Estimation of Employment and Unemployment in Bangladesh : A Review[1]

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1. Introduction

In a densely-populated poverty-stricken country like Bangladesh, employment concerns must figure prominently in any efforts at planned development. Concern for employment primarily arises from two considerations : first, because employment is considered the main vehicle for distributing income among the poor, and second, because the existence of unemployment and underemployment represents an inefficient allocation of investible resources. Sound employment policies, therefore, need to be based on an understanding of the nature of the poverty-employment link as well as the issues related to the criteria for investment allocation and an appropriate choice of technology.

An essential prerequisite for integrating employment concerns into development planning, at the level of plan formulation, is the availability of sufficient information on variuos aspects of employment and unemploy-

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ment. In this report, we examine the conceptual and statistical basis of the estimates of employment and unemployment in Bangladesh and discuss the relevance of such estimates for employment planning. The nature of employment projections, as contained in the plan documents, is discussed in respect of their operational significance, data deficiency, and the underlying technological assumptions. In particular, we shall assess the role of the national statistical system in meeting the needs of employment-oriented development planning.

II. Concepts and Measurements of Unemployment

Labour supply response

As is well-known, measuring employment and unemployment in developing countries involves many conceptual and data problems. Yet some idea of the nature and magnitude of the unemployment problem is an indispensable pre-requisite for any meaningful action by the social and economic planners in tackling this problem. Development economists have advanced many new concepts for measuring unemployment, such as the 'removable surplus' criterion, the 'time criterion', the 'willingness criterion', the 'poverty' criterion and so on. Each of these criteria highlights different aspects of the unemployment problem and can be relevant for policy-making in different contexts.[1]

Any unemployment estimate, whatever be the conceptual basis, involves a notion of *excess* labour supply. It is not easy to define or quantify the potential supply of labour in the context of a rural agrarian

society like Bangladesh. Because of the seasonalities of agricultural work and the fluctuations in earnings and poverty levels, the size of the rural labour force varies considerably over time by frequent entries into and exists from the labour force. There are also large variations in work hours over time and among different age-sex groups, so that the definition of a full-employment norm in terms of, say, a standard work-day or man-year, involves considerable arbitrariness.[3]

Table 1. Proportion of population aged 10 years and above in the labour force

(in percentage)

	Population Census, 1961	Population Census, 1974	Population Census, 1981
Both sexes	54.4	44.3	40.5
Male	75.7	80.4	73.9
Female	17.2	4.1	4.3

Source : 1982 Statistical Year Book of Bangladesh.

As one would expect, the estimation of the size of the labour force in Bangladesh suffers from many ambiguities. The population census figures in respect of labour force participation rates of working age population shows considerable variation over time which defies any plausible explanation (Table 1). The census criteria for inclusion in the labour force tends to show as inactive those potential workers whose response to shrinking opportunity of employment is to withdraw frequently from the labour market. Considerable ambiguity also

arises in defining women's status as unpaid family worker vis-a-vis housewife. The higher female participation rate in 1961 compared to the later census years is in fact attributed to such definitional confusion. Available evidence, however, suggests that female participation rates have probably increased over the past years[4]

For policy-making, one has to keep in mind that excess supply of labour cannot be determined independent of the nature of the work opportunities offered and the changes in the socio-economic organisation that are considered feasible. Survey findings from rural Bangladesh show that workers belonging to almost all socio-economic classes have considerable unutilised time. The reason for this, however; must be different for different socio-economic groups. For the landless and the poor, underemployment arises because of limited demand in the wage-labour market along with lack of access to assets that can provide opportunties for self-employment. For the households with relative land abundance, the inactivity would largely be explained by supply factors. While the opportunities for productive self-employment in family farms is greater, employment for wage may be inconsistent with class status.[5] This later observation has important policy implications for utilisation of surplus labour. An estimate of excess labour supply in rural *wage-labour* market alone cannot capture the huge reserve of underemployed labour that could be utilised by, say, a redistributive land reform or a system of co-operative farming. Based on a village study, Ahmed (1978) reports that by far the greatest component of unutilised labour time of potential male workers is

accounted for by those who are willing to work on their own farm, but would not work as wage labourer.

