

## THE GROWTH PATTERN OF BANGLADESH: 1959-60 to 1979-80\*

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The cross-section and time-series studies on the growth pattern of developed countries (DCs) and less developed countries (LDCs) tend to suggest that the share of the primary sector in GDP declines and that of the secondary and tertiary sectors increases with an increase in the real per capita income. This paper examines these hypotheses using time series data from the Bangladesh economy during the period 1959-60 to 1979-80. It is found that the share of the primary sector in GDP declined and that of the secondary and tertiary sectors increased, but such shifts away from the primary sector were associated with declining real per capita income. Thus the growth pattern of Bangladesh is found to differ from that of most industrial and Third World countries as well as from Socialist European economies.

### I. Introduction

There are a number of studies which show the relationship between the sectoral shares in GDP and real per capita income. Some of them, [Fisher (1939), Clark (1960), Chenery (1960), Temin (1967), Chenery and Taylor (1968), Kuznets (1971)], have used both time series and cross section data covering the developed countries (DCs) and less developed countries (LDCs). Moreover, these studies have used slightly different definitions<sup>1</sup>

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<sup>1</sup> Mining and quarrying are sometimes placed under the primary sector and at other times under the secondary sector. Similarly, transport and communications, and utility are sometimes classified as secondary and sometimes as tertiary.

for the major sectors, viz., the primary sector, the secondary sector and the tertiary sector. In spite of the differences in data used and differences in definition, these studies reveal that the share of the primary sector in GDP continuously declines and that of the secondary sector continuously rises with an increase in the real per capita income, while the share of the tertiary sector may rise but this rise need not vary consistently with the level of real per capita income. Usually it is seen that there is an increase in the real per capita income along with the acceleration of growth. Thus, modern economic growth is associated with shifts in the sectoral shares in GDP away from the primary sector. Such shifts are not surprising because it is most unlikely that the process of economic growth accompanied by continuous changes in the internal and external demand as well as in technology has an equal impact on all kinds of production activities in different major sectors. However, the shifts in the sectoral shares in GDP over time describe the growth pattern for an economy. There is hardly any study describing or analysing the growth pattern of the Bangladesh economy over any length of time.

In this paper an attempt is made to examine: (i) the relationship between the sectoral share in GDP and the real per capita income; and, (ii) the growth pattern experienced by the Bangladesh economy. In doing so, we have developed a model in section II. The estimated model is given and analysed in section III. The growth pattern for the Bangladesh economy has been examined in section IV and finally a conclusion is added in section V.

## II. The Model

To examine the relationship between the major sectoral shares<sup>2</sup> in GDP and real per capita income as well as the growth pattern of the Bangladesh economy, we have fitted our data to the following equations:

$$x_i = a_i + b_i \ln y + d_i \ln N \quad (1)$$

$$x_i = a_i + b_i \ln y + c_i (\ln y)^2 + d_i \ln N \quad (2)$$

where

$x_i$  = share of the  $i$ th sector in GDP.

$i$  = one (primary sector), two (secondary sector), three (tertiary sector).

<sup>2</sup> For the purpose of our study the primary sector is designated to include agriculture and associated activities of fishery, forestry, hunting, mining and quarrying; the secondary sector to include the manufacturing sector, both large-scale and small-scale, and the tertiary sector to include all the sub-sectors except those included in the primary and secondary sectors.

$y$  = per capita income at constant Tk (prices of 1959-60)

$N$  = population in millions.

We have given below the reasons for the inclusion of the explanatory variables in equations (1) and (2).

Empirical studies such as Clark (1960), Chenery (1960), Kuznets (1971), etc., suggest, that as real per capita income increases, the relative demand for agricultural products falls all the time and the relative demand for manufactured goods first rises and then falls to be replaced by services. In other words, an increase in the real per capita income in an economy is normally accompanied by a rise in the manufacturing and tertiary shares in GDP while the share of the agricultural sector is seen to decline. Such shifts in the sectoral shares in GDP can mainly be explained by differences in the income elasticities of demand for the products of different sectors as suggested by Engel's law. The shift away from agriculture is thus the result of the low income elasticity of demand for agricultural products. On the one hand, the low income elasticity of demand for agricultural products reflects the structure of human wants with respect to commodities, such as food, and on the other hand, it may also be the result of greater income elasticity of demand for the products of the manufacturing and tertiary sectors as well as greater inducement towards the products of the non-agricultural sector resulting from technological changes and shifts in the pattern of work and life closely associated with modern economic growth. For these reasons, real per capita income is used as an explanatory variable to explain the variations in the sectoral shares. The relationship between the sectoral shares and real per capita income is expected to be negative for the primary sector, and positive for the secondary and tertiary sectors.

Conventionally, population size is used to indicate the size of the domestic market [Chenery (1960), p. 63]. Given the same level of per capita income across countries, it is also used to indicate economies of scale [Chenery and Taylor (1968), p. 395]. The size of the domestic market and economies of scale as reflected in the population size, shifts the comparative advantage of the economy towards the manufacturing sector.

Furthermore, a change in the population size reflects the change in actual or potential labour supply. In growth models with unlimited labour supply,<sup>3</sup> the expansion of the manufacturing sector is supported by an increase in the urban labour supply through migration from the rural sector in the short run. The expansion of the tertiary sector including the informal services sector in both the rural and urban areas, is also supported by increa-

<sup>3</sup> For instance Lewis (1954), Fei and Ranis (1964), etc.

ses in the labour supply. Moreover, in such models the population size also reflects the existence of unemployment and underemployment in the agricultural sector with very low or even negative marginal productivity of labour causing the reduction of its value added relative to the manufacturing and tertiary sector. Thus, the inclusion of population size as an explanatory variable would indicate the existence of an underemployed labour force in the primary sector and the importance of labour supply in the growth of the secondary and tertiary sector. The expected relationship between the sectoral shares and population size is negative for the primary sector, and positive for both the secondary and tertiary sectors.

In equation (2), an additional explanatory variable  $(\ln y)^2$  is introduced. This makes the relationship between  $x_i$  and  $y$ , a non-linear one, thus allowing for changes in the income elasticities of demand for the products of the different sectors with changing levels of real per capita income.

### III. Estimation of the Model and Explanation of the Empirical Findings

The equations have been estimated with time series data from the Bangladesh economy covering the period 1960-61 to 1979-80. The whole of the period is divided into two sub-periods: the pre-liberation period (1960-61 to 1969-70) and the post-liberation period (1972-73 to 1979-80). The two periods differ with regard to a few socio-economic and political factors. Besides, the data for the two years, 1970-71 and 1971-72, are not available. For these reasons, we have introduced a dummy variable ( $D=1$  for each year in the pre-liberation period and  $D=0$  for other years) in each equation to see whether the shifts in the sectoral shares in GDP differ between the pre-and post-liberation periods.

