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Employment Implications of India's Fifth Five Year Plan

RECENTLY, there has been accent on the formulation of models which establish a link between output and aggregate income distribution via employment. Employment is being increasingly viewed as an effective redistributive measure [1]. Accordingly, it would be interesting to assess the effectiveness of the development strategy of the Fifth Plan for its employment potential. Uufortunately, the Fifth Plan does not present any employment estimates on the ground that one-dimensional estimates are neither meaningful nor useful [2],

The purpose of this paper is to fill this gap insofar as it is feasible. An attempt is made to spell out the employment implications of various alternatives with a view to ranking them in terms of their employment effectiveness. An implicit assumption in this analysis is that the larger the employment potential of an alternative, the greater would be its welfare content.[1]

The Fifth Plan Model

The model consists of three sub-models : (a) macro-economic sub-model, *(b)* input-output sub-model, and (c) consumption sub-model. The macro sub-

1. This need not necessarily be so if the skill intensities of the two alternatives are substantially different.

model yields magnitudes such as the overall growth rate of output, exports, consumption, etc. For the input-output sub-model, the sectoral composition of all magnitudes except private consumption expenditure is determined largely on the basis of past trends. The consumption sub-model is worked out on the assumption that the concentration ratio would decline from .32 to .21, but it does not spell out how such a drastic reduction may be achieved.

The Data

Sectoral Classification

Our sectoral classification is a modified version of the classification used in the *Technical Note on the Approach to the Fifth Plan* [3]. The modification consists of aggregation of 5 agricultural sectors into one, the reason for this aggregation being an easier availability of the employment data. The manufacturing sector is broken up into 57 sub-sectors and the tertiary into 4. Thus a less disaggregated classification comprises 62 sectors. It may be noted that this classification is not capable of revealing the shifts in consumption expenditure which would be caused by a drastic reduction in the concentration ratio.

Employment Data

We faced two problems : *(a)* non-availability of comparable time-series for the non-manufacturing sectors, and *(b)* the use of time-criterion for measuring employment.

The first problem is resolved by utilising employment data from different sources. While employment estimates for Agriculture and Plantations, Railways, Other Transport and Other Services are taken from the 15th and 19th rounds of the NSS, for Construction the 1961 (adjusted) Census estimates are used [4]. For manufacturing industries the Annual Survey of Industries employment estimates are supplemented by those provided by the NSS[2] for small establishments [5].

The latter problem of time criterion for employment measurement is no doubt serious for our contention that the larger the employment potential of

2. The NSS excludes establishments employing less than 10 workers if using power and less than 20 if not using power. This implies a convenient but unavoidable assumption that our labour/output ratios based on data on the organised sector are also valid for the unorganised sector.

an alternative, the larger would be its welfare content. It is possible that in view of exploitative conditions in some sectors of the economy, the impact of a given employment increase on the existing income distribution may tend to be exaggerated. This would be, in our opinion, marginal. In any case, we must accept this constraint on our assumption.

Output Data

The output figures for the manufacturing industries are obtained by combining the ASI and the NSS data. From these figures representing gross output, imports are subtracted to obtain the estimates of gross domestic product on the basis of import coefficients taken from the *Technical Note on the Approach to the Fifth Plan.* The use of more recent import coefficients for adjustment of output figures for 1964 and 1969 need not involve underestimation of the labour/output ratios. It is indeed doubtful if import coefficients at our level of aggregation would have changed significantly in response to whatever changes have occurred in import mix in the intervening period.