Women's labour force participation is another important policy concern. Studies on female wage employment show that it is only the very poor and destitute women who seek employment outside the home ; even for them, the employment opportunities are limited to low-paid and low status work, often involving heavy manual work. Although such employment can be a means of survival for the poorest of rural households, it it also symptomatic of the extent of impoverishment and destitution in the society at large. The alleged nutritional link between women's wage employment and maternal and child health in the Bangladesh context is also an issue that requires careful consideration.[6] On the other hand, the experience of many projects on rural women, such as those of the Grameen Bank, suggests that when such as are given opportunities for self-employment within their home environment, their labour force participation rate can significantly increase.[7]

Extent of underemployment

The results of population censuses and manpower surveys in Bangladesh show strikingly low rates 'open unemployment' in the range of 1%-2% only. Given the difficulties in applying the concept of open unemployment, most researchers have used the time criterion to measure the extent of unutilisation of labour in Bangladesh. These studies vary a great deal in respect of the definition of the labour force, the accounting unit of time, and the assumptions regarding the full employ-

ment norm.[8] The survey methodology is also different, varying from one-shot surveys to collection of data at frequent intervals over a prolonged period. Nearly all of the studies cover only small rural localities so that the estimates would be affected by any geographical variation in the incidence of unemployment. Despite such differences, the studies yield consistently high estimates of underemployment in terms of the percentage of potential work time lost. Some of the estimates are as follows : 30% by the Dhaka University Socio-economic Survey Board (1956), 25% by Habibullah (1962), 52% by Ahmed (1974) ; 28% by Alamgir (1977), 42% by Ahmed (1978), 31% by Rahman, Akhlaqur (1679), 48% by Masum (1982) and 24% by Khuda (1982).[9] The nationwide manpower and labour force surveys of 1980 and 1983 also provide some measure of underemployment by time criterion ; in both years, about 22 percent of male workers were found to work for less than 40 hours during the survey week. (BBS, 1982, 1986).

While the above authors estimate underemployment directly on the basis of information on labour-supplying households, there are some estimates of agricultural underemployment obtained by matching labour supply with estimated labour demand. All these estimates are based on time criterion, modified by some notion of productivity norm. One early estimate of agricultural underemployment provide figures in the range of 30%-35% during the sixties.[10] A similar estimate by the FAO yielded a figure of 32% for 1969-70 and 36% for 1974.[11] Other similar estimates by Muqtada (1975) and Clay and Khan (1977) for the mid seventies also

fall in the 35%-40 range. For some years now, the BBS has been providing annual estimates of underemployment for the economy as a whole ; these estimates in terms of surplus man-years as percent of total labour force, have remained in the range of 36%-40% since the mid-seventies.[12] If all these estimates can be taken as rough indicators of the problem of underemployment, its magnitude would appear to have persisted at a high level for the entire period for which such estimates are available.

The year round estimates of underemployment conceal very large fluctuations in employment opportunities arising from the seasonality of agricultural operations. A direct evidence on the extent of these fluctuations is provided by the results of the 1980 Manpower Survey. Only 6 percent of rural male agricultural workers are found to have worked less than 40 hours during the peak period, while the corresponding figure is 68 percent for the slack period. The variability in employment opportunities for female workers is found to be even more severe. A number of other studies mentioned above have also attempted to estimate the magnitude of seasonal underemployment. While the seasonal dimension of the employment problem has never been in doubt, there is less agreement on whether there is a 'removable surplus' in the peak season. Substantial rates of underemployment even during the peak period have been found in some studies (Ahmed, 1974 ; Ahmed, 1978 ; Khuda, 1982) ; but a few studies have also reported near-full-employment in the peak season in the case of particular categories of workers such as wage

labourers or in areas having relatively lower year-round underemployment (Rahman and Islam, 1985; R. I. Rahman 1981). There is also some evidence of labour constraint faced by large farmers in the peak seasons (Ahmed, 1981).[13]

In theory, the existence of surplus labour by time criteria does not necessarily imply the existence of disguised unemployment by the 'production criterion'; the latter would depend on the nature of the labour supply response upon withdrawal of labour from the existing field of production (Sen, 1975). A recent BIDS study on the impact of the food for work (FFW) programme has attempted to tackle this question directly by comparing the labour-supplying households in the FFW project area with a control group of households in a non-project area. On the basis of observation from a six-week period, the study concludes that the FFW employment largely represents a shift from low productivity self-employment rather than a significant gain in total employment.[14] The study further concludes that the output or income foregone as a result of withdrawal of labour from self-employment must have been rather insignificant because of very low marginal returns from such activities. This later conclusion is derived indirectly from the observation that the non-FFW workers of the participant households did not find it worthwhile to increase their work hours in family enterprise to compensate for the shift of employment by the FFW workers. For the area as a whole, the study found a positive but small effect on market wage rates, but there

was no evidence of any significant loss of agricultural output due to a decline in the use of hired labour.