The sources of GDP figures used in the study are: (i) Alamgir and Berlage (1974) who obtained the data on GDP at current prices from the published documents of the Central Statistical Office (CSO) of Pakistan for the pre-liberation period, and (ii) Bangladesh Bureau of Statistics for the post-liberation period. The pattern of GDP growth is explained by Clark (1960), Kuznets (1971) and others in terms of factors influencing demand, assuming no bottlenecks in the supply side. But in the case of Bangladesh such an assumption is not wholly true. There exist bottlenecks restricting the supply of output in different sectors of the Bangladesh economy. For instance, in the agricultural sector, factors such as: (i) natural calamities like floods, droughts, cyclones, tidal bores, hailstorms, pest attacks, etc., could have been responsible. Some of these were present every year causing damage to agricultural output, (ii) the increasing population-land ratio with

traditional technology causing low productivity in the agricultural sector despite the fact that about 16 per cent of the agricultural sector operated with HYV seed-fertilizer-water technology. In the manufacturing sector there was widespread underutilization of capacity [Islam (1981), p. 192; Bangladesh (1973), pp. 196-197, Afroz and Roy (1976)] which was caused by a lack of skilled workers, foremen and managers, by a shortage of raw materials and intermediate goods, frequent power failure, strikes, mechanical troubles, imbalanced machinery etc., with higher underutilization of capacity in the post-liberation period [Ahmad (1986) p. 224]. In the tertiary sector also, there was an underutilization of capacity due to a shortage of spare parts and intermediate goods.

In the presence of the supply restricting factors in the Bangladesh economy, GDP grew at the annual trend compound growth rate of 5.0 per cent and 3.9 per cent respectively, during the periods 1960-61 to 1964-65 and 1965-66 to 1969-70. Due to considerable damage and loss in all sectors of the economy during the nine month liberation war, there was an absolute fall in GDP in 1972-73 which was about 23 per cent lower than the 1969-70 GDP level in 1959-60 constant prices. Two-thirds of this fall in GDP was accounted for by a decline in agricultural output, a quarter of it by a decline in the manufacturing output and the rest was due to short-falls in construction, transport, trade and other sectors [Bangladesh (1973), p. 17].

The First Five Year Plan of Bangladesh started its implementation in 1973-74 with a 5.5 per cent target growth rate of GDP per annum over the 1969-70 GDP level. In reality it postulated a higher growth rate of GDP (about 10.7 per cent) over the depressed GDP level of 1972-73. During the first two years of the First Five Year Plan, GDP grew at the rate of 9.4 per cent per annum. This growth rate over the 1972-73 GDP level may be termed the 'recovery rate' since the GDP level of 1969-70 was reached only in 1974-75. The recovery of GDP in 1974-75 came mainly from the recovery of the agricultural sector in spite of drought in 1972-73, floods in 1974, non-fulfilment of irrigation programmes and shortfalls in the supply and distribution of chemical fertilizers [Islam (1978), pp. 134-136].

There was very slow recovery in the export sector with commodity export earnings of 1974-75 being half of that in 1969-70 [Ahmad (1983), pp. 227-228]. This was due to the fact that it took some time for Bangladesh to be recognised by other countries as a sovereign independent state and to set up diplomatic relations with them. The donor countries/agencies adopted a strong negative attitude against Bangladesh on the issue of the acceptance of the past debt liability it had accumulated as one of the provinces of Pakistan. As a result, Bangladesh experienced enormous difficulties in aid negotiation in the beginning of the post-liberation period [Faaland



(1981), pp. 128-148] and the flow of foreign assistance was very low in the first two years of the First Five Year Plan, [Bangladesh (1981a), pp. 115-116]. Finally, Bangladesh faced a severe foreign exchange crisis in 1974 which in turn adversely affected the import of essential industrial raw materials, intermediate goods, spare parts and capital goods.

Besides the shortage of foreign exchange, private investment in the manufacturing sector was as low as 9 per cent of total private investment in the economy due to factors such as the nationalization of industries after liberation, the commitment of the government to establish a socialist economy, the imposition of a very low investment ceiling on private investment by the industrial policies of 1972 and 1974, the lack of skilled labour, managers and investors because of repatriation of non-Bengalis to Pakistan, inflation at home and abroad, etc., which made the investment climate unfavourable. Consequently, the manufacturing sector could not recover in 1974-75.

The tertiary sector could not attain recovery in 1974-75 even though about 84 per cent of total private investment took place in the sub-sectors like physical planning and housing (including private construction), transport, trade and services [Bangladesh (1980), p. IX-4, Table 9.2]. The primary reason for higher private investment in these sectors was that it involved less risk but yielded a higher and quicker return in comparison with investment in the manufacturing and agricultural sectors [Bangladesh (1980), p. IX-3]. The slow recovery may be attributable to the lower imports of intermediate goods and spare parts due to the foreign exchange crisis as well as to the fact that there existed a shortfall of about 45 per cent in the development expenditure in this sector during the first two years of the First Five Year Plan.

However, the shortfalls in the target growth rate of the First Five Year Plan led to its reexamination in the beginning of 1975-76. Hard-Core Programmes (HCP) were prepared for the remaining years of the First Five Year Plan by reallocating the investment resources in favour of potentially productive sectors. They were followed by Bangladesh (1978), in 1978-79 and 1979-80.

During the period 1975-76 to 1979-80, the agricultural sector experienced an annual compound growth rate of 2.7 per cent which was less than the population growth rate of 2.8 per cent [Bangladesh (1978), p. 265]. The fluctuation in the production of this sector during this period was caused by droughts in 1976-77, and by hailstorm, pest attacks and variation in rainfall in other years. The target in the distribution of fertilizers could not be attained in these years but the performance in this respect was better in the Two Year Plan compared to the HCP. The irrigation target was almost achieved in the Two Year Plan but not in the HCP because of shortfalls in the

imports of irrigation machinery, wasteful/inefficient use of irrigation equipment resulting from the shortage of spare parts, and due to the inefficient organisation and management of irrigation projects. There was also a short-fall in seed distribution in the HCP. The other factors that caused slow growth of agriculture were slow growth in the livestock and poultry sub-sectors, declining production in forests with the (exception of 1977-78 to 1979-80) and little growth in the fishery sub-sector [Bangladesh (1981b) July, p.44].

The Taka was devalued in May 1975 which stimulated exports in the HCP with export targets exceeded in the Two Year Plan [Ahmad (1983), p.242, Table 10.14]. Bangladesh had to comply with the advice of the donor countries/agencies in regard to policy reforms and accepted the past debt liability of Pakistan for the projects physically located in Bangladesh. As a result the inflow of foreign assistance increased after 1974-75 [Bangladesh (1981a), pp.115-116]. Furthermore, remittances from abroad also increased from 1974-75 [Bangladesh (1981c), p.387]. Because of all these factors, the foreign exchange crisis eased, making available more raw material, spare parts, intermediate goods and capital goods for the economy.

