployment or underemployment, even very low wages may overstate the real cost of employing labour, in the sense of the value of the alternative production there would have been if the worker had not been employed where he is. The value of the alternative production

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<sup>19/</sup> Document ID/CONF.1/B.17.

<sup>20/</sup> Employment and Economic Growth, op. cit., pp. 137-138. For an interesting discussion of imperfections in labour and capital markets, see Strassmann, op. cit., chap. V.

foregone, so far as the activities of the worker himself are concerned, will be nil if the worker was wholly unemployed, and may be very low if he was greatly underemployed. 21/

"It will be understood that nothing in this argument suggests that wages regarded as incomes are higher than they ought to be. The argument is that the money cost of employing labour overstates the real cost of doing so."

28. A good deal of emphasis is laid on this point in another ILO paper dealing with the choice of industrial technology, but it is equally relevant to the present paper. If the ratio of labour costs to capital costs in terms of money were lower than it is, entrepreneurs would more often find it profitable to resort to more intensive staffing, better maintenance of expensive equipment and multiple shift work. Governments may wish to take account in their employment policy of this common distortion of the structure of prices and costs in developing economies. (This point is elaborated below.)

29. It may be added that the Governments of some developing countries, aware of the hardships often involved in the attempt to bring up a family in urban conditions on the wages prevailing, particularly for unskilled workers, have acquiesced in, or in some cases taken the initiative in bringing about, rather rapid increases in industrial and other wages. This probably tends to limit the growth of employment opportunities. In a number of situations, a hard choice has to be made between more employment or higher wages for those already employed.

30. If it is the policy of a Government to do all it can to ensure that as much labour is employed in the industrial sector as can productively be employed there, the above analysis suggests that steps taken to implement such a policy should include the following:

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21/ There may be other elements in costs to society that cannot be neglected. Unless wage-earning employment can be provided on the spot, workers will have to move in order to take it up and this will involve costs of transport. If they move to towns, they will have to be provided with somewhere to live, and other forms of social capital. They may also need various forms of training which, however desirable, cannot be provided without costs. All these things will make demands on resources which will constitute real costs to society.



- (a) Promoting awareness on the part of the managements of industrial enterprises, public and private:
- (i) of the importance of keeping employment considerations in mind, along with others, when taking decisions relating to the composition of output and the techniques of production; 22/
  - (ii) of the fact that opportunities for the productive employment of labour in industry depend not only on the choice of products and technology, but also on exploring the scope for more intensive staffing, better maintenance of existing equipment and an increase in shift work.

In countries where national or regional Productivity Institutes or Management Development Centres have been set up, these provide channels of approach and technical advice to both public and private industrial managements, and it seems appropriate that in their work considerable emphasis should be given to employment considerations. Otherwise, efforts to increase productivity may make for unnecessary redundancy and dismissal of workers, and if these workers cannot find other jobs, any increases in productivity that may be achieved are likely to be dearly bought in terms of welfare.

(b) Governments might wish to investigate systematically, in co-operation with employers' and workers' organizations, the reasons why multiple shifts are not more widely employed in industry, with a view to finding ways of overcoming the difficulties that at present stand in the way of making wider use of them.

(c) Again in co-operation with employers' and workers' organizations, Governments might wish to try systematically to identify the categories of key personnel, shortages of whom constitute major obstacles to the employment of more labour in industry. Supervisors, process-planners and maintenance men may be among these categories, but there may be others equally or more important.

(d) Having identified these categories of workers, Governments might wish:

- (i) to estimate the numbers in each category who should be trained in order to meet present and foreseeable future needs;
- (ii) to organize, or to assist entrepreneurs to organize, "crash" training programmes as an emergency measure and longer-term training arrangements to ensure that the supply of personnel in the key categories will keep pace with the demand for them.

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22/ The issues raised by this point are discussed in the paper, "Progressive Industrial Technology for Developing Countries" (document II/CONF.1/B.17).

(1) Governments which provide tax incentives for the reinvestment of profits might wish to consider counteracting this bias in favour of the employment of capital, rather than labour, by making an increase in a firm's labour force as privileged for tax purposes as investment in additional equipment.

(2) In taking decisions on the size and composition of the labour force to be employed in industrial undertakings in the public sector, Governments might wish to base their decisions not on the market prices of capital and labour, but on a system of "accounting prices" or "shadow prices" designed to reflect more accurately the relative scarcity of capital and labour. Governments might also wish, through appropriate fiscal measures, to give private entrepreneurs inducements to behave as though capital were dearer and labour cheaper than the prices actually prevailing. Such inducements may take various forms. Governments further wish to use licensing systems as a means of applying a certain amount of compulsion in appropriate cases. For example, at the time of applying for a licence to establish a new plant, employers could be required to present a strong and convincing case for the techniques they plan to adopt and give information on the sources of supply of machinery etc. Since these are matters of general economic management, bearing just as much on other sectors as on the industrial sector, they will not be further discussed here. 23/

23/ See Employment and Economic Growth, *op. cit.*, pp. 138-141 and Employment Objectives in Economic Development, *op. cit.*, p. 72. See also A. Qayam: Theory and Practice of Accounting Prices (Amsterdam, 1960) and Mahbub ul Haq: The Strategy of Economic Planning: A Case Study of Pakistan (Oxford University Press, Pakistan Branch, Karachi, Lahore, Dacca, 1963), pp. 42-45.