The employment-poverty link

Although employment is an important means of generating and distributing income, the link between poverty and employment is not a straightforward one. To clarify some of the issues involved, let us look at the following identity for per capita labour income of a household during any defined period of time :

$$\frac{Y}{N} = \frac{L}{N} \times \frac{Lu}{L} \times \frac{Y}{Lu}$$

where Y = household income from employment

N = number of persons in the household

L = number of working members in the household

Lu = labour time actually utilised in standard work unit, e-g-, man-months

The first term on the right-hand side of the above equation is the labour force participation rate; the second term is a measure of the extent of utilisation of the labour time ; and the third term shows the average productivity of the labour time utilised. It can be noted that an adequate level of employment is sometimes defined in terms of the capacity to provide a minimum living to the population. As can be seen from the above identity, the application of the so-called 'income criterion' based on a threshhold level of household income would, in fact, incorporate many different poverty-related aspects of employment.[15] For policy-making, what is more important is to analyse how the various components

in the right-hand side of the above identity would affect poverty levels among different socio-economic groups.[16] In rural Bangladesh, the poorest households have often been identified as (a) the demographically weak households with inactive males and (or) many children, (b) wage-labour households with inadequate employment, specially in the slack season, and (c) households earning their living from rural crafts, petty trading and other activities of a rudimentry nature with extremely low retruns to labour.

No uniform pattern of relationship between household income or landownership on the one hand and degree of underemployment on the other can be established from the studies on rural underemployment in Bangladesh. According to the results of the various rounds of the Household Expenditure Survey (HES), nearly three-fourths of rural incomes accrue without the mediation of the labour market, mostly as income from self-employment. The ownership of assests, particularly land, which determines returns from self-employment, is therefore the major factor behind income distribution.[17] The absence of an income employment link in cross-sectional comparisons should not, however, lead one to believe that lack of employment, even by time criterion, is not an important cause of poverty. Regression results obtained by Khan *et al.* (1981, pp. 65 68) show that the number of mandays of employment has a significant positive impact on family income, after controlling for the effect of asset ownership. While more than average rate of underemployment for the landless group is reported by some studies (e-g-Khuda, 1982), others show that

the workers in this group may have near-full employment (e-g-, Khan *et al*, 1981). A more disaggregative analysis by R·I. Rahman (1981) suggests that while self-employment on the whole is much more remunerative than wage employment, the reverse is true for workers belonging to the poorest households. Studies on some of the self-employment activities of the poor also show that the returns to labour time from such activities can be lower than the market wage rate, suggesting that such activities would be undertaken only in the absence of opportunities for wage employment.[18] Female workers from the poor households are perhaps the most disadvantaged both in terms of returns from self employment and the wage rates for hired labour. All this would suggest that the poverty-employment link has many dimensions that need careful empirical investigation.

One useful approach to the quantitative analysis of issues relating to employment and income distribution is within the framework of the so-called social accounting matrix (SAM). The SAM approach is based on a disaggregation of household sector income and outlay accounts into socio-economic classes, so that it can add an income distributional dimension to the conventional national accounts system and input-output analysis. The Planning Commission has recently constructed a SAM-based macro-model which has provided the technical frame for the preparation of the Third Plan.[19] The construction of a SAM with sufficient disaggregation into types of incomes and socio-economic classes makes an enormous demand on data,

The data available from various nation-wide sruveys in Bangladesh (e-g. Manpower Survey, Household Expenditure Survey, Agricultural Census) do not allow any detailed income-occupation cross-classification, which is an essential building block for the SAM important entries in the present SAM are therefore either in the nature of informed guesses or are based on only fragmentary evidence. In particular, it has not been able to capture the important aspects of the employment-income link discussed above.[20] But the advantage of the SAM approach is that, by highlighting the existing data gaps in the national statistical system, it can point to the ways in which the collection and reporting of data can be improved for a better understanding of the poverty-related issues.

III. Employment Projection

Sectoral employment intensity of Production

Each of the successive five year plans in Bangladesh have had targets for overall and sectoral employment expansion. The employment projections involve estimating one way or the other the employment impact of investment and output growth during the plan period. Besides the conceptual problems of employment measurements, such an exercise makes enormous demand on data regarding the employment intensity of production in various sectors of the economy. To be meaningful, an exercise of this nature has to be sufficiently disaggregative, since projections based on sectoral *average* labour intensity may conceal the effects of likely changes in the technology-mix within the

aggregate sectors.