During the period 1975-76 to 1979-80, management efficiency and labour relations improved considerably. For the encouragement of private investment in the manufacturing sector, the industrial policies of 1972 and 1974 were revised in 1975. The ceiling on private investment was raised and ultimately withdrawn in 1978-79. The revised policy removed, to some extent, the fear of nationalisation and establishment of a socialist economy. This became clear when some of the nationalised industrial units were handed to private hands in 1975. In response to such policies alongwith economic stability attained in 1975-76, there was a continuous increase in private investment – both local and foreign – in the manufacturing sector. About 29 per cent of total private investment and 19 per cent of the public sector development expenditure took place in this sector. Consequently, the index of industrial production increased from 89.76 in 1972-73 to 106 in 1977-78 and 112 in 1979-80 with 1969-70 = 100 [Bangladesh (1980a), p.278]. Furthermore, the manufacturing sector recovered in 1976-77 having an annual growth rate of 1.7 per cent during 1975-76 to 1979-80. This was made possible mainly through better capacity utilization in both the public and private sector industries compared to the years 1973-74 and 1974-75.

The growth of GDP in the tertiary sector was 5.1 per cent per annum during 1975-76 to 1979-80. It experienced a higher growth than that of agriculture and manufacture since about 60 per cent of total private investment and nearly 52 per cent of public sector development expenditure took place in this sector. It attained the GDP level of 1969-70 in 1978-79.

Bangladesh is one of the few countries which experienced negative growth in real per capita income during the sixties and seventies. According to World Bank estimates, the average annual growth rate of per capita GNP during the period 1961 to 1977 was  $-0.4$  per cent [World Bank (1979), p.126]. Such an aggregate picture, as some argue, conceals the fact that the trauma of liberation was a watershed between two distinct phases of growth, each phase being characterised by positive (although very low) growth rates of real per capita income. They suggest that the estimation and discussion of the relationship between the sectoral shares in GDP and real per capita income be done separately for each phase. However, we do not consider it necessary, because the estimation of the relationship between the sectoral shares in GDP and real per capita income separately for the pre-and post-liberation periods reduces the degrees of freedom for the estimates and a small degree of freedom is a weak base for drawing meaningful inferences.

The main objective of our analysis is to provide explanations for the overall long term relationship between the sectoral shares in GDP and real per capita income, instead of explaining the relationship in a particular year/short period. We do this because long term relationships are more stable than short term ones.

Growth in Bangladesh is associated with widening income inequality [Appendix-A (Table 1)]. Since the income share of the bottom 80 per cent households was lower in 1976-77 compared to 1963-64 and the income share of the top 20 per cent of households was higher in the two years, it is obvious that the trickle down effect of growth was not realized. It is also evident that with the growth of population the per capita income of the top 20 per cent of population increased and that of 80 per cent of the population decreased over the period 1963-64 to 1976-77. This is also corroborated by Table 2, (Appendix-A) which reveals that the top 15 per cent of households, both rural and urban, enjoyed an absolute increase in their income while the bottom 85 per cent of households, both rural and urban, experienced an absolute decline in their income during 1963-64 to 1976-77. Thus, the trends of per capita income for the upper and lower income groups were different and their directions remained unaltered during the pre-and post-liberation periods. Moreover, explanations for the shifts in the sectoral shares in GDP are provided in terms of the trend in the real per capita income for the upper and lower income groups.

Despite the modest growth, the real per capita income in the seventies was found to be lower than in the sixties. Thus the period, taking the two decades together, is seen to be characterised by virtual stagnation. The combined phenomena of low and stagnated income on the one hand and worsening inequality on the other have given rise to the problem of absolute



poverty in Bangladesh. Given the extremely low level of per capita income, it is inevitable that increasing income inequality also led to increasing poverty over time [Khan (1977), World Bank (1980)]. Thus, the growth process in Bangladesh during the sixties and seventies enabled a privileged minority to enrich themselves absolutely while pushing the majority into increasing impoverishment. The semi-logarithmic form [equations (1) and (2)] is chosen as it gave a better fit than the ordinary linear case and the logarithmic linear case in the trial runs. The equations (1) and (2) are estimated using the Ordinary Least Squares (OLS) method. The  $R^2$  obtained from equation (2) for major sectors is not significantly different from the  $R^2$  obtained in equation (1). Consequently, the term  $(\ln y)^2$  seems to be an irrelevant variable in explaining the variation in the sectoral shares in the GDP of Bangladesh, for which the estimated equation (2) for the major sectors are not reported here. However, the estimated equation (1) for the three major sectoral shares are given in Table 1, with necessary data for estimation in Table 3 (Appendix-A).

The coefficient of determination is very high for the primary and tertiary shares and is low for the manufacturing share. About 87 per cent of the variations in the primary share and 86 per cent of the variations in the tertiary share are explained by the real per capita income and population size whereas these factors explain only 51 per cent of the variation for the secondary sector. The low coefficient of determination of the secondary sector may suggest that one/more-than-one important explanatory variable(s) be included for adequate explanation of the variations in the secondary sector. Values of the Darbin-Watson statistic reveal that these equations seem to be free of serial auto-correlation.

It is seen in Table 1 that the coefficient of the dummy variable in all the three equations is significant at the one per cent probability level. It indicates that the shifts in the sectoral shares in GDP are significantly different between the pre- and post-liberation periods of the Bangladesh economy.

#### 1. *Sectoral Shares and Real per Capita Income*

Usually, the pattern of continuous shifts of the sectoral shares in GDP from the agricultural sector to the secondary and tertiary sectors is explained by a continuous increase in the real per capita income. In Bangladesh the real per capita income in 1959-60 constant prices had a declining trend for the period 1959-60 to 1979-80.<sup>4</sup> A nutrition survey of East Pakistan in

<sup>4</sup> Trend line for real per capita income in Bangladesh:

TABLE I

Estimated regression equation (1) for three major sectors (t-ratios in parentheses)

Sector's share	Method of estimation	Regression equations*					$NR^2$	DW	
Primary	OLS	$X_1 = 0.9000$ (2.630) <sup>b</sup>	-	$0.18D$ (-6.71) <sup>a</sup>	+	$0.32 \ln y$ (4.49) <sup>a</sup>	-	$0.48 \ln$ (-8.44) <sup>a</sup>	$NR^2 = 0.87$ DW = 2.20
Secondary	OLS	$X_2 = 0.1000$ (0.570)	+	$0.05D$ (3.36) <sup>a</sup>	-	$0.09 \ln y$ (-2.42) <sup>b</sup>	+	$0.11 \ln$ (3.57) <sup>a</sup>	$NR^2 = 0.51$ DW = 1.26
Tertiary	OLS	$X_3 = 0.0001$ (0.002)	+	$0.013 D$ (5.86) <sup>a</sup>	-	$0.23 D \ln y$ (-3.82) <sup>a</sup>	+	$0.37 \ln$ (7.79) <sup>a</sup>	$NR^2 = 0.86$ DW = 2.70

\*a = significant at one per cent probability level, b = significant at 5 per cent probability level. DW = Durbin-Watson statistics.