Since the Fifth Five Year Plan output projections are in terms of 1971-72 producer's prices, output figures for the manufacturing industries at current prices have been inflated on the basis of wholesale price indices given in the Report on Currency and Finance 1972-73 [6], For the remaining sectors output figures are taken directly from the *Technical Note.*

Projection of Labour Coefficients for 1978-79

The labour input in most manufacturing industries decreases over time. This could be explained in terms of the combined effect of improvements in quality of workers, economies of scale, and labour saving technological change. In order to project the labour/output ratios for 1978-79, we must, therefore, allow for a fall in the observed coefficients. The total change is not broken up into its various components owing to data limitations. Consequently, we assume that the change is an exponential function of time. For Agriculture, Railways, Transport, Other Transport, and Construction, first, the employment figures are extrapolated for 1973-74 on the basis of the observed rates of growth. The coefficients so derived are adjusted, by using the rates of growth of labour

productivity provided by the Perspective Planning Division, to arrive at the labour/output ratios in 1978-79.[3]

These estimates are no doubt 'notional' but they cannot be set aside as unrealistic. As these sectors are essentially traditional, the slowness of change in the labour-output ratios implied by the low growth rate of labour productivity appears to be reasonable. We find that in a number of sectors the assumption of an exponential change in the labour/output ratios yields results which are not easily acceptable. For instance, while in Other Textiles, Organic Heavy Chemical and Electrical Household Goods the annual rates of decline in the labour input range from 14% to 31%, in some other sectors such as Other Chemicals and Machine Tools, they actually increase. Since these rates are taken as valid for the Fifth Plan, the implication is that the observed nature and pace of technical change are not likely to alter over the projection period.

Addition to the Labour Force (1973-74—1978-79)

Addition to the labour force during the Fifth Plan is based on the labour force projections of the Expert Committee set up by the Planning Commission [8]. The procedure consisted of projecting the population on the given assumptions about trends in fertility and mortality and then applying age and sex specific participation rates on rural and urban population in the age-group 14-60.

For participation rates, the 1961 rates are adjusted on the following assumptions :

1. The participation rates in rural areas will decline owing to the expansion of educational facilities.
2. In urban areas the male participation will decline for the same reason; but the female participation rates will increase due to an increase in the tempo of development and a rise in the age of marriage.

The estimates on these assumptions are :

total labour force in 1973-74	...	216.90 million
" " in 1978-79	...	245.35 „
addition during 1973-74 to 1978-79	...	29.45 „

3. The probable impact of mechanisation on employment in Agriculture and Plantations during the period in question cannot be assessed without making a number of simplifying assumptions.

The Results

Our results arc grouped into two sets : the first set consists of results on aggregate manpower imbalances during the projection period, and the second, of trade offs between equality, growth, import substitution, and export promotion in terms of employment. The fall in employment in some of the sectors is caused by the decline in the labour-output ratio being much larger than the growth of output. For example, a 6.8% increase in gross output of Man-Made Fibres is not large enough to compensate for an 8% decline in the labour-output ratio and hence this sector's employment is expected to fall by 1292 over the period.

We arrive at an estimate of the employment potential by adding to the difference of the aggregate levels in 1973-74 arid 1978-79 the replacement requirements. This works out to be 37.11 million. Deducting the addition to the labour force during this period we find that at the end of the Fifth Plan the backlog of unemployment would be reduced by 7.66 million. Since the unemployment at the beginning of the Fifth Plan was larger than 3.53% of the labour force (i.e. more than 7.66 million) it is unlikely that the Plan would wipe out the unemployment completely. Given the fact of under-fulfilment of Plan targets in India, this is hardly an exciting result. If anything, it confirms the enormity of the unemployment problem.

A close scurtiny of the results of the 24 policy alternatives reveals that the range of variation in employment is small. Table 3 shows that the percentage deviation of employment from that of 3D ranges from —4 to +2. This implies that the employment potential of, say, a growth oriented policy is not substantially different from that of an egalitarian policy. Similarly, the employment effects of export promotion and import substitution do not vary a great deal. As indicated earlier, the nominal differences in employment cannot be taken at face value primarily because of the fixity of sectoral shares in all the solutions. Nevertheless, an examination of the results suggests some policy implications.

