

**Inter-industry Linkages of Services in the Bangladesh Economy
(With a Case Study of the Ready-made Garments Industry)
And Potential Service Trade**

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Executive Summary

1. The purpose of the present study has been to assess the direct and indirect contribution made by services in the economy of a developing country like Bangladesh. With this aim in view, we tried to estimate the direct and indirect linkages of services in the economy of Bangladesh. Since, the RMG industry presently earns Bangladesh the largest amount of foreign exchange and is considered to be the leading 'growth industry' of Bangladesh, we made a particular attempt to assess the contribution of services in RMG manufacturing and exporting activity. These exercises, together with an examination of the current international service trade of Bangladesh, made it possible to outline the future development and potential international trade of services in Bangladesh.
2. It has been found that the service sector contributed most to the growth of GDP in Bangladesh. The share of the service sector rose from 39% of GDP in 1976/77 to 62% in 1997-98. Within the service sector, professional and miscellaneous services made the largest contribution followed by transport-storage-communication services, housing services and so on. On the other hand, services like power-gas-water-sanitation, public administration, professional and miscellaneous services recorded relatively high growth rates. Yet higher than average price-inflation in these as well as housing and banking-insurance services indicated a relatively large shortfall in their supply.
3. It has been found that services are used widely as inputs in commodity and service production. In industrial production, service-contents are the largest per unit of output. This, in turn, implies that increased industrial production will not only require an increased supply of inputs, but a cheaper and better supply of services will help to reduce per unit costs of production. It has also been found that, in the industrial sector, trade, electricity-gas and transport are the major services used.
4. It has been further observed that service production itself requires services as inputs and, in fact, the service sector is the largest user of services as inputs in the Bangladesh economy. It has been found that

housing, electricity-gas, public administration, banking and insurance services are the big user of services per unit of output. Moreover, the larger share of most of the services has been found to meet final demand (as private and public consumption) and service sector as whole is the second largest employer after agriculture. It provides employment to more than a quarter of the total employed labor force in Bangladesh.

5. The examination of inter-industry linkages of services has revealed that while electricity-gas, transport-communication and public administration create greater backward linkages, trade and banking-insurance create larger forward linkages. On the basis of total direct linkages, electricity-gas, trade and banking-insurance dominate all other services. Again, on the basis of total direct and indirect linkages, banking-insurance, electricity-gas and transport services rank higher than other services. This means that an increase in final demand for one unit of output of these services will bring forth a greater increase in total output of the economy compared to other services. Regression analysis also confirms strong inter-industry linkages of services with the commodity producing sectors (agriculture, industry) of the economy. It has also been found that if agricultural and industrial production increases by one per cent, services will be increasing by more than one per cent.
6. The study of the role of services in RMG industry has revealed that production-planning, input-procurement, management-accounting, banking and insurance, shipping service, port service, transport and communication service, electricity, legal counseling, sales and distribution, security, cleaning, housing service, data processing, photocopying and some special services are widely used in RMG manufacturing firms. Some of these services are internally procured, some are procured partly from internal sources and partly from outside suppliers, and some services are entirely procured from outside suppliers. The outside supplies of services, again, may come from domestic private suppliers or national government or may be imported from abroad.
7. It has been further found that shipping services and sales and distribution services are almost entirely imported from abroad by the RMG manufacturing industry as a whole.

8. The estimate of service use in RMG manufacturing industry has revealed that the RMG manufacturing firms located in the Chittagong Zone have to incur relatively less in terms of transport costs than those located in the Dhaka Zone. It was also found that medium and large firms consistently spent more on travelling, entertainment and participation in trade fairs. No distinct variation was, however, found between RMG manufacturing firms located in the export processing zones and those located in ordinary places, in respect of service-use.
9. Calculations based on sample data and CMI data showed that the contribution of services in total RMG production ranges between 20-25 per cent.
10. As for trade in services, it has been found that shipping service is the largest service imported by Bangladesh. It accounted for roughly 12% of total commodity-imports and 37% of the trade-deficit in 1996-97. Travelling is the second largest import of services followed by banking and insurance service. On the other hand, labor service is the largest service export from Bangladesh. Earnings from export of labor service paid for 28% of total commodity imports and covered 90% of the trade-deficit in 1996-97.
11. As for the future development of services and services trade, it has been suggested that shipping services should be developed on a priority-basis. Because it will, on the one hand, save our imports and, on the other hand, create prospect of exporting shipping services by incorporating it in our RMG exports, i.e., by exporting the output of RMG industry, using our own shipping services.
12. Dockyard/ship repairing and harbor services have been pointed out for development with the potential for export to the northeastern region of neighboring India. It has been argued that Bangladesh may sell transport services also to India in the same fashion, and that Bangladesh and India do not need any formal transit/transshipment agreement signed between them in order to engage in such trade.
13. It is suggested that Bangladesh should allow foreign investors to set up tourist resorts and hospitals with modern equipment in different parts of the country. It has been particularly suggested that a convention

center may be set up in Chittagong/Cox's Bazar in order to host international conferences and conventions.

14. To expand the current export of labor services, it has been suggested that Bangladesh should institute training programs for appropriate skill-development. But to sell data entry, data processing, accounting and monitoring services through electronic media, Bangladesh may need to import improved and modern communication services. Electricity-gas and communication sectors have been found to experience a large shortfall in supply. Importation of these services has been suggested as an alternative to make up for the shortfall in the supply of power.
15. Lastly, it was noted that the importation of communication, power services and the development of health and tourists services, would require FDI.

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Introduction

Gone are the days of Adam Smith, David Ricardo and Karl Marx when services were viewed as unproductive and the mention of trade in services was hardly found in economics literature. However, things have changed since then. Nowadays, services are recognized to constitute an important sector of the economy — no less than the agriculture or industry. Not only do services contribute significantly towards GDP and employment in both developed and developing countries, the use of new technologies has made many services storable, transportable and consequently, tradable. Lately, a large proportion of the world economic transactions is taking place in service trade. Again, services may be classified as those consumed directly and those used as intermediate inputs. These intermediate services, also known as 'producer services' play a much more complex and important role in the development process than is suggested by their direct contribution to gross domestic product (GDP) and employment-creation. This is reflected in the inter-linkages between services and the rest of the economy. Production and export in agriculture, industry and the service sectors require many services

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like planning, coordination, banking, insurance, transportation and storage, utilities, telecommunication and other infra-structural services. The lack of access to adequate and efficient services is considered as an impediment to economic development in developing countries. National efficiency and the international competitiveness of a country depend not only on the availability of adequate infra-structural services, but also on an inter-linked 'services infrastructure' of producer services. So when the domestic supply of services is inadequate or inefficient, the import of services is the other option left open to a country. Thus we see that efficient production in the economy is inter-linked with adequate and efficient supply of services from both internal and external sources. This again makes policies relating to trade and investment (including FDI) in the service sector strategically important.

The objective of the present study is to examine the inter-linkages between services and other activities of the Bangladesh economy. The study of such inter-linkages will help to identify services where increased and better supply, requiring imports and FDI, will raise the general productivity of the economy. Since the readymade garments (RMG) industry is the leading 'growth industry' of Bangladesh, we intend to supplement our study of inter-industry linkages of services with reference to the RMG industry particularly. The scheme of the paper is as follows: Section I presents a profile of the service sector in Bangladesh; Section II examines the inter-linkages between services and other sectors of the economy; Section III explores the role of services in the RMG industry of Bangladesh, Section IV discusses the potential service trade and service-related FDI and, finally, Section V presents the summary of findings, policy implications and conclusions.