1962-64 indicated that about 45 per cent of the rural and 76 per cent of urban families suffered from caloric deficiency, and 61 per cent of the rural and 77 per cent of urban population suffered from protein deficiency [Islam (1978), p.5]. An ILO study revealed that about 85 per cent of the rural households comprising about 86 per cent of the rural population in 1963-64 had per capita family income below the level necessary to provide adequate caloric intakes [Islam (1978), p.6]. Since 90 per cent of the population in Bangladesh live in rural areas, it was indicative of the extent of poverty in Bangladesh in the early sixties. The extent of poverty increased further in the seventies [Appendix-A (Table 4)].

Rice is the main food of the Bangladeshi people. Per capita rice consumption declined throughout the sixties. To a certain extent this was made up by consumption of wheat but still the aggregate per capita consumption of cereals showed a slight downward trend over the period 1960-70 [Khan (1972), p.20, (Table 3.3)]. In the post liberation period, the per capita consumption of cereals is thought to have declined further. Even if the per capita rice consumption declined throughout the period, the Bangladesh economy was over-whelmingly dominated by rice. The entire economic life there still centred around it. About 80 per cent of total cropped acreage was under rice cultivation, and rice production accounted for about 70 per cent of total crop production.<sup>5</sup> Although wheat was also produced in Bangladesh, it accounted for only 0.06 per cent of total foodgrain production in 1967-68, 3 per cent in 1978-79 and 6 per cent in 1979-80. Excess domestic demand for wheat was satisfied by imported wheat. In spite of the fact that rice and wheat have the same caloric value, the consumers in Bangladesh consider rice as a normal good and wheat as an inferior good. Other inferior goods are sweet potatoes, potatoes, tapioca, etc.

There were two markets for foodgrain in Bangladesh. One was the sale of foodgrain through the rationing system and the other was the free market. The price of wheat was always lower than the price of rice in both the

$$Y_t = 318.51 - 2.76 T \quad R^2 = 0.33, \quad 1959-60 \text{ to } 1979-80$$

(t = 26.79)    (t = -2.92)    DW = 1.00

Growth of the real per capita income in Bangladesh:

$$\log Y_t = 5.77 - 0.01 T \quad R^2 = 0.35, \quad 1959-60 \text{ to } 1979-80$$

(t = 140.71)    (t = -3.03)    DW = 1.08

<sup>5</sup> Raw jute contributes only 4 per cent of total crop production. Of total raw jute production 30-35 per cent is exported abroad. The income elasticity of demand for raw jute in the developed country market is 0.515 [Bhuyan and Nguyen (1977), p. 142]. Tea constitutes only 0.2 per cent of total crop production. Of total tea production about 50-55 per cent is exported abroad. The income elasticity of tea in the developed country market is less than one [FAO (1979)]. But in the domestic market it is more than one [Islam (1965), (1966)].

markets during the period 1960-61 to 1979-80.<sup>6</sup> Again, rationed prices for rice and wheat were always less than their free market prices due to government subsidies on rationed commodities.<sup>7</sup> In the free market, the price of sweet potatoe was about one-fifth of the rice price, and the corresponding figures for potato and tapioca were about one-third and a half respectively.

The economic growth in Bangladesh was accompanied by widening income inequality during the period under study [Ahmad (1983), pp.262-264]. The incomes of the upper income groups increased while those of the lower income groups declined throughout the period and on balance, we obtained a declining trend of the real per capita income for the economy as a whole. Given the inequalities in income distribution, the income elasticities of demand for foodgrain for the upper income groups were much lower than those of the lower income groups.<sup>8</sup> The upper income groups' absolute expenditures on agricultural products increased at a declining rate because the percentage of their income spent on agricultural products declined with the increasing real per capita income. Since the urban consumers in the upper income groups obtained a significant portion of their foodgrain consumption from the ration shops (at a relatively lower price), the increase in their absolute expenditure on primary products was much less than what it would have been in the absence of the rationing system. The consumers in the lower income groups substituted low priced inferior goods for high priced rice with a decrease in their real per capita income.<sup>9</sup> Even though a larger percentage of income of the lower income groups was spent on agricultural products despite their declining real per capita income, their absolute expenditure on these products was declining. The rate of decrease in their absolute expenditure would be higher if the rate of substitution of inferior

<sup>6</sup> In the post-liberation period the rationed price of wheat was 25 per cent less than the rationed price of rice while the free market price of wheat was about 30 per cent less than the free market price of rice.

<sup>7</sup> The rationed price of rice was about 35 per cent lower than its free market price whereas for wheat it was about 30 per cent less.

<sup>8</sup> Mahmud [(1979), p.65, (Table 1)] has found that for rural households the income elasticities of demand for foodgrains were 0.73 for the bottom 30-40 per cent of households and 0.41 for the top 10 per cent of households. For urban households, Islam [(1965), p.65 (Table XI)] has shown that income elasticities of demand for rice and wheat were respectively 0.61 and 0.74 for the industrial workers (lower income groups) and were 0.29 and 0.18 for the persons employed in the government offices and commercial enterprises in Chittagong (middle income groups).

<sup>9</sup> In the case of Indonesia, Timmur (1979) has found that the foodgrain consumption pattern of the bottom 30-40 per cent of population is highly sensitive to changes in the relative price ratios of two commodities, namely rice and cassava.

goods for rice was higher. This substitution rate in the lower income groups would be higher for the rural sector relative to the urban sector, because the rural poor were practically denied access to rationed commodities, which is that they had to consume foodgrain at relatively a higher price compared to the urban lower income groups. Moreover, the absolute expenditure of the lower income groups was lower than it would have been without the rationing system, because the foodgrain consumption of the urban lower income groups mainly depended on rationed supplies.

Given the fact that about four-fifths of the population in Bangladesh were below the poverty line in terms of the minimum caloric requirements in 1980 and that one-fifth of the population was above it [Bangladesh (1980), p. 1-1], the absolute expenditure of the lower income groups on agricultural products declined sharply.<sup>10</sup> whereas that for the upper income groups might have increased slightly. The rate of decline in the absolute expenditure of the former groups on primary products was apparently greater than the rate of increase in it for the latter groups. With the declining real per capita income, on balance, the absolute expenditure on primary products for the economy as whole might have declined or increased at a very low rate if at all. The decline of the absolute expenditure on the primary products or its increase at a very low rate relative to the rate of increase of expenditure on non-food output might have caused the primary share in GDP to decline. Consequently, the real per capita income had a significant positive relationship with the primary share (Table 1).