During the preparation of the earlier two five year plans, no elaborate employment exercise could be undertaken due to extreme paucity of data.[21] Since then, considerable employment data have been generated in the country, although, as will be evident from the following discussion, large information gaps still remain. The employment projection exercise undertaken for the Third Plan follows a 38-sector classification of the input-output model, while for many sectors (e. g., food crops, manufacturing, etc.), the estimates of labour input coefficients are in fact derived at a much more disaggregate levels.[22] The employment estimates are in standard man-years, and a combination of time criterion and productivity norm seems to have been applied, although not unambiguously.[23] The methodology is similar to the one followed by the BBS which now publishes annual estimates of employment in standard man-years according to broad sectoral breakdown. However, compared to the BBS estimates, the Third Plan exercise would appear to be much more robust in respect of concepts, details, and the data base.[24] In what follows, we shall attempt a brief review of this exercise, which may be useful in the way of a stock-taking of the employment data now avaialble in the country.

The employment projections in crop production are based on forecasts of acreage under individual crops along with estimated labour input per acre, which are crop-specific and assumed constant over time. The labour coefficients are treated as 'norms' while significant variations are observed with respect to such agronomic

Table 2 : Employment projections by broad sectoral classification for the Third Five Year plan (in million man-years)

Sector	1984/85	1989/90	Incremental share (%)[a]	Annual growth rate during plan
Agriculture	11.64	14.15	50.1	3.98
(Foodgrains)	(6.73)	(8.14)	(28.1)	(3.88)
(Other crops)	(1.72)	(2.09)	(7.4)	(3.98)
(Non-crop)	(3.19)	(3.92)	(14.6)	(4.21)
Manufacturing	1.89	2.73	16.8	7.52
Construction	0.57	0·74	3.4	4.35
Services	5.19	6.69	29.8	5.21
TOTAL	19.29	24.30	100.0	4.73

a. Share of the respective sectors out of total employment increase during the plan.

Note : A standard work-year is assumed to consist of 300 working days.

Source : Table A. 1 in the appendix.

and socio-economic variables as land quality, farm size, etc. Past evidence suggests that employment variations due to variations in the average yield of individual crops varieties may not be very significant, so that the assumption of constancy of labour input coefficients is not likely to be a serious problem for medium-run projections. The increase in employment and output will mostly come from the anticipated change in the cropping pattern in favour of the more productive crops, and to a lesser extent, from an increase in the cropping intensity. The variations in the estimated labour input coefficients

across different crops (especially, between the local and HYV varieties of foodgrains) are therefore crucial to the estimated employment impact of the projected increase in crop production.

Farm management data are not available in Bangladesh on a regular and systematic basis. The Agro-Economic Research cell of the Ministry of Agriculture has been conducting the *Costs and Returns Surveys* since the late 1970s for collecting crop-wise information on the use of labour and other inputs. The sample however varies in respect of size and location resulting in very large variations in the estimates from year to year. Estimates of labour use crop production are also available from a number of survey-based studies, covering mostly one or two villages. (Some alternative estimates of crop-wise labour input in foodgrain production are shown in Table A. 2 in the appendix.) The range of estimates that are available can produce widely different results for employment projections. For example, the implied elasticity of employment with respect to foodgrains output in the projections for the Third Plan turns out to be-72-(See Table A. 3 in the appendix.) However, projections made by a World Bank study in respect of a similar target of foodgrains production imply an employment elasticity of only-44-[25]

Information on labour use in various non-crop agricultural activities is rarely available. Past estimates of employment in non-crop agriculture has been based on the assumption that such employment accounts for a certain proportion of employment in crop production.[26] Such an assumption can at best serve as a rough guide

for estimating the benchmark employment figures, but is clearly unsuitable for estimating incremental labour demand. In the Third Plan exercise, some attempt has been made for the first time for estimating employment in certain non-crop agricultural activities from the demand side. Thus, the ratio of employment to value added has been estimated for some livestock products by making separate estimates in respect of various animals (e. g., poultry, cows/buffaloes in milk, dry or working, etc.) These estimates are still very tentative and no similar estimates have been possible for fishery and forestry.[27] In view of the importance being attached to creating more employment in agriculture, this must be a priority area for generating employment data.