In Table 1, columns 9 and 11 give an idea of the effectiveness of various strategies and policies. While the overall ranking is on the basis of the deviation from 3D, the within-group ranking is on the basis of the deviation from variant D in each group. Our results show that strategies represented by variants 5B,

TABLE 1-ALTERNATIVE DEVELOPMENTAL STRATEGIES AND THEIR EMPLOYMENT POTENTIAL

Group No.	Case No.	Growth Rate (%) 1978-79 over 1973-74 in N. D. P. (at factor cost)	Total Commodity Exports	Inequality in Expenditure Distribution	Import Substitution	Employment	Employment in each variant × 100/Employment in 3D	Ranks	Employment in Each Variant Within Group × 100/Employment in Variant D	Ranks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	1A	5.5	7.5	Without Reduction	Without Import Substitution	193273873	98.78	16	98.70	3
	1B	5.5	7.5	With Reduction	-do-	196764840	100.56	5	100.48	1
	1C	5.5	7.5	Without Reduction	With Import Substitution	192107968	98,11	19	98.10	4
	1D	5.5	7.5	With Reduction	-do-	195820870	100.01	9	100.00	2
2.	2A	6.0	7.5	Without Reduction	Without Import Substitution	195930085	100.14	8	98.79	3
	2B	6.0	7.5	With Reduction	-do-	199281544	101.85	2	100.48	1
	2C	6.0	7.5	Without Reduction	With Import Substitution	193464264	98.88	15	97.55	4
	2D	6.0	7.5	With Reduction	-do-	198332937	101.36	4	100.00	2
3.	3A.	5.5	7.0	Without Reduction	Without Import Substitution	193059964	98.67	18	98.67	3
	3B	5.5	7.0	With Reduction	-do-	196632093	100.50	6	100.50	1
	3C	5.5	7.0	Without Reduction	With Import Substitution	192016289	98.14	20	98.14	4
	3D	5.5	7.0	With Reduction	-do-	195663342	100.00	10	100.00	2

4.4 A	5.0	6.5	Without Reduction	Without Import Substitution	190688519	97.46	22	98.49	3
4B	5.0	6.5	With Reduction	-do-	194670597	99.49	12	100.55	1
4C	5.0	6.5	Without Reduction	With Import Substitmittion	189464287	96.83	24	97.86	4
4D	5.0	6.5	With Reduction	-do-	193611581	98.95	14	100.00	2
5. 5A	6.0	8.0	Without Reduction	Without Import Substition	195994109	100.17	7	98.70	3
5B	6,0	8.O	With Reduction	-do-	199561815	101.99	1	100.50	I
5C	6.0	8.0	Without Reduction	With Import Substitution	194868107	99.59	11	98.13	4
5D	6.0	8.0	With Reduction	-do-	198574662	101.49	3	100.00	2
6. 6A	5.0	7.0	Without Reduction	Without Import Substition	190831342	97.53	21	98.84	3
6B	5.0	7.0	With Reduction	-do-	194350577	99.33	13	100.67	1
6C	5.0	7.0	Without Reduction	With Import Substitution	189454937	96.83	23	98.13	4
6D	5.0	7.0	With Reduction	-do-	193064287	98.67	17	100.00	2

NOTE : Rank 1 is assigned to the highest value.

2B and 5D are likely to generate more employment than 3D. Much of the additional employment is attributable to a higher overall growth rate. Another useful inference is that a strategy without import substitution produces comparatively more employment. This suggests that 'import-substituting' industries are comparatively more capital intensive.

The symmetry of the ranks in column 1 of this table is significant. It shows that (a) within every group variant B has the highest employment potential, and *(b)* variant C is preferable to variant A. Since in every group both the overall growth and export growth rates are fixed, an obvious implication of (a) is that the reduction of inequality by increasing the demand for mass-consumption goods, say, foodgrains, generates more employment than a policy of import substitution.