Section I

Profile of the Service Sector in the Bangladesh Economy

Size and Growth

In order to understand the role of the service sector in the Bangladesh economy, let us examine its size, components and growth rates over time. Table 1 shows that in 1973/74, services accounted for 39% of overall economic activities, measured in terms of contribution to Gross Domestic Product (GDP). In 1986/87, half of the GDP originated in the service sector and in 1997/98, the service sector's contribution rose to 62% of total GDP. During the same period, agriculture's share in GDP declined from 51% to 29%. While the agricultural sector's decline is consistent with the predictions of the 'stages of growth theories' ¹, the very large rise in the size of the service sector is not necessarily what these theories anticipated. The stage-sequencing theories consider the growth in the service sector as a 'post-industrial' phenomenon². We may, however, consider the growth of service sector as a modern-day development phenomenon³, reflecting the growing role of services in the modern mode of production (of both commodities and services) as well as satisfaction of final demand. Within the service sector, the largest contributions have come from professional and miscellaneous services (247 billion Taka) followed by the transport-storage- communication (TSC) services (173 billion Taka), housing services (147 billion Taka), trade services (137 billion Taka)[Table 2]. Banking-insurance, power-gas-water-sanitation (PGWS) services, public administration (including health and education services) and construction services made relatively small contribution. This ranking is, of course, based on the absolute contribution of various services. This does not say much about the growth of individual services over time. In order to estimate the growth of real services we have fitted an exponential trend line to the time series

1 W.W. Rostow, *The Stages of Economic Growth*, (Cambridge, 1960).

2 D. Bell, *The Coming of the Post-Industrial Society: A Venture in Social forecasting*, (New York, 1973).

3 In Japan, labor movement to the service sector occurred before the movement to manufacturing. R. Minami, *The Economic Development of Japan*, (London, 1986). p. 273. In Singapore, over 60 percent of the labor force were employed in the service sector as early as 1920 and over 70 percent of GDP has originated in services since 1970. D. Riddle, *Service-led Growth: The Role of the Service Sector in World Development* (New York, 1986), pp.5-6

data (in constant value) for each service sub-sector (Table 3). The resulting trend values are presented in Table 4. The table shows that while services as a whole increased at an annual compound rate of 5.5%, some specific services such as power-gas-water-sanitation service (17.1%), public administration (8.9%), professional and miscellaneous services (7%) recorded higher growth rates. The growth of services has been plotted on graphs also. Graph I shows the growth of service sector vis-a-vis agriculture and industries. Low growth trends for agriculture and industries compared to services are evident. Graph II, on the other hand, shows the changes in shares, represented by bar diagrams, of various services over time. It can be seen that services like power-gas-water-sanitation and public administration (including public health and education) which recorded relatively high growth rates, started rather with a small base.

The price behavior of services is shown in Table 5 for 1997-98. The GDP implicit deflator was 214.6 compared to 100 in 1984-85. But the corresponding price increases were much higher for professional and miscellaneous services, housing, power-gas-water-sanitation services, banking-insurance and public administration.

The use of services as inputs in industrial, agricultural and service production also creates demand for services⁴. In 1976-77, 34% of the total output of the service sector was used as inputs (Table 6). Out of this, 15% was used by the industrial sector while the agriculture and the service sectors used 12% and 7%, respectively. Compared to 1976-77, only 17% of the total output of the service sector was used as inputs in 1986-87 (Table 7). Moreover, the service sector itself was the largest user of services as inputs (7%) in 1986-87. This does not, however, mean that the use and importance of services as inputs declined. In fact, the use of services as inputs rather increased in 1986-87, compared to 1976-77, by more than five times. In 1986-87, although the industrial sector was no more the largest user of services as inputs, it was, nevertheless, the most intense user of services per unit of output. This can be verified by comparing the service-content of output (per unit) of various sectors. In 1976-77, one Taka-worth output of the agricultural, industrial and service sectors required, respectively, .09 Taka-, .19 Taka- and .07 Taka-worth services as inputs (Table 6). In 1986-87, these service-requirements per unit of output were .07 Taka, .16 Taka and .07 Taka, respectively (Table 7). Because of technical progress, the use of services per unit of output reduced but still

4 Services used as inputs in agricultural, industrial and service production are also known as 'producer services' and these producer services play a far more important role in the development process than is suggested by their direct contributions to GDP and employment. See UNCTAD, 'Services and the Development Process', Document No.TD/B/1008/Rev.1, p. 12.

industrial production possessed the largest service-contents per unit of output. The implication is that the increase in industrial production (and for that reason, agricultural and service production too) will require increased supply of services as inputs. Besides, the cheaper and better supply of service-inputs will reduce the costs of production to a great extent in the industrial sector⁵.

Among the services, housing, health and education, though receive inputs from other sectors, do not supply inputs to any sector (except for health sector supplying inputs to banking-insurance sector only). Construction, electricity-gas, trade, transport, public administration, banking and insurance and professional & miscellaneous services receive inputs from and supply inputs to most of the other sectors (Table 8). In the industrial sector, after trade, electricity-gas and transport are the dominant service-supplier (3% and 2% respectively) followed by professional services, banking insurance and construction (1% each) [Table 10].

Service production itself requires services as inputs. In 1976-77, service production used 12.5% of its total output as input (Table 6). In 1986-87 service inputs used in service production accounted for 7% of the total production (Table 7). The share of intra-service transaction was as high as 20% in housing followed by electricity and gas (16%), public administration (12%), banking and insurance (8%) [Table 10].

The bigger chunk of most of the services produced go to meet the final demand as private and public consumption. While trade services go entirely to meet input-demand, housing health and education services are entirely exhausted to satisfy final consumption. The lowest proportion of services going to final demand is in construction (18%) and electricity-gas (20%)⁶.

The sectoral employment shares have been reported in Table 9. In 1996, 27.3% of the total employed labor force was employed in the service sector. Between 1974 and 1996, total employment increased by

⁵ In the process, the international competitiveness of the country also may get enhanced. See B. Hoekman, 'Assessing the General Agreement on trade in Trade in Services', in Martin, W. and L. A. Winter (eds.), *The Uruguay Round and Developing Economies*, World Bank Discussion Papers, No. 307, (Ch. 10, p.340)

⁶ Government of Bangladesh, Planning Commission, *An Augmented Input-Output Table of Bangladesh Economy 1986-87*, p. 23

4.5% per annum. But employment in the service sector increased by about 6.9% per annum. Within the service sector, growth of employment was the largest in construction (18.2%) followed by trade (10.7%), electricity-gas (10.6%), banking-insurance (10.3%) and transport-storage-communication (10.0%).

So far, we have seen the contribution of services to GDP and employment in the Bangladesh economy. But these are only the direct contributions of the services sector. Services make an even greater contribution through its linkages with the rest of the economy. In the following section we will, therefore, make an attempt to examine these inter-linkages.

Section II

Estimating Inter-linkages between Services and Other Sectors of the Economy

(A) Input - output Analysis

Method

The importance of inter-linkages of various sectors of the economy has been stressed by Hirschman⁷. These inter-linkages are created as a consequence of each sector's role as a supplier of inputs to and receiver of inputs from other sectors of the economy. In order to estimate the role of services as a supplier and receiver of intermediate inputs, an ideal starting point is an input-output table of the economy.

As is commonly known, an input-output table gives the flow of goods and services from each sector of the economy to different sectors of the economy over a period of one year normally. An input output table is alternatively also called 'inter-industry transaction' table. Production of output in any sector of the economy requires raw materials as well as labor and capital as inputs. The outputs produced, in turn, are used to satisfy intermediate input demand as well as to satisfy final demand. The economy is divided into a number of sectors. Each sector is represented in the input-output table by a row and a column. The row corresponding to a

⁷ A. O. Hirschman, *The Strategy of Economic Development*, New Haven, 1958.

sector gives the delivery of outputs of the sector while the column indicates the amount of inputs received by the sector. Thus an entry into the cell corresponding to the i-th row and j-th column denotes the quantity of output of sector i absorbed as input by sector j, and is represented by X_{ij} . The output of sector j is represented by X_j .

The inter-industry transaction table can be used to derive input-output coefficients. This is done by dividing each column entry in the matrix by the total output of the sector. If we denote the input coefficient by a_{ij} , then

$$a_{ij} = \frac{X_{ij}}{X_j}$$

The input-output coefficient ' a_{ij} ' gives the amount of purchases from the i-th industry to support one unit of output of industry 'j'. Suppose $a_{ij} = .12$. This means that each Taka worth of output of industry j will require twelve paisa worth of input from industry i. The input-output coefficient, thus, gives the direct interdependence among sectors of the economy. But this is only a partial picture of interdependence among various sectors of the economy.