Although the subject cannot be pursued here, two difficulties about the "accounting prices" approach may be mentioned briefly. One is the difficulty of determining, in a scientific manner, accounting prices that would reflect real scarcity in the sense that they would just "clear the market" for capital and labour, leaving neither a shortage nor a surplus of either; a perfect solution to this problem is unlikely to be achieved, but even quite arbitrarily determined shadow prices could make for more rational decisions than the present distorted market prices. A second and perhaps greater difficulty is that attempts to correct the effects of the cost distortion, both in the public and in the private sector, are liable to cost money, or to involve a loss of revenue, to the State. It is all very well to say that employment of more labour would be economically rational in the sense that the additional goods or services produced would be worth more than the social costs of employing the additional labour, but if the additional employment involves money costs that are not covered by the sale of additional goods or services, how is the additional employment to be financed? If it is in the public sector, it will involve increased demands on public funds. Special inducements to private enterprise to employ more labour are liable to involve either tax rebates or special subsidies. Money spent to correct the effects of cost distortions may be very well spent from the points of view both of productivity and of welfare, but such money will have to be found somewhere.

(g) Governments may wish to take due account, in decisions affecting wages, of the effects of wage increases on employment opportunities. 24/

(f) Some forms of international action may be helpful in this connexion

31. While a policy to employ more labour productively in the industrial sector would need to be implemented primarily by direct and indirect government action in the country concerned, some forms of international action may be helpful in this connexion. These may include the following:

(a) Increasing the emphasis placed, in the work of the international technical co-operation missions concerned with management development or productivity improvement, on searching for opportunities for the productive employment of labour in industry.

(b) Increasing the emphasis placed, in the work of the international technical co-operation missions concerned with vocational training, on identifying and training categories of key personnel, shortages of whom constitute obstacles to the employment of more labour in industry.

(c) International lending through such agencies as the International Bank for Reconstruction and Development and regional development banks might include the employment potential of various investment projects among the criteria for lending. Lower rates of interest might be charged on loans granted to finance projects that promise larger increases in productive employment than others. In pre-investment feasibility studies of projects carried out by lending agencies, careful consideration might be given to alternative and more labour-intensive possibilities of production.

(d) A main reason for under-utilization of industrial capacity in a number of developing countries is the shortage of imported materials, intermediate goods and spare parts (which together might be called "maintenance" imports) due to lack of foreign exchange. This, for instance, appears to be the case in India. Where such bottle-necks are important, it is worth-while to examine whether, in providing international capital aid to the country concerned, some shift of emphasis might be called for as between the financing of formation of fixed capital and the financing of expansion of maintenance imports caused by the growth of industrial capacity. With regard to Asian countries it has been observed that:

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24/ This subject is discussed in another paper, "Wages and Industrial Development" (document ID/CONF.1/B.16), prepared for the Symposium by the International Labour Office.

Foreign aid is a way out of this difficulty and has been so used by many countries. But the preference of the donor countries for specific-project aid has, on balance, led to a greater expansion of the demand for imported maintenance materials than the increase in the free aid which can be utilized for the purchase of these materials. Thus, when a scarce resource is provided from abroad, the donors do not seem to devote much care to ensuring that the resource is fully utilized. 25/

In such cases, a more balanced distribution between specific-project aid and capital aid that is not tied to specific projects could, by making available to the country more foreign exchange for financing maintenance imports, go some way towards bringing about fuller utilization of existing capacity and a greater immediate increase in employment in the industrial sector, although the longer-term solution would depend much on the development of industries to provide import substitutes, and on export promotion.

(e) An increase in employment in the industrial sector, as in any other sector, will lead to an increase in demand for food. The difficulty of providing a commensurate increase in food supply, especially in urban areas, is often a constraint on the rate of growth of industrial employment. While most developing countries have taken steps to expand their programmes of agricultural development, it will be some time before these programmes can yield the expected additional food output. During this interval, an expansion of international food aid, more particularly through the World Food Programme, could be of material help to those countries in raising the level of industrial employment without risking inflation.

(f) For countries in process of industrialization where labour is plentiful and capital scarce, the comparative advantage of international trade in manufactures normally lies with products requiring relatively more labour and less capital. It has been observed that:

There is evidence that comparative cost conditions are changing to the advantage of the newly developing countries as regards the production of certain manufactured goods, particularly those requiring a good deal of labour, such as textiles, clothing, ceramics, pharmaceuticals, light electrical material and some types of durable consumer goods such as bicycles and sewing machines. 26/

The development of industries manufacturing labour-intensive products for export markets to earn more foreign exchange would at the same time provide more opportunities for industrial employment that promote economic growth.

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25/ Economic Survey of Asia and the Far East, op. cit., p. 41.

26/ Employment Objectives in Economic Development, op. cit., p. 127.

The developed countries could do much to help realize this potential comparative advantage by admitting manufactured exports of developing countries more freely to their markets.

(g) As indicated above, because of the lack of adequate technological research, the most appropriate technology for countries with an abundance of labour and a scarcity of capital simply may not be known. In order that the technology adopted in industrialization may correspond more closely to their relative factor endowments, these countries will have to make special efforts to promote technological inventions and innovations directed at saving capital and making more productive use of the available labour. There is, however, a limit to national efforts. Furthermore, many technological developments of this nature might be expected to meet the similar needs of a number of developing countries. As emphasized in the ILO paper on the choice of industrial technology, 27/ there seems to be, therefore, a particular need for concerted international action to foster such inventions and innovations, including increased technical co-operation by international agencies in these fields of activity.

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