However, in order to rank these policies two refinements are necessary. One refinement consists of separating out the employment potential of a specific policy. For instance, we find that between variant IA and IB the only postulated change is in the degree of inequality. However, as a result of the reduction in inequality, imports decline even without import substitution on account of a shift in demand in favour of mass consumption goods whose import-content is relatively low. Hence, in order to estimate the employment potential of a postulated reduction in inequality, we must subtract the additional employment that is created through a higher domestic production. In order to separate out the pure redistribution effect, therefore, we have to ensure that both imports and import-substitution are maintained at a given level. We, therefore, assume that the reduction in import is a measure of import substitution. Subtracting such additional employment from the difference in employment of the two variants, we get a measure of the employment effect of the postulated reduction in inequality.

A contrast is provided by a comparison of, say, variants IA and 3 A. We find that even with no import substitution a 0.5% increase in the overall growth rate involves a 4.8% increase in the imports. Hence, the entire difference in employment of the two variants is not attributable to the increase in the growth rate. Again, in order to account for the difference in the imports bet' ween variants 2A and IA we assume a 4.6% import substitution. Subtracting such employment from the difference of the two variants, we get a measure of the employment effect of a 0.5% increase in the overall growth rate.

The second refinement is introduced by computing the change in employment for a 1% change in each of the policy variables. This correction is necessary because the changes considered in the Plan document for each of these variables vary. For instance, while the planned reduction in inequality is 35.2% the variation in overall growth rate is not larger than two per cent. A further refinement which we are unable to carry out is to adjust these employment effects for differences in efforts required for achieving a uniform change in each of these policies.

The employment effects of the four policies and their ranks are presented in Table 2. It may be noted first that their employment effects vary from one group to another and that no systematic pattern of change is discernible. The ranking of the four policies in terms of our results is as follows :

1. Overall growth,
2. Export promotion,
3. Reduction of inequality, and
4. Import-substitution.

The first two policies are found to have a substantial employment potential for the reason is that agricultural and other labour intensive activities have to grow rapidly for both higher overall growth rate and export promotion. The employment potential of export promotion may not wholly materialise if the export of engineering and other manufactured goods continues to grow at a rapid rate.

The relatively low rank for reduction of inequality is attributable to several factors. Firstly, a 1% reduction in the concentration ratio can-be more easily achieved than a 1% increase in, say, the overall growth rate. Hence, for an appropriate comparison it would be necessary to compare the employment potential of a larger than a 1% reduction in this ratio with that of a 1% increase in the latter. Secondly, the nature of the sectoral classification adopted is not capable of bringing out marked shifts in consumption pattern arising from redistribution of income in favour of the poor primarily because it does not distinguish between luxuries and mass consumption goods. For instance, a classification which distinguishes between bicycles and power driven vehicles,

bidi and cigarettes, coarse and refined cotton, would be far more sensitive to a redistribution of income. Thirdly, there is a considerable underestimation of demand for food-grains. Tendulkar has presented some estimates which cast doubt on the adequacy of the 3.99% increase in the foodgrains output[1] for meeting the likely demand [9]. Finally, the redistributional employment effect is probably suppressed by the fact that the inter-dependence between redistribution and factor intensity in agriculture is not taken into account. To illustrate, if income inequalities are sought to be removed by a massive programme of redistribution of agricultural farms among the rural poor, the aggregate labour/ output ratio would rise primarily because on small farms labour requirements per unit of output are larger than those on large farms. If the difference in labour intensity is substantial, which is in fact the case, the adjustment would yield a much larger redistributional employment effect [11].