The total significance of any sector in the economy can be estimated by examining the inter-industry linkage effects that represent the effect of a one unit increase in the autonomous portion of final demand on the level of production in each sector. A sector may receive inputs from one or more other sectors. This reflects the sector's backward linkage. Again, a sector may supply inputs to one or more other sectors. This indicates the forward linkage of the sector with the sector/sectors to which it supplies inputs. Thus, backward linkages refer to the interdependence of one industry through purchases of inputs from other industries/sectors. On the other hand, forward linkages mean interdependence of one industry through sales to other industries/sectors. However, these backward or forward linkages only measure the first round direct effects of inter-industry relationships. But there are also important indirect linkages (second, third, fourth, rounds). An increase in sector j's output will require not only an increase in the output of the sectors supplying inputs to sector j but also increased outputs of the sectors providing inputs to these sectors. Thus inter-industry or inter-

sectoral linkages have three components: (I) backward linkage effects, (ii) forward linkage effects and (iii) total linkage effects. Specifically, these linkages may be defined as follows⁸:

$$L_{Bj} = \frac{\sum_i X_{ij}}{X_j} = \sum_i a_{ij};$$

$$L_{Fi} = \frac{\sum_j X_{ij}}{Z_i}$$

and

$$L_{Tj} = \sum_i a_{ij}^*$$

Where L_{Bj} denotes backward linkages of sector j , X_{ij} denotes number of units of commodity i used in the production of commodity j ; L_{Fi} denotes forward linkages of sector i ; Z_i denotes total demand for commodity i consisting of intermediate demand for i , $\sum_j X_{ij}$, and the final demand for i , Y_i ; L_{Tj}

denotes total linkages and $a_{ij}^* = (1 - a_{ij})^{-1}$

Measurement of Linkages

For measuring the inter-sectoral linkages of the service sector in the Bangladesh economy, we have used the input-output table of Bangladesh economy for the year 1986-87. This input-output table gives input-output flow for 53 sectors of the Bangladesh economy. Since our purpose is to estimate the sectoral inter-linkages of the service sector only, we have consolidated this 53 x 53 input-output table into a 12 x 12 input-output table with 10 service sectors and agriculture and industry included (Table 8). From this input-output

⁸ P.A. Yotopoulos and J.B. Nugent, *Economics of Development : Empirical Investigations* (New York, 1976), p. 268

flow table, we have constructed a 12 x 12 input-output coefficient table 'A' (Table 10). From this table, we have computed the Leontief-matrix $[I-A]$ which, in turn, has been inverted to give $[I-A]^{-1}$ (Table 11).

Results

The results of the exercise are reported in Table 12. In this Table, the backward linkage, forward linkage, total direct linkage and total direct and indirect linkages of various service sectors and corresponding ranking of the sectors have been given. Although this Table reports inter-linkages of agriculture and industrial sectors too, these two sectors have been excluded from the sectoral ranking exercise. And this is because, here, our main purpose is to see the ranking of various services only on the basis of their respective inter-sectoral linkages.

Table 12 shows that electricity-gas, transport, public administration, health and construction services create greater backward linkages in comparison with other services. In fact, for a unit increase in the output of electricity, gas, transport, public administration and health, additional demand-creation for output of other sectors ranges between 30% to 43%. Housing, construction and banking-insurance services spur demand for other sector's output to the tune of 15 to 20% for a unit increase in their own output. Backward linkages, thus represent the capacity of the corresponding services to generate demand for goods and services in other sectors following an increase in their own output. Therefore, on the basis of backward linkages of services, it is clear that investment in electricity-gas, transport, construction, banking-insurance, health and public administration would have the most expansionary effects on the economy.

On the other hand trade, electricity-gas, banking-insurance and transport services accounted for 100%, 80%, 53% and 20%, respectively as inputs in the production of other sectors' output. Forward linkages, thus, reflect the importance of the corresponding services as inputs for output of other sectors of the economy. The importance of services as inputs for other sector's output implies that not only is their availability essential for production to continue in other sectors of the economy but a cheap and better supply of services will substantially reduce the costs of production of the goods in which they are used as inputs.

Forward linkages, therefore, represent the 'producer role' of services, and we can see the paramount importance of trade, electricity-gas, banking-insurance and transport services in this respect.

Total direct linkages are obtained by adding the backward and forward linkages together, and represent the capacity of the corresponding services to induce and to be induced in respect of production-activity. Total linkages on the other hand represent both direct and indirect capacity of the services to spur economic activity throughout the economy, following an increase in their own demand. On the basis of total direct and total direct-indirect linkages, we can also see the dominant role of electricity-gas, banking-insurance and transport services in the economy of Bangladesh. Services, therefore, represent both challenges and opportunities for the policy-makers. The challenge is to find the way to make the services available in the country at cheaper prices whereas the opportunity lies in the capacity of the services to induce economic activity in the economy both as supplier and receiver of inputs.

We need now to consider two shortcomings of the input-output exercise presented above. First, the input-output flow of goods and services relates to a particular year and second, the year for which the input-output table is available is not a recent year. In order to circumvent these shortcomings, we have carried out regression analysis.

(B) Estimating Linkages of Services by Regression Analysis

The table showing the contribution of agriculture, industry and services in GDP forms the basis of our regression analysis. The nature of the regression exercise undertaken is that the absolute contribution of each sub-sector of services to GDP is regressed on the absolute contribution of agriculture and industry in GDP, at constant 1984-85 prices, for the period between 1984-85 to 1997-98 (Table 3). We have tried with both linear and log-linear forms of regression equation:

$$(i) \quad S = \alpha_0 + \alpha_1 \text{ Ag.} + \alpha_2 \text{ Ind.}$$

$$(ii) \quad \text{Log } S = \mu_0 + \mu_1 \text{ Log Ag.} + \mu_2 \text{ Log Ind.}$$

where,

S = contribution of each sub-sector of services in GDP

α_0, μ_0 = intercept

Ag. = contribution of Agriculture in GDP

Ind. = contribution of Industry in GDP

α_1, μ_1 = regression coefficient of Agriculture in equations (i) and (ii), respectively;

α_2, μ_2 = regression coefficient of Industry in equations (i) and (ii), respectively.

The results of the regression exercise are presented in Tables 13-14. The results in both tables are similar. The estimated coefficients, particularly for the industrial sector, are statistically significant in most of the regression equations. The explanatory power of the estimated regression equations given by R^2 is very high. Durbin-Watson (D-W) test in the case of simple regression either indicates absence of serial auto-correlation or is inconclusive about its presence. In the case of log-linear regression, of course, auto-correlation problem seems to exist. But our purpose, here, is the identification of linkages instead of making precise prediction. So serial auto-correlation of the 'disturbance' term does not pose a serious problem. However, in terms of the number of statistically significant coefficients, value of R^2 and value of the Durbin-Watson statistic, the simple linear regressions seem to give a better 'line of best-fit' to the data than the log-linear regression. However, both types of regression results confirm that strong linkages do exist between services and other commodity producing sectors.

The interpretation of the regression coefficients is simple. For example, in equation (1) of Table 13, if agricultural production increases by one Taka, it will require aggregate service input to the extent of 0.69 Taka. In equation (2) of Table 14, if industrial production increases by one Taka, additional construction service will be required to the extent of .42 Taka. We can interpret the other regression equations also in the same manner.

The log-linear regression equation fitted to the data above is the log transformation of the Cobb-Douglas function⁹. Hence, μ_1 and μ_2 denote the input-elasticities and the sum $(\mu_1 + \mu_2)$ gives changes in the

⁹ The log-linear equation $\text{Log } S = \mu_0 + \mu_1 \text{ Log Ag.} + \mu_2 \text{ Log Ind.}$ (fitted to the data) is the log - transformation of the equation $S = A \cdot \text{Ag}^{\mu_1} \cdot \text{Ind}^{\mu_2}$ which is similar to the Cobb-Douglas production function $Q = AK \alpha L\beta$.

output of services following changes in inputs (output of agriculture and industry). The computed values have been presented along with the regression results (Table 14). It may be observed that in all of the cases except for trading and housing services, the sum of the input-elasticities is greater than one. The implication of the finding is that if agricultural and industrial production increases by one percent, services would be increasing by more than one percent.

Both the input-output and the regression exercises confirm that services have been using inputs from the commodity producing sectors (agriculture, industry) and also are being used, themselves, as intermediate inputs in agricultural and industrial production. Of course, intra-service use of services as inputs is also significant.

Section III

Role of Services in the Ready-made Garments (RMG) Industry of Bangladesh

Starting in late 1970s as a small non-traditional sector of export, the Ready-made Garment (RMG) industry has emerged as the largest foreign exchange-earner for Bangladesh. In 1997-98, Bangladesh's total exports were 5161.2 million U.S. dollars. The RMG share was 55% of total exports and 61% of total manufacturing exports from Bangladesh. Out of this total RMG-exports, 43% went to countries belonging to the European Union (EU) and 40% went to the United States and Canada¹⁰. Currently, Bangladesh enjoys preferential access in these markets. The removal of Multi-Fiber Agreement (MFA) quotas in the year 2004 under the Uruguay Round Agreement on Textiles and Clothing (ATC) will result in Bangladesh's losing its preferential access in the EU and American markets¹¹. Consequently, Bangladesh will be compelled to compete with other low-cost RMG-exporting countries of Asia and elsewhere. So the continuation of Bangladesh's present success in RMG exports will depend on her ability to reduce costs and improve the quality of output. In the preceding sections, we have seen the crucial role of services in manufacturing production. In this section we examine the role of services in the RMG industry, particularly.