While the employment estimated for the formal or organised sectors pose no problem, most non-agricultural employment is generated in the unorganised part of manufacturing, construction and service sectors. For small-scale and cottage industries, fairly detailed information on production and input structure is now available from some recent large-scale surveys.[28] The problem here lies not so much in estimating the specific labour input coefficients as in arriving at the industry-wise estimates of *total* employment and value-added-Converting the *number* of workers into equivalent *manyears* of employment also poses a difficult problem, since a large number of cottage industry workers are simultaneously engaged in other occupations. The usual information regarding the relative proportion of part-time and full-time workers may not fully capture the subsidiary and seasonal nature of some of these occupations. In the

1978-79 BIDS survey on rural industries, as high as 82 percent of the workers were reported as full-time employed according to the respondents' own perception of the nature of employment (Hossain 1985a). However, a detailed inquiry on labour utilisation revealed quite a different picture. For the group of industries located entirely in rural areas, only 16 percent of the workers were found fully-unemployed by the norm of 48-hour working week; for the semi-urban industries, the figure was 41 percent.[19]

As for construction activities of different types, estimates are usually available in respect of the share of wage cost in the total cost of construction; this can be converted into manyears of employment by using the wage rates of respective categories of workers. It is however much more difficult to arrive at any reasonable national level estimates of the volume of construction of each type. The data gaps are even more serious for the unorganised part of the service sectors such as trade, transport and professional services. The employment estimates for these sectors can at best refer to the *number* of persons engaged in these activities as their primary occupation; any adjustment according to either productivity or time criterion has to be based on quite arbitrary assumptions.

Employment estimates and system of national accounts

The weakness of the employment data, to a large extent, is also a reflection on the quality of data used in the system of national accounts (SNA) in Bangladesh. For some sectors (e. g., small-scale and cottage industries,

professional services), the estimates of sectoral value-added in the SNA are directly derived from employment estimates (i. e., by multiplying the number of people engaged in the respective activities by value-added per worker). In many other sectors, an improved set of data for the SNA can also help in arriving at better estimates of employment. There is therefore a case for co-ordinating the system of data-reporting in respect of the SNA and the employment estimates.

For the small and cottage industries sector, there is now scope for improving the SNA by taking advantage of the results of some of the recent surveys conducted by the BSCIC and the BIDS.[39] For some activities like handloom-weaving and crop-processing, estimates of value-added can be derived directly by the input flow method; this method was actually used by the Planning Commission (1980b) in the construction of the 1976-77 input-output table. If this methodology is followed, the estimates of employment can be derived from the value-added estimates by using the labour input coefficients (in standard work-unit). The existing SNA method does the reverse, thus relying on rather dubious estimates of employment in terms of *number* of workers.

As mentioned earlier, estimates of employment in construction are difficult to derive because of lack of information on the volume of construction activities of different types. The estimation of the volume of construction on a regular basis can also be useful in improving the SNA estimates in respect of gross national investment. A methodology for estimating investment by components (i. e. expenditures on difficult

types of machinery and construction) was developed at the Planning Commission (1980c) during the preparation of the Second Plan. This has yielded estimates of gross national investment which are significantly different from those in the SNA as maintained by the BBS.

In the case of transport service, the SNA relies on data on the number of vehicles (together with estimated unit income from each mode of transport), although there is hardly any reliable information on the unorganised rural sector, If such data can be generated and properly updated, this should also yield better employment estimates (provided per unit employment is known). As regards professional services, the data used in the SNA, in respect of the number of persons and income per person, are either outdated or derived from surveys of limited coverage. Again, a strengthening of the data base would help the SNA as well as employment estimation.

Interpretation of employment projections

We have so far judged the merit of the employment projections in terms of the underlying estimates and assumptions regarding the employment intensity of production in various sectors of the economy. How far these projections would be realised would, of course, largely depend on the effectiveness of the investment programme in achieving the planned targets of production. In principle, both the employment and output targets have to be decided simultaneouly in working out the investment plan, since the value of the incremental capital output ratios (ICORs) would crucially

depend on the incremental technology mix, which would also determine the employment intensity of production that would be realised. In the manufacturing sector, for example, the achievement of both employment and output targets out of a given investment plan would depend on whether the allocation of investment between the large-scale and small-scale components within each sector is in the right proportion. While all this can be taken care of by the appropriate choice of coefficients and parameters in the macro-plan models what is often missing in the plan-making exercise is the identification of an investment profile, in concrete physical terms, which is in conformity with the under lying technological assumptions of the macro-plan. This, of course, leads one to the general problem of how to operationalise the macro-economic plan by integrating sectoral and project planning into overall investment planning which is a theme beyond the scope of this study.