Again, given the income inequalities in Bangladesh, the income elasticities of demand for manufactured goods were much higher for the upper income groups relative to the lower income groups.<sup>11</sup> With increasing real per capita income, the consumers of the upper income groups normally spend a higher proportion of their income on manufactured goods. Their expenditures on manufactured goods might have increased further due to an international demonstration effect. Consequently, their absolute expenditure

<sup>10</sup> The reasons for this sharp decline may be the following: (i) substitution of foodgrains by inferior food items, (ii) the rationed foodgrain being an addition to total supply, the demand of the urban upper income groups for foodgrains was reduced, which kept the free market price relatively lower, (iii) consumption of foodgrains by the lower income groups in exchange for their physical labour under the Food for Works Programmes.

<sup>11</sup> Islam (1965), p.55, (Table XI) has estimated that for urban households the income elasticities of demand for cotton cloth, footwear, tobacco products and tea were 1.52, 1.23, 1.31 and 2.31 respectively for the people employed in the government offices and commercial enterprises in Chittagong (middle income groups) and were 0.56, 0.68, 0.18 and 1.03 for the industrial workers (lower income groups). Income elasticities of demand for manufactured goods are not available for upper and lower income groups of rural households. However, Islam (1966), pp.33-34, (Table XVIII) has found the income elasticities of demand for those manufactured goods to be 1.31, 1.69, 2.31 and 3.09 respectively for the rural households in Bangladesh taken together.



on them increased sharply. Of course, it was smaller than what it would have been without the rationing system, because they also consumed some manufactured goods such as vegetable oil, sugar, soap, blades, etc., from the ration and fair price shops at relatively lower prices compared to the free market price.

But the manufactured goods distributed through the ration and fair price shops formed a very insignificant proportion of total manufactured goods consumed in the Bangladesh economy.

The consumers of the lower income groups probably reacted to the declining real per capita income in one of the following ways. Firstly, some consumers might have reduced household savings and kept their expenditures on essential manufactured goods unchanged to maintain their social status. Secondly, some, perhaps, reduced spending on essential manufactured goods. Thirdly, some probably consumed less of the essential manufactured goods, sometimes with substitution of high quality goods by low quality goods. Fourthly, consumers who were extremely poor might have reached the lowest limit of cloth consumption. If they had to reduce spending on clothes beyond this minimum limit, they might face the alternative of being naked. Even in this situation, they might reduce their expenditure on food rather than on clothes. However, the absolute expenditures on the manufactured goods for the lower income groups declined with the decreasing real per capita income. Since the essential manufactured goods formed a very insignificant proportion in their consumption baskets, the rate of decline of expenditure on them was very low.

The rate of decrease in absolute expenditure of the lower income groups on the manufactured goods was more than offset by its rate of increase for the upper income groups. Consequently, the absolute expenditures on the manufactured products for the economy as a whole increased with the declining trend of the real per capita income. This perhaps accounted for the significant negative relationship between the secondary share and real per capita income (Table 1).

Bangladesh experienced growth in GDP during the period 1960-61 to 1979-80 [Ahmad (1983), p.209 (Table 10.1)]. Industrialization was the growth strategy during this period. The government undertook various policies which favoured the emergence and expansion of manufacturing at the cost of agriculture [Lewis and Guisinger (1971), pp.223-260].

The tertiary sector includes the economic and social overheads whose creation is desirable not only for their own sake but also for the generation of external economies for other sectors [Haq (1963), pp.32-38]. Since power, transport and communication, and banking services are considered

supportive services to industrialization, the industrial strategy of development in Bangladesh favours the development of these service sectors. Furthermore, one feature of LDCs with surplus labour is that the tertiary sector is over-expanded compared to the production sectors (agriculture and industry) at the initial stage of growth. The main reasons for this are given below. Firstly, economic planners consider the development of the economic and social overheads as a precondition for economic growth because it creates external economies and supplies non-tradeable inputs to production sectors. With this end in view, a major proportion of the government development budget in most of the LDCs (about 50-55 per cent in Bangladesh) is allocated to this sector. After completion of the projects, their operation and maintenance necessitate the employment of some people paid out of the government revenue budget. Secondly, the growth of population, urbanisation and education indirectly puts some pressure on the government to create jobs in the economy. It is much easier to create jobs in the service sector (e.g., administration and defence), than in the production sectors. Thirdly, LDCs have surplus labour which is beyond the capacity of the production sectors to absorb. Due to the push-factor or rural-urban migration, the tertiary sector employs a portion of the surplus labour force, which would have remained unemployed otherwise [Haq (1963), p. 74].

Consequently, the share of the tertiary sector in GDP increased during the period even though the real per capita income in Bangladesh declined. This phenomenon can be explained in the following terms. It is seen in the case of Bangladesh that economic growth was associated with widening inequalities in income distribution. Since the real per capita income of the upper income groups increased during the period under study, their absolute expenditure on services also increased. On the other hand, the absolute expenditure of the lower income groups on services had been declining with their declining real per capita income. On balance, the absolute expenditure on services for the economy increased over time. This factor caused increases in the tertiary share in the face of declining real per capita income for the economy as a whole. Perhaps for this reason, we have obtained a significant negative relationship between the tertiary share and real per capita income (Table 1).

## 2. *Sectoral Share and Population Size*

There was some growth in GDP throughout the period under study. Growth in GDP was also accompanied by population growth which was as high as 3 per cent per annum during the same period. Due to high population growth, the labour force in the economy increased much faster than the

capacity of the economy to absorb it. As a result, surplus labour appeared in the rural sector and open unemployment in the urban sector. Studies of Masum (1979) and Khuda (1982) reveal the extent of surplus labour available in the rural sector. As the size of the population increases, the population pressure on land increases causing the productivity of labour (both average and marginal) to be lower and sometimes negative. This can happen even though modern high-yielding variety seed-fertilizer-water technology covers only 16 per cent of total cultivable land and has raised average productivity per workers and also employment in modern agriculture. Furthermore, because of the dominance of traditional technologies in agriculture, the labour productivity in the manufacturing and tertiary sectors where modern technologies were adopted because of the industrialization strategy of development since the mid-fifties. Consequently, the value added in the primary sector contributing more than 52 per cent of GDP increases at a lower rate than the manufacturing and tertiary sectors. Thus, with an increase in the population size, the primary share in GDP declined making the relationship between the primary share and the population size significantly negative (Table 1).