10 Government of Bangladesh, Export Promotion Bureau (EPB), *Export From Bangladesh (1972-73-97-98)*, p.1

11 The World Bank and the Asian Development Bank, *Bangladesh : Economic Trends and Policy Agenda*, May 1998, p.17

The RMG manufacturers are scattered all over Bangladesh. But those who manufacture RMG for exports only are mainly located in Dhaka and Chittagong. There are about 2,600 RMG manufacturers registered with the Bangladesh Garment Manufacturers' and Exporters' Association (BGMEA). Time and other constraints did not permit us to contact more than 100 RMG manufacturers. But because of general aversion to disclose business information to outsiders, we were able to collect information only from 83 RMG manufacturers. Again, information from some RMG manufacturers was not comprehensive. So we finally settled for 74 RMG manufacturing units to carry out our analysis. Out of these 74 RMG manufacturing firms, 36 are located in Dhaka and 38 in Chittagong. Of the 38 RMG manufacturing units selected from Chittagong, 8 are located in the Chittagong Export Processing Zone (CEPZ) and the rest are situated in the city and its surrounding areas. Of the 74 firms under study, 50 belong to an 'average group' employing up to 300 people, 15 belong to a 'medium group' employing more than 300 but less than 1,000 people and 9 belong to a 'large group' employing more than 1,000 people.¹²

We now proceed to investigate the type of services used by RMG manufacturing firms and their level of adoption, sources of supply and method of securing these services and, finally, estimate the extent of service use in RMG manufacturing and exporting activity.

(A) Type of services used in RMG Manufacturing & Exporting:

Accordingly, we first describe below different services used in RMG production (Table 15) along with their level of adoption and sources of procurement:

12 The classification of firms as 'average', 'medium' and 'large' is arbitrary. The CMI in Bangladesh follows the tradition of classifying all manufacturing establishment with 50+ workers as a large-scale manufacturing firm. But we know that the RMG industry in Bangladesh is a labor-intensive manufacturing activity. So we computed the average employment per unit, which has been found to be about 300 workers (in our sample). We, therefore, placed all firms, employing 300 or less people, in the 'average' group. For all the above-average firms, again a 'mean' value has been computed. The firms employing workers equal to this 'mean' number or below, have been placed in the 'medium group'. The firms employing workers more than this 'mean' number have been ranked as the 'large group'. On the basis of such calculations and some subjective consideration (for example, rounding of the figure) we classified the firms in various groups.

Production Planning, Input procurement, Management and Accounting

After receiving orders from the customers, the RMG manufacturing firms carry out production planning. All firms (100%) perform production planning without any formal outside help. On the other hand, input procurement is carried out in almost 87% of the cases (64 out of 74) by the firms themselves if and when they are the direct suppliers to the foreign buyers. In 13% of the cases foreign buyers supply inputs to the RMG manufacturing firms. But RMG manufacturing firms that supply to the domestic RMG firms (for export) receive inputs from the latter in 100% of the cases. That is, in such cases, input procurement is done 100% outside the firm.

Management control and accounting are performed by almost all of the firms, and these are carried out internally except in the case of a few large and joint-venture firms where the services of external audit firms are used. Quality control is performed by all the firms, and it is done mostly internally (82%).

Banking and Insurance Service

Almost all firms (98%) turn to banks for working capital against their sales orders from abroad and about 57% (42 out of 74) borrowed from banks to purchase their machines and equipment as well. Bank loans are used invariably by all firms to buy inputs and to meet a certain percentage of running expenditure, except for a couple of partially (joint-venture) and fully foreign-owned firms. All firms use banking services in varying degree.

All firms have their machines and plants insured and, additionally, all input-importers (87%) and 15% of the exporters get their imports/exports also insured.

Shipping Service and Shipping Agent & Port-use

Shipping service is widely used by RMG manufacturers. Shipping service is required for procuring inputs and exporting outputs. Sometimes air-freight service is also used. RMG manufacturers have to hire services of Clearing & Forwarding Agents for clearing inputs from the port/custom and loading the finished goods onto ships for export. Port-charge is a normal expenditure by all RMG manufacturers for using the port-facilities for the purpose of import and export.

Transport and Communication

Within the country, to get the imported inputs from the ports to the plant-premise and to carry the finished goods to the ports, wheel transportation and rail transportation are the chief transport modes. Services are also widely used by RMG manufacturing and exporting firms for moving cargo. Wheel transport service is procured by almost all firms (about 98%) from independent transport companies and, only in a few cases, from sister companies (belonging to the same parent organization). Railway service is used by 68% (50 out of 74) of the firms. Of course, when a particular firm operates as a subcontractor to the exporting firm, the service-charges for wheel transport/railway transport are paid by the latter.

All RMG manufacturing firms use telephone, telex, fax and courier service extensively. All firms own telephones, and about 62% (45 out of 74) firms own telex/fax machines. Several firms (about 10%) use the Internet also. Of course, for maintenance of their communication equipment, all firms use external service.

Electricity

All firms use electricity supplied by the Government-owned Power Development Board (PDB). Disruption in power supply hampers production in the RMG manufacturing firms. To overcome such disruptions, about 70% firms (50 out of 74) own and use small power generators.

Legal Service

About 85% of the firms (61 out of 74) use legal service from professional legal consultants. Most medium and large firms have one or more legal consultants employed on a permanent basis and hire others (both local and foreign as per requirement) to look after the legal matters concerning the firms.

Sales and Distribution

Marketing services, in the form of securing orders for output, are performed by the firms themselves except for those who work as subcontractors to the exporting firm.

In Bangladesh, RMG manufacturers who export to foreign countries do not normally take the service of electronic or print media to advertise their products. They do, however, organize and participate in trade fairs to display their products to and secure orders from foreign distributors. Almost all firms (99% per cent) get their products distributed in foreign markets by foreign distributors. Only one joint-venture firm in the sample was found to secure distribution of its product by its foreign-owner.

Security, Cleaning and Housing Services

All firms have their own security and cleaning staffs to maintain security and tidiness of their plant-premises. The plant-premises are secured on a rental basis in 95% cases (62 out of 66 firms located outside export processing zone).

Data Processing and of Photocopy

About 25% of the firms (18 out of 74) own one or more than one computer. Data processing is carried out internally in all the firms with computers or without computers. Maintenance service for computers is, of course, secured from outside, normally, the computer- supplier. About 30% of the firms (23 out of 74) own a photocopy machine, although all firms use photocopy service in variable amount.

Special Services

RMG manufacturing firms use some special services that they get by dint of their membership in some association or location in a certain area of the country. For example, the BGMEA lobbies on behalf of all members, with national and foreign governments and international organizations to facilitate and promote RMG trade. It organizes trade fairs for display of wares produced by the members, arranges for participation of members in international trade fairs, provides the members with various relevant information, gives them legal and other aid/assistance and so on. Again, the RMG manufacturing firms located in export processing zones enjoy certain privileges and facilities which are not available to firms located in other areas. For example, RMG manufacturing firms located in the Chittagong Export Processing zone enjoy the privilege of getting their cargo containers cleared (by the custom) right at their own plant-premise instead of at port-sheds. This enables the firms to avoid losses incurred through pilferage of their wares (imported/intended for export) during clearance at the port sheds. Again, the firms located in the export processing-zone secure the

connection to some services such as telephone, electricity, water, etc. almost instantly whereas in other areas of the country it takes months/years for getting connection for these essential services. Of course, firms have to pay for such special services in terms of their membership subscription to the association or in terms of higher rent for their plant premises.

(B) Supply of Services

We have seen that services are widely used in RMG manufacturing and exporting activities. Now we turn to examine the sources of supply of these services:

Own Supply

Securing orders from buyers, planning production, managing the implementation phase and controlling the accounts are all indispensable services to carry out production activity. Hence these services are internalized, i.e., supplied by the RMG manufacturing and exporting firm internally. Security, cleaning, legal service, data processing, etc. may be internally supplied or obtained entirely from outside or may be supplied partly internally and partly externally (from supplier outside the firm). The firms decide on the sources of securing these services according to convenience and cost effectiveness and, in this respect, no systematic variation has been observed among the firms irrespective of their size and location.

External Supply

On the other hand, services like shipping, transport, communication, banking-insurance, etc. are supplied entirely from outside the RMG manufacturing and exporting firms. Again, these services are supplied by private firms and/or government-owned institutions. While wheel transportation is entirely supplied by private suppliers, railway service is a government monopoly. Within the country, airfreight is also a government monopoly. In telecommunication service, government is the dominant supplier. Private telephone service, on a limited scale, is a recent introduction. In banking and insurance also, government is the major supplier. Apart from the poor quality, the government-supplied services are also known for their comparatively high costs.