TABLE 2-RANKING OF POLICIES IN TERMS OF THEIR EMPLOYMENT POTENTIAL

Group No.	*Employment Effect of 1% increase in Import-substitution*	*Employment Effect of 1% reduction in Inequality*	*Employment Effect of 1% increase in Exports*	*Employment Effect of 1% increase in growth rate*
1.	7436	98922	426084	5173568
2.	15259	94692	126096	4372874
3.	6669	101254		
4.	8075	112829	283122	
5.	6972	101118		
6.	9014	99645		
Ranks	IV	III	II	I

NOTE : (i) Rank 1 is assigned to the highest value.
(ii) Columns 2 and 3 are based on within group comparisons, and Columns 4 and 5 on inter-group comparisons after necessary adjustments.

The lowest rank for import substitution is hardly surprising in view of the fact that import substitution entails development of industries which are highly

4. However, while evaluating the redistributional employment effect it is sometimes overlooked that if a substantial part of the foodgrains demand is met through imports it may turn out to be smaller than expected. See, for instance, Gupta [10].

capital-intensive. Assuming that a 1% increase in import substitution is as difficult to achieve as a 1% increase in exports, the latter would be associated with a considerably larger employment effect. Even if the composition of exports changes over the next five years, in view of the large difference in employment potential, it is unlikely that the ranks would be reversed.[5]

An important issue in employment planning is the sensitivity of factor proportions to changes in relative prices. It is often assumed without any empirical basis that the absolute increase in employment associated with a given output increase is not as large as it might have been but for the distorting effect of relative prices of labour and capital. Some economists go as far as to suggest that the unemployment problem cannot be solved unless relative prices are brought in line with factor endowments [12]. An implicit assumption in this proposal is that there are considerable substitution possibilities between labour and capital. This assumption is valid if it is limited to *ex-ante* substitution possibilities. In contrast, *ex-post* substitution possibilities are quite restricted [13]. In fact, while in very large establishments the elasticities of substitution are around unity, in small and medium-sized manufacturing establishments they are less than one [14]. A similar finding is reported by Todaro and Pack [15]. This suggests that the possibilities of increasing employment by tinkering with relative prices are often exaggerated.

A comment on the methodology used is necessary. Given the framework of the Fifth Plan model we have tried to evaluate the relative employment effectiveness of a redistributional policy. The related question of employment as a redistributive measure has not been explored. This issue is relevant in the context of the feasibility of the drastic reduction in the concentration of consumption expenditure. It is unlikely that an increase in direct taxes would help in achieving this. If anything, it is likely to add to the tax-evasion. A part of this reduction, however, could be easily accomplished through employment. Unfortunately, our analysis is not capable of throwing light on this aspect of the relationship. By reversing the sequence, the more interesting first-round effect of employment on income-distribution is missed out. The

5. It is worth speculating how much of the difference in employment potential can be wiped out if agriculture is treated as an import-substituting industry. In view of our dependence on food imports the case for treating agriculture as an import-substituting industry is a strong one.

scantiness of the existing data makes it difficult to construct sectoral income distribution profiles without which this effect cannot be computed. All that one can attempt to do is to introduce simplifying but not altogether unrealistic assumptions to generate the necessary data for carrying out such an exercise.[6,7]

Conclusion

The following are the major findings of our analysis :

(1) The Fifth Plan is not capable of absorbing all the unemployed. More specifically, in the absence of a firm estimate of backlog of unemployment at the beginning of this Plan, all that we are able to predict is that a substantial number would remain unemployed at the end of it.

(2) The more interesting results pertain to the employment effectiveness of the four policies: growth maximisation, inequality reduction, export promotion and import substitution. Our results show that for a 1% change in each of these growth maximisation produces the largest employment effect followed by export promotion, inequality reduction and import-substitution. The rank of inequality reduction might change if an allowance is made for *(a)* the non-comparability of a 1% change in inequality reduction with a 1% change in any of the three remaining policies, *(b)* the underestimation of the foodgrains demand, (c) the interdependence between redistribution and factor-intensity in agriculture, etc.

(3) *Ex-post* substitution possibilities between labour and capital are often exaggerated. Hence, the employment effect of a change in relative prices is unlikely to be substantial.

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