The large population size in Bangladesh supported the manufacturing sector through the extension of the domestic market for its products. People with declining real per capita income lying below the subsistence level could not live without a minimum of some basic manufactured goods such as clothing, medicines, some manufactured food items, etc. The consumers of the upper income groups with increasing real per capita income normally had a greater demand for manufactured products compared with agricultural products. Consumers might have diverted spending on manufactured products from imports to domestically produced goods which replaced imports. As a result, the absolute expenditure on the manufactured products was expected to increase with population growth, extending the domestic market for them, in spite of declining overall real per capita income in the economy. Such a large domestic market made it possible for some industrial units to produce more for satisfying the basic needs of the growing population and thus enabled them to achieve some economies of scale. Since the domestic market in Bangladesh was highly protected, protection kept a few inefficient firms in operation.<sup>12</sup>

<sup>12</sup> For example, in the pre-liberation period industries like sugar, cigarettes, paper, specialized textiles had a negative social rate of return indicating their inefficiency [Khan (1972), p. 125]. This is not unreasonable for sugar and cigarettes because sugarcane and leaf tobacco were produced in Bangladesh to be used as raw materials for gur and local bidi production respectively even when there were no sugar and cigarette manufacturing industries.

The large population size facilitated the growth of the manufacturing sector through the supply of industrial labour. The number of registered industrial units increased during the period 1962-63 to 1978-79 [Bangladesh (1981c), p.300, (Table 5.12)]. A survey of the Bangladesh Bureau of Statistics in 1969 indicated that there were 330,400 unregistered industrial units in rural areas with assets worth less than Tk. 0.5 million. Of these, nearly 82 per cent were classified as cottage industries and the remaining 18 per cent were small scale industries. The number of workers employed in the large scale manufacturing sector increased during the sixties and seventies [Bangladesh (1971), p.34, and Bangladesh (1981), p. 483 (Table 11.32)]. The number of handloom factories including unregistered ones also increased from 114, 273 in 1976 [Bangladesh (1979), p.248] to 197,280 in 1977 [Bangladesh (1981), p. 327, (Table 5.38)]. No information is available for other rural industries. However, these rural industries, registered or unregistered, provided employment to a significant portion of the rural labour force.

Thus, the population size increased manufacturing production through an extension of the domestic market and the increased supply of industrial labour. As a result we have obtained a positive relationship between the secondary share and the population size (Table 1).

With an increase in population, there would be a greater demand for housing, public utilities, health, education and training, transport, storage, communication, retail trade, banking and other miscellaneous services. In response to the increased demand, these services would expand.

It was noted above, that, due to an increase in the population, surplus labour appeared in the rural sector and open unemployment in the urban sector. Some of the urban unemployed got employment in the modern manufacturing sector, administrative services and some services associated with the growth of the manufactures. Some of them might have been engaged in the informal service sector also. Some of the educated unemployed obtained jobs in the formal service sector while some of them went abroad, particularly to the Middle East. This tendency among the educated unemployed was more pronounced in the post-liberation period [Bangladesh (1981), p.490, (Table 11.43)].

In the process of economic growth, landlessness in the rural sector increased [Stepanek (1979), pp.96-106]. The income distribution became more skewed and the greater proportion of population became absolutely poor. The absolute poverty was more severe for rural people. It forced some of the surplus rural labourers to become retail traders in both agricultural and industrial products, either imported or locally produced. Their number

increased with the development of rural infrastructures and the rural transport system [Thomas (1971), p.213, (Table 7.8)]. Some of the surplus labour migrated to the urban areas in the hope of earning its livelihood. Some of them got jobs in the manufacturing sector and some were engaged in the procurement and the distribution of raw material for, and products of, these modern industries. The majority of them were absorbed in the informal service sector such as domestic servants, street hawkers, retailers, rickshaw pullers and taxicab services [Bangladesh (1981), pp.484-486]. Again, the continuous migration of the rural surplus labourers increased the urban population [Appendix-A, (Table 3)], and consequently, the rate of urbanization. The rate of urbanization was much faster in the post-liberation period than in the pre-liberation period. With an increased urban population, some services were further expanded and/or new informal service activities were created. Thus, the service sector was expanded with increased urbanization and the growth in population. As a result, a significant positive relationship is obtained between the tertiary share and the size of the population (Table 1).

#### IV Growth Pattern: Past and Future

An attempt is made in this section to trace the changes in the sectoral shares in GDP with changes in the level of real per capita income. Firstly, we have shown how the sectoral shares changed with changes in the level of per capita income during the period 1960-61 to 1979-80. Secondly, we have drawn paths of the sectoral shares for future periods with changing levels of per capita income.

Keeping the population size fixed at 54 million and using the trend value of real per capita income, the sectoral shares are estimated [Appendix-A, (Table 5)]. The estimated sectoral shares are plotted against the trend values of real per capita income (Figure 1). The graphs of the sectoral shares appear to have similar slopes with significantly different intercepts in the pre-liberation (1960-61 to 1969-70) and the post-liberation (1972-73 to 1979-80) periods. In both the periods, the primary sectoral share declined with the declining trend of real per capita income [Figures 1(a) and 1(d)] but the shares of the secondary and tertiary sectors increased with the declining trend of real per capita income [Figures 1(b), 1(c), 1(e) and 1(f)]. The directions of the changes in the sectoral shares as suggested by the estimated equations in Table 1, are expected to remain unaltered in future with declining real per capita income after 1979-80. In other words, the primary share would decline and the second and tertiary shares would increase with a decline in the real per capita income.



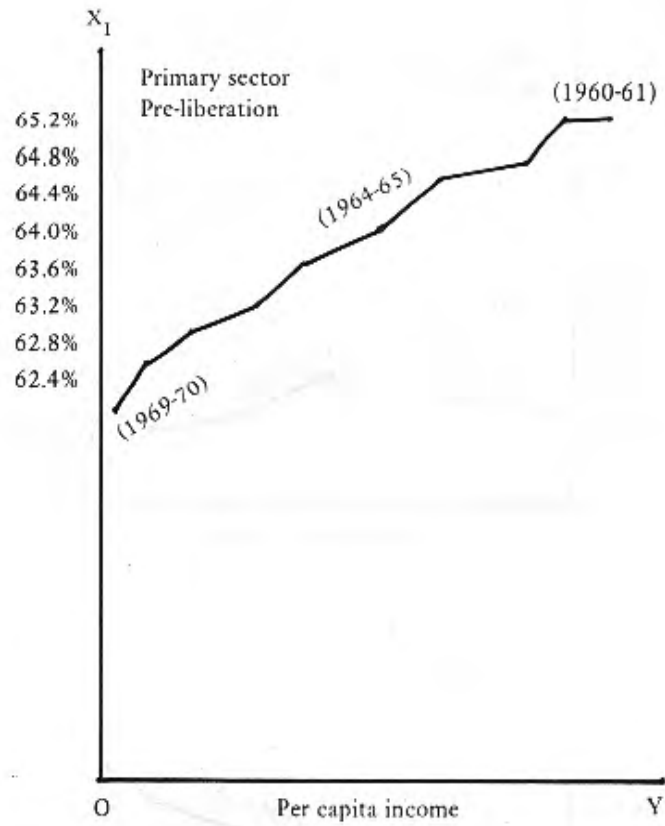


Figure 1(a)