The sectoral employment estimates discussed here must be distinguished from the more usual estimates of the distribution of the labour force according to industrial or occupational classification, as shown in the results of the population censuses and manpower surveys. There is a great deal of overlapping of occupations among rural workers who usually engage themselves simultaneously in various types of activities, so that the two sets of estimates mentioned above do not exactly match according to sectoral classification.[31] It may also be remembered that the latter set of estimates, for most, occupational categories, are not at

full employment intensities (i. e in standard man-years); instead the figures refer to the *number* of persons employed. The intensity of employment would vary across occupations depending on the capacity of the respective occupations to absorb the disguisedly unemployed labour force. A change in the occupational distribution of the labour force would generally reflect the effects of forces from both the supply and demand sides (since, in the absence of significant open unemployment, the increase in the labour force would be accommodated somewhere). In contrast the employment projections of the type discussed here can be useful in identifying the sources from which additional *demand* for labour are likely to originate during the plan period, so that an appropriate employment strategy can be formulated.

Although employment expansion is considered as a vehicle for income generation, there is no straightforward interpretation of the employment projections in terms of targets for poverty alleviation. It is worth noting that in the Third Plan macro-modelling exercise, employment projections have not been treated as endogenous to the process of income distribution as generated within the SAM framework. Given the present state of knowledge, employment monitoring must be combined with other means of poverty surveillance. A few points may however be noted. How far the poor can benefit from encreased employment would depend, firstly, on the extent of self employment opportunities for the poor, and, secondly, on the extent to which increased employment opportunities

are translated into demand for wage labour. The importance of wage income for the rural poverty groups can easily be seen from Table 3, which is based on the results of the 1976-77 Household Expenditure Survey. The extent to which the projected growth of total employment exceeds the anticipated increase in the labour force is one indicator of the likely improvement in the respects of wage employment during the plan period. Clearly, there are other factors involved which can affect the supply-demand balance in the wage labour market. The capacity of the agricultural sector to retain surplus labour would largely depend on the rate of productivity growth on small subsistence farms and any change in the distribution of land.[22] Over the last few decades, there has been a trend towards increasing landlessness along with an increase in the proportion of wage labourers in the total agricultural labour froce. At the same time, there appears to have been a steady decline in the share of agriculture in the total labour force (see Table 4). It remains to be analysed how far this structural transformation of the labour force has been due to the pull effect arising from growth in non agricultural sectors or due to the push effect arising from increasing landlessness along with low agricultural productivity growth. The answer to this must be sought in the pattern of non-agricultural employment, particularly in respect of employment in high-productivity demand-induced activities vis-a-vis low-productivity employment of residual nature. As mentioned earlier, this is one area where information on income and employment is lacking most.

Table-3 Income Formation by Socio-Economic Class in Rural Bangladesh, 1976/77

	Agricultural landless	Small farmers	Medium farmers	Large farmers	Non-agri cultural rich	Non-agri cultural poor
Percent of all rural households	27.4	14.0	26.0	10.8	12.4	9.5
Household size (number of persons)	4.6	5.4	6.6	9.2	5.8	5.1
Annual income per household (Taka) *Source of household income (percent)*	4,080	5,433	8,261	17,097	5,253	9,122
Wages and salaries	73.8	48.3	9.3	2.0	34.5	24.1
Agriculture (monetary)	0.4	7.0	23.0	40.0	5.3	9.8
Agriculture (Subsistence)	2.5	21.5	47.3	46.8	12.6	17.1
Business	4.0	3.6	3.8	1.5	18.7	20.1
Other Income	19.3	19.6	16.6	9.7	18.9	28.9

Source and Methodology This table based on estimates made by the Planning Commission for construction of 1976-77 social accounting matrix. The basic data comes from the original data tapes of the 1976-77 *Household Expenditure Survey*. The distinction between agricultural and non-agricultural households is on the basis of main occupation of the household head. Small, medium and large farmers are defined as those operating holding of less than 1.5 acres, 1.5-5.0 acres and more than 5.0 acres respec, tively. Farm size distribution is derived indirectly from 1976-77 Agricultural Census results.