Government Supply

Other than the services that government-owned organizations supply in parallel with the private-suppliers, there are some services for which government is the sole supplier. These services are electricity, water supply, satellite communication, port-service, rail transport, international shipping service (by national carrier) and so on. Government monopoly in the supply of these services more often leads to high costs and low quality of the services supplied.

Imported Services

There are some services that are partially or fully imported by the RMG manufacturing and exporting firms. The Bangladesh-made RMG are distributed and sold in foreign markets entirely by foreign business firms. Foreign shipping services are imported to the extent these are used for importing inputs, machines and exporting the finished goods produced by the RMG manufacturing firms. Banking and insurance services are imported to the extent that RMG manufacturing firms use such services supplied by the foreign-owned banks and insurance companies. Legal services also are imported to the extent that Bangladeshi RMG manufacturing firms use such services supplied by foreign nationals/legal consulting firms.

Supply of Special Services

Special services are supplied by specialized institutions. For example, the BGMEA has been established for providing services to its members. On the other hand, special services provided by the export-processing zones can be enjoyed by only those firms that are located in such special economic zones. So far such services have been provided by the government owned export-processing zone only. From now on, such services may be obtained from private export processing zones also. Since a foreign-owned export processing zone (Korean Export Processing Zone, for example) has already started its operation in Bangladesh, it means that special services, provided by the export processing zones, may now be imported too.

(C) Estimate of Service use in RMG Manufacturing and Exporting Firms

We have seen that services are widely used by RMG manufacturing and exporting firms in Bangladesh. Here we intend to estimate the extent of such service-use in RMG manufacturing and exporting activity. Our survey of RMG manufacturing and exporting firms gives us information on the yearly output, raw material use and the use of different services for 74 firms. These are reported in Table 16. For estimating total

service use, expenditure on transport, shipping, shipping agent and port charge, electricity, security and cleaning, rent for the plant premise, legal service, telephone telex/fax charges, photo copy, participation in trade fairs, travelling-entertainment, repair and maintenance, bank and insurance fee, association fee were recorded separately. It has been observed that the firms located in the Chittagong Zone spent relatively less on transport use than those located in the Dhaka Zone. Again, it also has been found that medium and large firms consistently spent more on travelling, entertainment and participation in trade fairs. No distinct variation in service-use between the RMG manufacturing and exporting firms located in export-processing zones (EPZ) and those located in ordinary places was found. The reason may be that services supplied to the EPZ and those supplied to other area of the country vary in quality only (prompt and regular supply), not in costs. The difference was expected, to be reflected by the differences in rent paid (for plant-premise) by the firms located in EPZ and those located in other areas of the country. But all the firms located in EPZ owned their plant premises. So the rent was imputed (and hence, subjective) rather than actual costs. In any case, we were able to calculate the total expenditure on different services incurred by the RMG manufacturing and exporting firms in our sample survey. And the ratio of services to total output has been calculated to be .253 (from Table 16). This means that the contribution of services in total RMG production is around 25%.

Since our sample size for the above exercise was small, we tried to supplement our finding on the contribution of services in RMG production by an estimation using data from published sources. We used data from the Census of Manufacturing Industries (CMI) 1989-90, the Input-Output Table of the Bangladesh Economy for 1976/77, the Input-Output Table of the Bangladesh Economy for 1986/87, and also various publications of the Bangladesh Bureau of Statistics (BBS) in order to obtain a separate estimate.

The CMI data were available for the year 1989-90 (published in 1994). The information on more than 700 RMG manufacturing and exporting firms has been reported. But data on service use by the RMG manufacturing and exporting firms are not available directly. For example, CMI reports expenditures on advertising, banking and insurance, legal and accounting services, consultative service, telephone, postage, etc. under the heading of 'Non-industrial Costs'. Electricity costs have been reported under the heading of 'Industrial Costs' along with raw material costs. Costs of repair and maintenance have been reported separately. On the other hand, shipping costs and transport costs have not been reported anywhere. So we

had to estimate transport and shipping service inputs going into RMG manufacturing. CMI reported 'raw material costs' which included transport and shipping costs. Since almost the entire supply of raw materials came from imports, both shipping costs and transport costs were involved. From the values for total imports and total transport services going into imports, reported in the Input-Output Table 1986/87, we have computed the input-coefficient for transport services going into imports and it has been found to be .09. Again, the ratio of freight and insurance costs to total imports (f.o.b) has been computed for the last eight years (1989-90 to 1996-97) and it has been found that for most of the years, the value for this ratio has been 0.11. We have used this value as the input-coefficient for shipping services going into imports. Now using the input-coefficients for transport and shipping service going into import along with the value of raw materials reported in CMI, we have estimated the transport service and shipping service used in the RMG manufacturing. These estimates along with other components of service-use are reported in Table 17, which, in turn, enabled us to compute the contribution of services in RMG manufacturing. The contribution of services to RMG manufacturing has been calculated to be 21%. On the basis of this exercise along with the findings from our sample survey, it may be concluded with some degree of certainty that the contribution of services in RMG manufacturing ranges between 20-25 per cent. But what is even more important is that this contribution can be made to exceed 30 per cent or so of the RMG manufacturing and exporting activity. This point will be dealt on more elaborately in the following section.

Section IV

Current and Potential International Trade in Services for Bangladesh

We have seen that services play an important role in the agricultural and industrial production of Bangladesh. Services make strong direct and indirect contribution to the production of goods as well as services. We have further seen that the contribution of services to the largest foreign-exchange earning industry, the RMG manufacturing, is also substantial. We have seen that these services are procured from both domestic and external sources. It is well recognized that a prompt, adequate and better supply of services can

increase national productivity significantly. Where the supply of services falls short of total demand, import is the alternative left open.

(A) Current Service Trade

Table 18 shows that currently Bangladesh incurs the largest amount of foreign exchange for importing shipping services. It accounted for roughly 12% of the total commodity-imports and 37% of the trade-deficit in 1996-97. Travelling abroad by the nationals of Bangladesh is the second largest service-import (Table 19). The presence of a good number of foreign banks in Bangladesh and import of insurance services for almost all commodity imports in Bangladesh make the banking and insurance services the third largest import of services in Bangladesh.

Regarding the export of services from Bangladesh, it may be seen from Table 18 that manpower export is the largest service export from Bangladesh---second only to RMG exports. In fact, even in the early 1990s, manpower export earned Bangladesh the largest amount of foreign-currency. Today, the remittances by Bangladeshi skilled- and unskilled-workers working abroad provide for 27 per cent of the total commodity-imports of Bangladesh and cover 90% of the trade-deficit of the country.

(B) Development of Services and Potential Service Export/Import

We have seen that shipping service is not only the largest service import by Bangladesh, almost our entire exports, particularly RMG exports, go abroad by foreign vessels. Hence development and expansion of shipping service should be a natural choice. It will be import-saving, on the one hand, and export-augmenting, on the other. We have seen that shipping service accounts for more than one-third of the total service-use in RMG manufacturing. This, of course, does not include the shipping services used in RMG export. Since RMG is our largest foreign-exchange earner, and if we can export RMG by using our own shipping services, it means that we shall be exporting a huge amount of shipping services as well. It is only needless to mention that in such a prospective case, the contribution of services will go up further in total RMG manufacturing and exporting activity.

Related to shipping service are the dockyard/ship repairing services and port facilities. Even if the development and expansion of these services require foreign direct investment (FDI) and hence involve import of services initially, it will be profitable in the long run. For, these services hold a great prospect for export. Particularly, the port services can be exported to the northeastern region of neighboring India by way of re-exporting to this region commodities imported through the ports of Bangladesh.

In the same fashion, Bangladesh may export transport services also to India. Movement of goods between northeastern and western India through Bangladesh territory is cheaper than that through alternative Indian route. For such trade, India and Bangladesh, of course, need not sign a formal transit/transshipment agreement, which has recently created a very bitter political controversy in Bangladesh. Bangladeshi business firms (Bangladesh-India Joint venture firm as well) may import the relevant goods in normal way and re-export them to the Indian businessman on the Eastern or Western border of Bangladesh as the demand for the goods requires. All Bangladesh and India need to do is to sign a trade-protocol agreeing not to impose tariff on such movement of goods between the two countries. In this way Bangladesh can sell (export) transport services to India and India can have its own output cheaply transported between her Eastern and Western regions.¹³

We have seen that Bangladesh imports huge amount of tour/travel services for her nationals. To offset such imports, Bangladesh can only develop and export its own travel services. As a part of development of tour/travel service, Bangladesh currently allows foreign companies to set up five-star hotels in Bangladesh. Besides this, Bangladesh should also allow FDI in tourist resort development in Bangladesh. Particularly an International Convention Center may be set up in Chittagong/Cox's Bazar to host international/regional conferences and conventions. This will raise the tourism prospect of these two places.