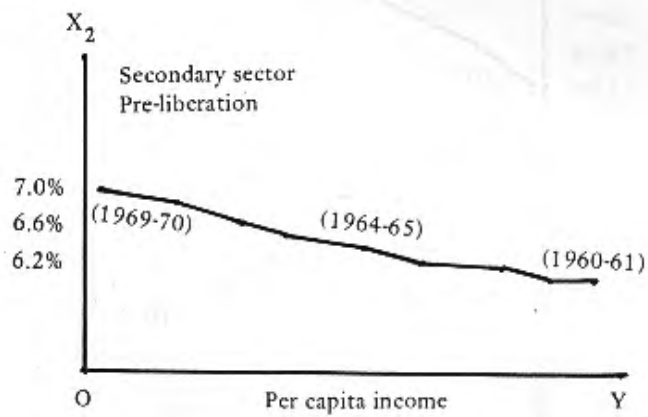


Figure 1(b)

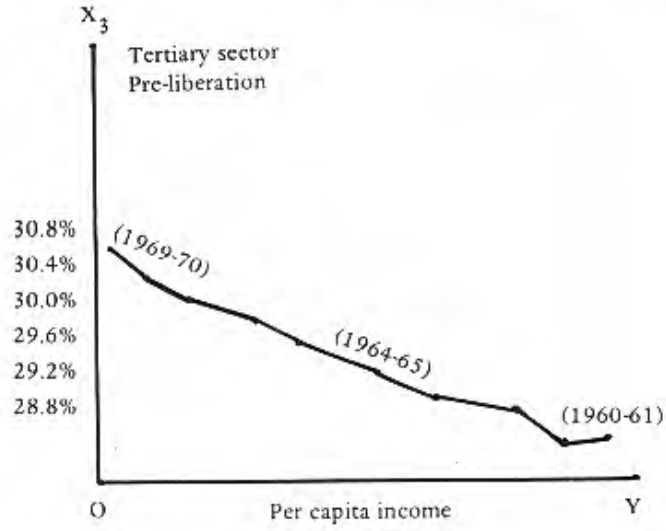


Figure 1(c)

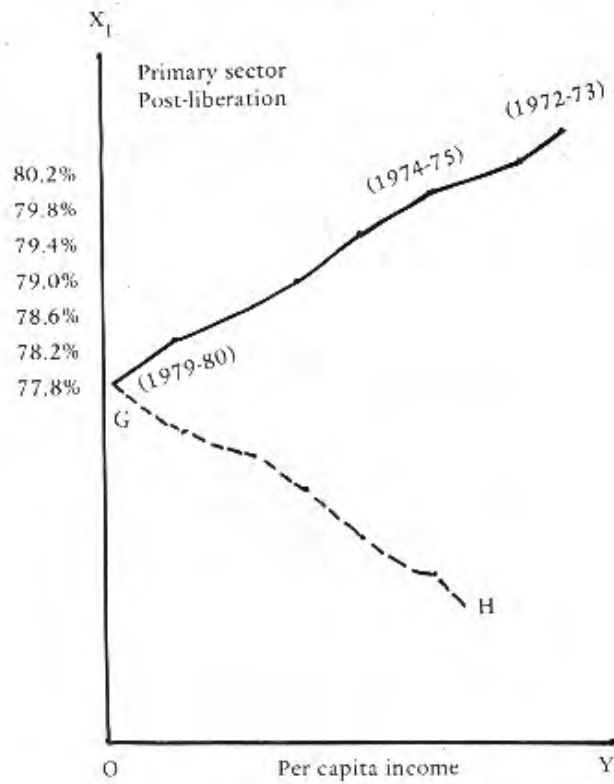


Figure 1(d)

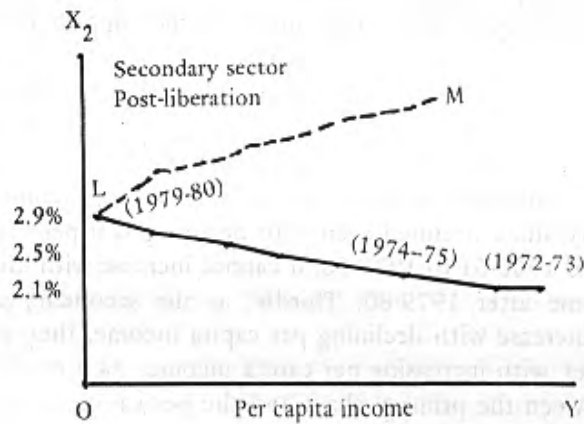


Figure 1(e)

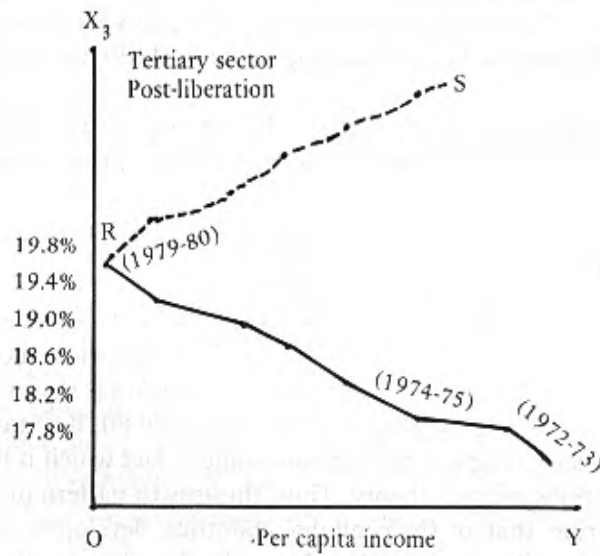


Figure 1(f)

Would the direction of change in the sectoral shares have altered when the real per capita income increased after 1979-80? The estimated equations for the sectoral shares predict that the primary share will increase and the secondary and tertiary shares will decrease with increases in real per capita income. Such predictions seem to be untrue as they appear to be inconsistent with theory.

With an increase in per capita income, the share of the primary sector in GDP will decline for the reasons given below. Firstly, since the income elasticity of demand for primary products is less than unity, the primary share will decline with an increase in per capita income. Secondly, since the primary share declined even with declining real per capita income during the period 1960-61 to 1979-80, it cannot increase with increasing real per capita income after 1979-80. Thirdly, as the secondary and tertiary sectoral shares increase with declining per capita income, they are expected to increase faster with increasing per capita income. As a result, a negative relationship between the primary share and the per capita income is expected and one of the paths for the primary share over time may be shown by the downward sloping curve GH in Figure 1(d).