Table 4 : Trends in the size and composition of agriculture labour force in Bangladesh

	Agricultural labour as % of total labour force	Landless labour as % of agricultural labour force[a]
Population Census, 1951	83.2	14.1
Population Census, 1961	86.0	18.8
Employment survey, 1967-68	80.0	19.8
Population Census, 1974	77.1	24.9
Pilot Manpower Survey, 1979	71.9	37.0
Manpower Survey, 1980	73.6	40.5
Population Census, 1981	61.0	—
Labour Force Survey, 1913-84	58.7	39.1

a. Agricultural wage labour in the case of manpower and labour force survey.

Source : Various population census and emplyment survey reports.

Notes

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2. See Sen (1975).
3. For a discussion on these issues, see Khuda (1982) and Rahman and Islam (1985).
4. Cf. Rahman, R. I. (1986) ; Islam (1979).
5. See Khan *et al.* (1981), p. 26
6. See Mahmud and Mahmud, 1985.

7. For evidence on this, see Hossain (1984c), p. 104.
8. For discussion on this, see Rahman and Islam (1986).
9. In some cases, several alternative estimates have been made by the same author.
10. As quoted by Ahmed (1974).
11. Reported in Alamgir (1974).
12. Cf. *Statistical Pocket Book of Bangladesh*, various issues.
13. Much depends on the length of the peak period one is considering; the peak may be very short-lived because some of the agricultural operations have to be performed simultaneously on all farms depending on the arrival of the monsoon.
14. The FFW employment was found to be of an intermittent nature accounting for less than half of the total work days of the participating workers. The time rate of underemployment in the participant households was found to be 16% compared to 21% among non participant households; see Osmani and Chowdhury (1983).
15. For an application of the income criterion for measuring urban underemployment in Bangladesh, see ARTEP-ILO (1985a), pp. 35-36.
16. See Lipton (1983), p. 4.
17. This is clearly borne out by the results of the 1978-79 HES which show the cross-classification of households acording to income and landownership: see *1984-85 Statistical Year Book of Bangladesh*.
18. Hossain (1984b) (1984c).
19. For description of the 1976-77 SAM, see Tims (1983). The Third Plan macro-model is described in Planning Commission (1985b).
20. See Tims (1983).
21. See Planning Commission (1973) and Khan (1979).
22. See Table A, 1 in the appendix. The methodology of employment estimates and projections is discussed in Ahmad *et al.* (1985) and Mujerj (1985).
23. A standard man-year is taken to consist of 300 work-days.

24. For 1980/81, the BBS estimate of total employment is 19-53 million man years while the estimate in the Third Plan exercise is 17. 57 million man-years ; see Mujeri (1985) and *Statistical Year Book of Bangladesh, 1982*, pp. 414-17
25. According to the projections in the World Bank study, foodgrain production would increase from 14.75 million tons in 1980/81 to 20.01 m. t. in 1987/88 while employment would increase from 1, 927 million mandays to 2,227 million mandays ; see World Bank (1983), p. 32.
26. This proportion was taken to be 37%—38% in the estimates for both the First Plan and the Second Plan as well as in the more recent estimates by the BBS, although the origin of this particular figure is not known. See Planning Commission (1973a), p. 186 ; Khan (1979), p. 4.
27. The value of the independent estimates have also been compromised by accepting the BBS estimate for total employment in non-agriculture ; see Mujeri (1985).
28. These surveys have been conducted by the BSCIC, the BIDS and the Handloom Board.
29. The time rate of unemployment was estimated at 44 percent for rural enterprises and 7.5 percent for semi-urban enterprises ; see Hossain (1984a).
30. For the SNA, the BBS relies entirely on the results of its own surveys conducted in 1969-70 and 1976-77.
31. This must be borne in mind in interpreting the various estimates mentioned earlier regarding the extent of *agricultural* underemployment in Bangladesh.
32. Land ownership can be seen as a means for the poor farmers to have a share of the rent or profit element of agricultural income and, thereby, subsist even without adequate employment either on own farm or outside.

Appedix

Table A. 1 Sectoral value-added and employment projections for the Third Five Year Plan

Sectors	Emloyment[a]		Value-added[b]	
	1984/85	1989/90	1984/85	1989/90
Wheat	0.35	0.54	4.25	7.71
Rice	6.38	7.60	85.17	102.35
Coarse grains	0.02	0.03	0.20	0.21
Fats and oils	0.10	0.12	1.79	2.28
Sugarcane	0.16	0.22	2.07	2.75
Beef and Sheep	0.22	0.24	2.29	2.53
Poultry and eggs	0.37	0.47	2.96	3.78
Dairy products	0.77	0.89	4.93	5.72
Vegetables	0.59	0.70	19.90	23.66
Fruits	0.04	0.04	3.39	3.66
Fish	1.36	1.74	12.57	16.05
Tea	0.02	0.03	0.46	0.56
Cotton and Wool	00.5	0.05	0.04	0.04
Hides	0.20	0.22	1.04	1.14
Jute	0.57	0.69	4.57	5.46
Tobacco and Betelleaf	0.17	0.21	1.74	2.08
Forestry	0.27	0.36	7.70	10.32
Cotton yarn	0.05	0.06	1.00	1.35