Currently, many people go abroad for medical treatment (see Table 19). Bangladesh may encourage foreign investors to set up hospitals with most modern equipment. This will reduce the flow of Bangladeshi nationals going abroad for medical treatment.

¹³ A K. Azad, 'Transit/Transshipment Agreement: An Economic Alternative to a Political Controversy.' Paper presented at a seminar organized by the Dept. of Economics, University of Chittagong, Bangladesh, on October 7, 1999.

Bangladesh earns a substantial amount of foreign exchange by exporting labor services abroad. A striking degree of complementarity between the petroleum exporting countries of West Asia and the developing countries of South Asia/North Africa has enabled Bangladesh to export both skilled and unskilled labor. Given Bangladesh's abundant labor supply, in order to expand further the export of labor services, Bangladesh should arrange for training of its labor force according to current and expected future development of labor service-demand abroad.

But export of labor services involves cross-border movement of labor. Recently, there has been a significant increase in the barriers to cross-border movement of such labor, seriously threatening this mode of service-export. So Bangladesh should try to export its labor services by selling data entry, data processing, accounting and monitoring services abroad through electronic media. This again will require development of easy, cheap and improved telecommunication services. Since the development of communication service requires huge investment and sophisticated technology, Bangladesh should try to attract foreign investors to invest in telecommunication infrastructure¹⁴. Finally, power service's (electricity-gas) irregular, interrupted, inadequate and costly supply is the cause of millions of man-hour losses in Bangladesh. High costs of power supply raises production cost. So the importation of electricity-gas service should get top priority in the import list of services. It may be remembered, here, that electricity-gas and communication are the services that have been found to be in short supply and have experienced higher than average price-inflation in the past. Again, importation of these services requires FDI also.

With this we conclude our discussions of the current and potential international trade in services for Bangladesh. The summary of the findings of the study and conclusions follow.

Section V

Summary of Findings and Conclusions

¹⁴ The World Bank's Country Report also recognizes the large investment and fast moving technology involved with the development of communication services and stresses the need for partnership between Bangladesh and transitional companies (TNC s). The World Bank, Op. cit. p.16.

(A) Summary of the Findings

The purpose of the present study has been to assess the direct and indirect contribution made by services in the economy of a developing country like Bangladesh. With this aim in view, we tried to estimate the direct and indirect linkages of services in the economy of Bangladesh. Since, the RMG industry presently earns Bangladesh the largest amount of foreign exchange and is considered to be the leading 'growth industry' of Bangladesh, we made a particular attempt to assess the contribution of services in RMG manufacturing and exporting activity. These exercises, together with an examination of the current international service trade of Bangladesh, made it possible to outline the future development and potential international trade of services in Bangladesh. The findings of the study may be summarized as follows:

It has been found that the service sector contributed most to the growth of GDP in Bangladesh. The share of the service sector rose from 39% of GDP in 1976/77 to 62% in 1997-98. Within the service sector, professional and miscellaneous services made the largest contribution followed by transport-storage-communication services, housing services and so on. On the other hand, services like power-gas-water-sanitation, public administration, professional and miscellaneous services recorded relatively high growth rates. Yet higher than average price-inflation in these as well as housing and banking-insurance services indicated a relatively large shortfall in their supply.

It has been found that services are used widely as inputs in commodity and service production. In industrial production, service-contents are the largest per unit of output. This, in turn, implies that increased industrial production will not only require an increased supply of inputs, but a cheaper and better supply of services will help to reduce per unit costs of production. It has also been found that, in the industrial sector, trade, electricity-gas and transport are the major services used.

It has been further observed that service production itself requires services as inputs and, in fact, the service sector is the largest user of services as inputs in the Bangladesh economy. It has been found that housing, electricity-gas, public administration, banking and insurance services are the big user of services per unit of output. Moreover, the larger share of most of the services has been found to meet final demand (as

private and public consumption) and service sector as whole is the second largest employer after agriculture. It provides employment to more than a quarter of the total employed labor force in Bangladesh.

The examination of inter-industry linkages of services has revealed that while electricity-gas, transport-communication and public administration create greater backward linkages, trade and banking-insurance create larger forward linkages. On the basis of total direct linkages, electricity-gas, trade and banking-insurance dominate all other services. Again, on the basis of total direct and indirect linkages, banking-insurance, electricity-gas and transport services rank higher than other services. This means that an increase in final demand for one unit of output of these services will bring forth a greater increase in total output of the economy compared to other services. Regression analysis also confirms strong inter-industry linkages of services with the commodity producing sectors (agriculture, industry) of the economy. It has also been found that if agricultural and industrial production increases by one per cent, services will be increasing by more than one per cent.

The study of the role of services in RMG industry has revealed that production-planning, input-procurement, management-accounting, banking and insurance, shipping service, port service, transport and communication service, electricity, legal counseling, sales and distribution, security, cleaning, housing service, data processing, photocopying and some special service are widely used in RMG manufacturing firms. Some of these services are internally procured, some are procured partly from internal sources and partly from outside suppliers, and some services are entirely procured from outside suppliers. The outside supplies of services, again, may come from domestic private suppliers or national government or may be imported from abroad.

It has been further found that shipping services and sales and distribution services are almost entirely imported from abroad by the RMG manufacturing industry as a whole.

The estimate of service use in RMG manufacturing industry has revealed that the RMG manufacturing firms located in the Chittagong Zone have to incur relatively less in terms of transport costs than those located

in the Dhaka Zone. It was also found that medium and large firms consistently spent more on travelling, entertainment and participation in trade fairs. No distinct variation was, however, found between RMG manufacturing firms located in the export processing zones and those located in ordinary places, in respect of service-use.

Calculations based on sample data and CMI data showed that the contribution of services in total RMG production ranges between 20-25 per cent.

As for trade in services, it has been found that shipping service is the largest service imported by Bangladesh. It accounted for roughly 12% of total commodity-imports and 37% of the trade-deficit in 1996-97. Travelling is the second largest import of services followed by banking and insurance service. On the other hand, labor service is the largest service export from Bangladesh. Earnings from export of labor service paid for 28% of total commodity imports and covered 90% of the trade-deficit in 1996-97.

As for the future development of services and services trade, it has been suggested that shipping services should be developed on a priority-basis. Because it will, on the one hand, save our imports and, on the other hand, create prospect of exporting shipping services by incorporating it in our RMG exports, i.e., by exporting the output of RMG industry, using our own shipping services.

Dockyard/ship repairing and harbor services have been pointed out for development with the potential for export to the northeastern region of neighboring India. It has been argued that Bangladesh may sell transport services also to India in the same fashion, and that Bangladesh and India do not need any formal transit/transshipment agreement signed between them in order to engage in such trade.

It is suggested that Bangladesh should allow foreign investors to set up tourist resorts and hospitals with modern equipment in different parts of the country. It has been particularly suggested that a convention center may be set up in Chittagong/Cox's Bazar in order to host international conferences and conventions.

To expand the current export of labor services, it has been suggested that Bangladesh should institute training programs for appropriate skill-development. But to sell data entry, data processing, accounting and monitoring services through electronic media, Bangladesh may need to import improved and modern communication services. Electricity-gas and communication sectors have been found to experience a large shortfall in supply. Importation of these services has been suggested as an alternative to make up for the shortfall in supply.

Lastly, it was noted that the importation of communication, power services and the development of health and tourists services, would require FDI.

(B) Concluding Remarks

The present study has demonstrated that services make important direct and indirect contributions to the economy by supplying and receiving inputs, providing employment, earning foreign exchange and meeting final demand as private and government consumption.

The study of the role of services in a least developed country like Bangladesh has revealed that the growth of services is not necessarily a 'post-industrial' phenomenon. Growth in the service sector may occur even before full-scale industrialization is in place.

The strong interdependence between industry and services, revealed by the assessment of inter-industry linkages, implies that the lack of growth of services, particularly producer services, may prove to be a bottleneck to the growth of the industrial sector.

The 'bottleneck' caused by the shortage in domestic supply of services may, of course, be relaxed by increasing the supply of services through imports. But, unlike commodities, import of services to meet domestic demand may require FDI in some cases.

The constraints to growth of the domestic economy may be eased by importation of services that, in turn, may require FDI. The importance of services for a developing country like Bangladesh highlights the significance of the prospective WTO services negotiations. These negotiations should stress the need for granting greater access into the developed countries of services in which the developing countries, like Bangladesh, have a comparative advantage.

National strategy for future development of services should recognize the inter-industry linkages of services. A country will benefit more from the development of services having strong and substantial inter-linkages with the industries that are nationally important and/or internationally competitive. Again, the development of services having significant backward linkages with industries, will expedite the process of industrialization itself.