The shares of the secondary and tertiary sectors in GDP are expected to increase with increasing real per capita income because of the income elasticity of demand for the products of these sectors being greater than unity. Consequently, a positive relationship is expected between the secondary and tertiary shares and the real per capita income. The paths for these shares over time may be depicted by upward sloping curves LM [Figure 1(e)] and RS [Figure 1(f)].

Thus the direction of changes in the sectoral shares would remain unaltered even if there had been an increase in the real per capita income since 1979-80.

## V. Conclusion

The preceding analysis reveals that the share of the primary sector in GDP declined and those of the secondary and tertiary sectors increased over time in Bangladesh suggesting some shifts in the sectoral shares away from the primary sector during the period 1960-61 to 1979-80. But such shifts are associated with decreasing real per capita income, a fact which is inconsistent with the predictions of the theory. Thus, the growth pattern of Bangladesh was different from that of the capitalist countries, developed and developing. However, the direction of the change in the sectoral shares in GDP appears to remain unaltered in future even when there will be a secular increase in the real per capita income.

Furthermore, it is observed that the population size causes shifts in the sectoral shares in GDP in a less developed country (LDC) like Bangladesh. It causes a decrease in the primary share in GDP because of the existence of surplus labour in the rural sector. It supported the development of the secondary sector (particularly manufacturing) through the increased supply of migrated labour from rural and sub-urban areas and the expansion of the domestic market for industrial products, causing an increase in its share. It also increased the tertiary share in GDP through the expansion of formal services with an increased educated labour force and increased the expansion of informal services using some of the unskilled surplus labour in the economy.

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## Appendix-A

TABLE 1

Income shares of different household income groups in Bangladesh:  
1963-64 and 1976-77.

Percentage of total personal income							
Percentage of households		1963-64			1976-77		
		Combined	Rural	Urban	Combined	Rural	Urban
Lowest	40	18.0	18.5	13.0	15.4	15.9	13.9
Middle	40	37.5	41.5	29.5	35.6	37.1	28.9
Top	20	44.5	43.8	57.0	49.0	47.0	57.9

Source: (i) Figures for 1963-64 are taken from Bergan [(1967), p. 175, (Table VIII)].

(ii) Figures for 1976-77 are computed from the data provided by Bangladesh [1981], pp.568-569 (Table 15.12)].

TABLE 2

Per household real income of fractile groups  
(Taka per annum in 1963-64 price)

Fractile groups		Rural		Urban	
		1963-64	1976-77	1963-64	1976-77
Top	5 Per cent	5704	7083	13886	16565
Top	10 Per cent	4571	4751	9914	10990
Top	15 Per cent	3839	3923	8272	8372
Bottom	85 Per cent	1352	910	1716	1339

Source: Osmani and Rahman [(1986), p. 12)].

TABLE 3  
Total GDP, sectoral GDP, urban population, rural population and total population, in Bangladesh: 1959-60 to 1979-80.

Year	Total GDP Tk. in million 1959-60 constant prices	GDP in primary sector Tk. in million 1959-60 constant prices	GDP in secondary sector Tk. in million 1959-60 constant prices	GDP in tertiary sector Tk. in million 1959-60 constant prices	Urban popu- lation in million (1st January)	Rural popu- lation in million (1st January)	Total popu- lation in million (1st January)
1959-60	14507	8755	869	4883	2,546	49,766	52,312
1960-61	15292	9245	957	5090	2,641	51,121	53,762
1961-62	16459	9728	1154	5577	2,823	52,423	55,246
1962-63	16742	9444	1408	5890	3,018	53,677	56,695
1963-64	18318	10247	1427	6644	3,226	54,957	58,183
1964-65	18646	10413	1389	6844	3,448	56,261	59,709
1965-66	19419	10787	1546	7158	3,687	57,527	61,214
1966-67	19543	10752	1380	7411	3,941	58,741	62,682
1967-68	21318	11776	1629	7913	4,213	59,977	64,190
1968-69	21945	11596	1881	8468	4,504	61,231	65,735
1969-70	22391	11950	1742	8699	4,814	62,503	67,317
1970-71	—	—	—	—	—	—	—
1971-72	—	—	—	—	—	—	—
1972-73	17626	9934	1172	6520	5,882	67,498	73,380
1973-74	20441	11627	1176	7638	6,275	69,425	75,700
1974-75	22448	13585	1482	7381	6,708	71,288	77,996
1975-76	20129	10792	1655	7682	7,171	72,717	79,888
1976-77	19800	9875	1800	8125	7,666	74,098	81,764
1977-78	21825	11657	1768	8400	8,194	75,490	83,684
1978-79	22405	11325	1862	9218	8,760	76,889	85,649
1979-80	22601	11520	1771	9310	9,364	78,296	87,660

Sources: Ahmad [(1983), p.437, (Table 13); p.463 (Table 32)].

TABLE 4  
Percentage of rural and urban population  
below poverty line\* 1960-1980.

	1963-64	1976-77	1980-81
Rural	63.1	68.8	81.0
Urban	57.2	63.8	78.0

\* A person is said to be below the poverty line if his monthly per capita expenditure does not permit him to intake 2122 calories daily.  
Source: Arkadie and Wilde [(1984), pp. 30-31].

TABLE 5  
Estimated sector shares of GDP in Bangladesh\* at the fixed population  
size of 54 millions: 1960-61 to 1979-80.  
(Figures are in percentage)

Year	Agricultural share ( $x_1$ )	Manufacturing share ( $x_2$ )	Tertiary share ( $x_3$ )
1960-61	65.0	6.2	28.8
1961-62	65.0	6.2	28.8
1962-63	64.6	6.3	29.1
1963-64	64.4	6.4	29.2
1964-65	64.0	6.5	29.5
1965-66	63.7	6.6	29.7
1966-67	63.4	6.7	29.9
1967-68	63.1	6.8	30.1
1968-69	62.8	6.9	30.3
1969-70	62.4	7.0	30.6
1970-71	—	—	—
1971-72	—	—	—
1972-73	80.1	2.1	17.8
1973-74	79.8	2.1	18.1
1974-75	79.5	2.2	18.2
1975-76	79.2	2.3	18.5
1976-77	78.8	2.4	18.8
1977-78	78.5	2.5	19.0
1978-79	78.2	2.6	19.2
1979-80	77.8	2.7	19.5

\* The sectoral shares of GDP in Bangladesh have been estimated using the equations for the sectoral share as given in Table 1, and using the trend values of per capita real income.