Cloth millmade	0.02	0.04	0.55	1.35
Cloth handloom	0.89	1.28	5.06	8.07
Jute textile	0.17	0.21	5.00	6.00
Paper and pulp	0.01	0.01	0.57	0.68
Leather and leather products	00.3	0.05	2.65	4.57
Fertilizer	0.01	0.02	2.77	6.35
Pharmaceutica, Chemicals & Petroleum Products	0.03	0.04	3.06	3.82
Cement, limestone & klinker	0.00	0.00	0.10	0.16
Steel and Basic Metals	0.01	0.01	2.06	2.36
Metal products and Machineries	0.03	00.4	3.44	5.72
Wood and other industries	0·64	0.97	2.38	3.59
Urban housebuilding	0.07	0.09	1.01	1.29
Rural housebuilding	0.06	0.07	1.51	1.93
Other building and construction	0.44	0.58	6.43	8.47
Electricity and Gas	0.04	0.06	2.63	3.38
Transport	1.71	2.00	18.08	21.12
Healthservice	0.05	0.06	2.76	3.55
Education Service	1.06	1.39	6.60	8.70
Public Administration	0.92	1.13	12.72	15.67
Trade and other services	1.41	2.05	75.67	100.20

a. In million man-years. A work-year is assumed to consist of 300 working days.

b. In billion Taka at 1984/85 prices.

Source : Background macro-model for the Third Five year Plan.

Table—A.2 Alternative estimates of labour requirements for main foodgrain crops in Bangladesh (man-days per acre)

Crop		Third Plan[a]	World Bank[b]	Ministry of Agriculture[c]	BARC/ IFDC[d]	Agricultural University[e]	Range
Aus	—Local	64	72	78	60	66	60- 72
	—HYV	98	107	92	86	80	80-107
Aman	—Broadcast	—	40	50	51	79	40- 79
	—Transplanted Local	66	68	53	55	62	53- 68
	—Transplanted HYV	81	91	81	73	76	73- 91
Boro	—Local	117	75	73	83	82	73-117
	—HYV	126	108	110	103	113	103-126
Wheat	—Local	38	35	—	42	29	29- 42
	—HYV	58	65	48	52	52	48- 65

a. These figures have been used in the employment projections for the Third Five Year Plan; see Mujeri (1985).

b. Figures used for the employment projections by the visiting World Bank mission; World bank (1983); Table 4. 11. The original source of the estimates is Clay and Khan (1977).

c. Figures are from *Cost and Returns Survey*, Ministry of Agriculture, as reported in ILO-ARTEP (1985a).

d. BARC/IFDC (1982)

e. Estimates based on surveys carried out at the Bangladesh Agricultural University; Jabbar and Faruque (1978).

Table—A.3 Output and employment projections for foodgrains for the Third Five Year Plan

Crop	1984/85			1989/90		
	Area[a]	Yield[b]	Production[c]	Area	Yield	Production
RICE						
Aus Local	6104.00	0.32	1921.00	7190.03	0.37	2656.65
Aus HYV	1151.00	0.75	861.00	1450.65	0.93	1351.24
Aman Local	11443.00	0.50	5731.00	12325.53	0.50	6207.52
Aman HYV	2669.00	0.82	2199.00	3100.21	0.85	2637.89
Boro Local	851.00	0.65	553.00	835.27	0.67	475.40
Boro HYV	3040.00	1.08	3294.00	3975.19	1.13	4496.66
WHEAT						
Local	49.00	0.39	19.00	44.42	0.52	22.98
HYV	1622.00	0.89	1445.00	2435.45	1.16	2814.38
Total	26929.00		16023.00	31356.75		20662.72
Employment[d] (million man-years)		6.37			8.14	

a. In thousand acres.
b. In metric tons per acre.
c. In thousand metric tons.
d. Employment estimates are based on crop-specific per acre labour input requirements as shown in Table A.2 in the Appendix. A standard work-year is assumed to consist of 300 working days.

Source : Background macro-model exercise for the Third Five Year Plan.