On the whole, the development of services should be viewed neither as an alternative nor as an appendage but as complementary to industrial development. Hence, services deserve great care and attention in their own right.

Table 1
Sectoral Percentage Shares in the Bangladesh Economy

| Sectors | 1973/74 | 1976/76 | 1984/85 | 1986/87 | 1997/98 |
|-------------|---------|---------|---------|---------|---------|
| Agriculture | 51.0 | 46.0 | 42.0 | 41.0 | 29.0 |
| Industry | 10.0 | 10.0 | 10.0 | 8.0 | 9.0 |
| Services | 39.0 | 44.0 | 48.0 | 51.0 | 62.0 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Based on nominal values and calculated from *Bangladesh Economic Survey 1998, Min. of Finance,*

Govt. of Bangladesh (GOB).

Table 2
Sectoral Percentage shares of Services in the Bangladesh Economy

| | | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | 1990-91 | 1991-92 | 1992-93 | 1993-94 | 1994-1995 | 1995-1996 | 1996-1997 | 1997-1998 (Provisional) |
|--|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|-----------|-----------|----------------------------|
| All Services (billion Taka; current price) | | 197 | 234 | 271 | 314 | 359 | 402 | 460 | 512 | 567 | 619 | 696 | 787 | 860 | 950 |
| | Construction | 11.6 | 11.1 | 10.7 | 10.8 | 10.9 | 10.7 | 10.2 | 10.5 | 10.0 | 9.7 | 9.9 | 9.8 | 9.6 | 9.7 (92) |
| | PGWS | 1.9 | 1.3 | 1.1 | 1.6 | 1.9 | 2.2 | 2.4 | 2.7 | 3.1 | 3.2 | 3.4 | 3.6 | 3.5 | 3.5 (33) |
| | TSC | 23.2 | 23.5 | 22.9 | 21.0 | 20.1 | 18.7 | 21.3 | 21.3 | 21.7 | 20.8 | 19.9 | 18.9 | 18.7 | 18.2 (173) |
| | Trade | 19.7 | 17.5 | 17.0 | 15.9 | 15.3 | 15.4 | 14.8 | 14.4 | 13.7 | 13.9 | 14.5 | 14.8 | 14.6 | 14.3 (137) |
| | Housing | 16.2 | 15.8 | 15.1 | 15.9 | 16.7 | 16.4 | 16.1 | 15.4 | 15.3 | 15.7 | 15.5 | 15.9 | 15.6 | 15.4 (147) |
| | Pub. Ad & Def. | 6.5 | 7.3 | 7.7 | 7.9 | 8.1 | 8.2 | 8.2 | 8.5 | 8.6 | 8.8 | 8.9 | 9.0 | 9.3 | 9.7 (92) |
| | Banking & Insurance | 3.5 | 3.8 | 3.7 | 3.5 | 3.6 | 3.7 | 3.5 | 3.5 | 3.5 | 3.4 | 3.3 | 3.3 | 3.3 | 3.2 (30) |
| | Professional & Misc. | 17.6 | 19.7 | 21.8 | 23.2 | 23.4 | 24.6 | 23.5 | 23.6 | 24.0 | 24.5 | 24.5 | 24.6 | 25.3 | 26.0 (247) |
| | Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Bangladesh Economic Survey, 1995, 1998; Min. of Finance, GOB [Calculated; Figures may not add up to 100.0 because of rounding error;

Figures in the bracket give absolute contribution of services in billion Taka (current)].

Table 3
Contributions of Different Sectors of the Bangladesh Economy, 1984-85 to 1997-98
(1984-85 constant price; billion Taka)

| | | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | 1990-91 | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 Provisional |
|--------------|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------------------|
| Agriculture | | 170 | 176 | 178 | 175 | 173 | 190 | 193 | 198 | 201 | 202 | 200 | 207 | 220 | 227 |
| Industry | | 40 | 41 | 44 | 44 | 46 | 49 | 50 | 54 | 60 | 64 | 69 | 73 | 75 | 81 |
| All Services | | 197 | 208 | 221 | 236 | 248 | 259 | 272 | 284 | 299 | 318 | 341 | 362 | 385 | 410 |
| | Construction | 23 | 23 | 25 | 27 | 29 | 30 | 31 | 32 | 34 | 36 | 39 | 40 | 42 | 45 |
| | PGWS | 2 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 13 |
| | TSC | 46 | 47 | 52 | 54 | 56 | 59 | 61 | 63 | 66 | 70 | 74 | 78 | 83 | 89 |
| | Trade | 39 | 39 | 40 | 42 | 44 | 45 | 47 | 49 | 51 | 53 | 59 | 65 | 69 | 73 |
| | Housing | 32 | 33 | 35 | 36 | 37 | 38 | 39 | 41 | 42 | 44 | 45 | 47 | 49 | 51 |
| | Pub. Ad & Def. | 13 | 16 | 17 | 19 | 25 | 20 | 22 | 24 | 26 | 28 | 31 | 34 | 36 | 40 |
| | Banking & Insurance | 7 | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 11 | 11 | 11 | 12 | 12 |
| | Professional & Misc. | 35 | 38 | 40 | 45 | 47 | 51 | 54 | 57 | 62 | 66 | 70 | 75 | 80 | 86 |
| | Total | 407 | 425 | 443 | 455 | 467 | 498 | 514 | 536 | 560 | 584 | 610 | 642 | 680 | 718 |

Source: *Bangladesh Economic Survey, 1995,1998, Min. of Finance, GOB.*

Table 4
Results of Trend of Services

| Trend on time of : | Estimated (exponential) Model | Computed t- value | R2 | Compound Growth Rates (percent) |
|----------------------|-------------------------------|-------------------|-------|---------------------------------|
| All Services | $Y = 197 (1.055)^t$ | 105.24** | .999 | 5.5 |
| Construction | $Y = 23 (1.050)^t$ | 70.59** | 0.998 | 5.0 |
| PGWS | $Y = 2 (1.171)^t$ | 24.44** | 0.980 | 17.1 |
| TSC | $Y = 46 (1.048)^t$ | 72.29** | 0.998 | 4.8 |
| Trade | $Y = 39 (1.041)^t$ | 19.12** | 0.968 | 4.1 |
| Housing | $Y = 32 (1.035)^t$ | 106.82** | 0.999 | 3.5 |
| Pub. Adm. | $Y = 13 (1.089)^t$ | 24.42** | 0.980 | 8.9 |
| Banking & Ins. | $Y = 7 (1.047)^t$ | 13.84** | 0.941 | 4.7 |
| Professional & Misc. | $Y = 35 (1.070)^t$ | 108.17** | 0.999 | 7.0 |

Note: PGWS = Power-Gas-Water-Sanitation ; TSC = Transport -storage-communication; ** indicates significance at 99% level.

Table 5
Implicit GDP and Sectoral Deflators, 1984-85 to 1997-98

| Sectors | 1984/85 | 1994/95 | 1995/96 | 1996/97 | 1997/98 |
|-----------------------------|---------|---------|---------|---------|---------|
| Gross Domestic Product(GDP) | 100 | 191.9 | 202.6 | 206.3 | 214.6 |
| Agriculture | 100 | 180.8 | 188.3 | 186.7 | 195.7 |
| Industry | 100 | 163.0 | 170.8 | 173.1 | 178.1 |
| Services: | | | | | |
| Construction | 100 | 179.3 | 190.8 | 196.8 | 204.8 |
| PGWS | 100 | 208.5 | 229.8 | 239.3 | 245.6 |
| TSC | 100 | 187.4 | 190.3 | 194.3 | 195.4 |
| Trade | 100 | 171.4 | 182.0 | 181.7 | 188.1 |
| Housing | 100 | 235.1 | 263.9 | 275.5 | 287.6 |
| Pub. Adm. | 100 | 201.2 | 211.0 | 220.0 | 228.4 |
| Banking & Ins. | 100 | 208.5 | 229.8 | 239.3 | 244.9 |
| Prof. & Misc. | 100 | 243.3 | 258.9 | 270.9 | 287.7 |

Source: *Monthly Statistical Bulletin (August 1998), BBS*

Table 6
Use of Different Sector's Output in the Bangladesh Economy, 1976/77
(in percentage)

| | Agriculture | Industry | Services | Total Input Demand | Final Demand |
|-----------------------------|-----------------------|-----------------------|-----------------------|--------------------|--------------|
| Agriculture | 10.4 (.104367) | 11.4 (.193734) | 1.7 (.022837) | 23.5 | 76.5 |
| Industry | 7.1 (.041336) | 26.6 (.266525) | 28.8 (.228267) | 62.5 | 37.5 |
| Services | 12.2 (.090338) | 14.8 (.187001) | 6.6 (.065776) | 33.6 | 66.4 |
| Total Output (Million Taka) | 69592.30 (.236041) | 41001.67 (.647260) | 51753.52 (.316880) | | |

Note: Computed from the Input-output Table of Bangladesh Economy 1976-77. The values in the parentheses denote the input-coefficient.

Table 7
Use of Different Sector's Output in the Bangladesh, 1986/87
(In percentage)

| | Agriculture. | Industry | Services | Input Demand | Final Demand |
|--------------------------------|-----------------------|-----------------------|------------------------|--------------|--------------|
| Agriculture. | 13.1 (.130778) | 9.8 (.168360) | 0.7 (.004679) | 23.6 | 76.4 |
| Industry | 8.4 (.052613) | 36.6 (.366161) | 35.1 (.127386) | 80.1 | 19.9 |
| Services | 4.2 (.067325) | 6.0 (.164821) | 7.1 (.071511) | 17.3 | 82.6 |
| Total Output (Million Taka) | 326095.9 (.250714) | 189692.6 (.699344) | 522480.61 (.203577) | | |

Note: Computed from the Input-output Table of Bangladesh Economy 1986-77. The values in the parentheses denote the input-coefficient.

Table 8
Input - Output Flow Table 1986-87

(Million Taka)

| | Agriculture | Industry | construction | Electric & Gas | Trade | Transport | Housing | Health | Education | Public Adm. | Banking | Prof. & Misc. |
|----------------|-------------|----------|--------------|-------------------|----------|-----------|----------|----------|-----------|-------------|----------|---------------|
| Agriculture | 42645.65 | 31936.75 | 1345.51 | 0 | 146.6681 | 0 | 0 | 242.7308 | 0 | 657.9062 | 52.0215 | 0 |
| Industry | 17156.77 | 69458.0 | 41573.65 | 2461.555 | 1264.961 | 12887.19 | 88.7661 | 1673.943 | 241.6973 | 4506.882 | 769.3706 | 1088.696 |
| Construction | 919.9707 | 1107.38 | 0 | 64.1126 | 9.5476 | 1951.878 | 8749.523 | 20.4076 | 33.5371 | 248.7807 | 80.8388 | 108.0936 |
| Electric & Gas | 1005.535 | 3819.014 | 134.255 | 1168.795 | 169.3652 | 430.0248 | 0 | 40.4148 | 36.395 | 287.7642 | 36.9695 | 109.0098 |
| Trade | 13780.55 | 18332.62 | 0 | 0 | 0 | 127.7495 | 0 | 0 | 0 | 0 | 5.3749 | 31.7011 |
| Transport | 4172.445 | 4076.575 | 61.6662 | 40.7869 | 20.4432 | 1656.45 | 0 | 7.1233 | 13.8473 | 1020.594 | 124.8717 | 65.5789 |
| Housing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Health | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60.8105 | 0 |
| Education | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Public Adm. | 889.7885 | 485.483 | 3.2903 | 36.0593 | 65.1453 | 839.383 | 0 | 1.4977 | 24.7707 | 418.0357 | 146.778 | 165.9159 |
| Banking & Ins. | 301.8171 | 1445.85 | 0 | 7.1804 | 452.4598 | 516.5123 | 3204.796 | 0 | 0 | 0 | 0 | 152.2672 |
| Prof. & Misc. | 884.3627 | 1998.159 | 0 | 128.4851 | 68.692 | 118.1523 | 0 | 3.5846 | 0 | 920.1574 | 422.4494 | 202.8921 |

Source: Computed from the Augmented Input-Output Table of the Bangladesh Economy 1986-87, Planning Commission, GOB.

Table 9
Share of Employment by Sector in the Bangladesh Economy

| Sector | | Total Employment (million) | Percent of Employment in 1974 | Total Employment (million) | Percent of Employment in 1996 | Av. Annual Growth (percent) |
|-------------------|----------------------|-------------------------------|----------------------------------|-------------------------------|----------------------------------|-----------------------------|
| All Sector | | 21.4 | 100 | 56.0 | 100 | 4.5 |
| Agriculture | | 16.8 | 78.7 | 35.4 | 63.2 | 3.4 |
| Mining & Industry | | 1.0 | 4.8 | 5.3 | 9.5 | 7.8 |
| All Services | | 3.5 | 16.5 | 15.3 | 27.3 | 6.9 |
| | Construction | 0.04 | 0.2 | 0.5* | 1.0* | 18.2* |
| | EGWS | .008 | 0.04 | 0.04* | 0.1* | 10.6* |
| | TSC | 0.4 | 1.6 | 1.6* | 3.2* | 10.0* |
| | Trade | 0.8 | 3.9 | 4.3* | 8.5* | 10.7* |
| | Housing | | | 1.6* | 3.2* | |
| | Pub. Adm. & Def. | | | 0.9* | 1.7* | |
| | Banking & Insurance | 0.06 | 0.3 | 0.3* | 0.6* | 10.3* |
| | Professional & Misc. | 2.2 | 10.4 | 1.7* | 3.4* | 1.0* |

Source: *Statistical Yearbook of Bangladesh (various issues)*, BBS.. Note: * The latest employment figures for individual service sectors are available only for the year 1990.

Hence the sectoral shares and the annual growth rates refer to the year 1990 only.

Table 10
Input - Output Co-efficient Table 1986-87

[A]

| | Agriculture | Industry | Construction | Electric & Gas | Trade | Transport | Housing | Health | Education | Public Adm. | Banking & Ins. | Prof. & Misc. |
|----------------|-------------|----------|--------------|----------------|----------|-----------|----------|----------|-----------|-------------|----------------|---------------|
| Agriculture | 0.130777 | 0.16836 | 0.004916 | 0 | 0.004544 | 0 | 0 | 0.036448 | 0 | 0.026931 | 0.037593 | 0 |
| Industry | 0.052613 | 0.36986 | 0.151891 | 0.272063 | 0.03919 | 0.229969 | 0.001466 | 0.251357 | 0.015837 | 0.184489 | 0.555981 | 0.032868 |
| Construction | 0.002821 | 0.005838 | 0 | 0.007086 | 0.000296 | 0.034831 | 0.144497 | 0.003064 | 0.002198 | 0.010184 | 0.058418 | 0.003263 |
| Electric & Gas | 0.003084 | 0.020133 | 0.000491 | 0.129181 | 0.005247 | 0.007674 | 0 | 0.006069 | 0.002385 | 0.01178 | 0.026716 | 0.003291 |
| Trade | 0.042259 | 0.096644 | 0 | 0 | 0 | 0.00228 | 0 | 0 | 0 | 0 | 0.003884 | 0.000957 |
| Transport | 0.012795 | 0.02149 | 0.000225 | 0.004508 | 0.000633 | 0.029559 | 0 | 0.00107 | 0.000907 | 0.041778 | 0.090238 | 0.00198 |
| Housing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Health | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.043944 | 0 |
| Education | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Public Adm. | 0.002729 | 0.002559 | .000012 | 0.003985 | 0.002018 | 0.014979 | 0 | 0.000225 | 0.001623 | 0.017112 | 0.106068 | 0.005009 |
| Banking & Ins. | 0.000926 | 0.007622 | 0 | 0.000794 | 0.014018 | 0.009217 | 0.052927 | 0 | 0 | 0 | 0 | 0.004597 |
| Prof. & Misc. | 0.002712 | 0.010534 | 0 | 0.014201 | 0.002128 | 0.002108 | 0 | 0.000538 | 0 | 0.037667 | 0.305281 | 0.006125 |

Source: Computed from the Augmented Input-Output Table of Bangladesh Economy 1986-87, Planning Commission, (G.O.B).

Table 11

[1-A]-1

| | Agriculture | Industry | Construction | Electricity & Gas | Trade | Transport | Housing | Health | Education | Public Adm. | Banking & Ins. | Prof. & Misc. |
|----------------|-------------|-----------|--------------|-------------------|-----------|-----------|-----------|-----------|-----------|-------------|----------------|---------------|
| Agriculture | 1.173808 | 0.3275918 | 0.0555998 | 0.1041461 | 0.0226645 | 0.0845395 | 0.0222835 | 0.126048 | 0.005797 | 0.0995773 | 0.2601569 | 0.0132563 |
| Industry | 0.117386 | 1.681056 | 0.2562763 | 0.5331563 | 0.0855863 | 0.4277913 | 0.096828 | 0.4314161 | 0.0294117 | 0.3485055 | 1.0832404 | 0.065901 |
| Construction | 0.0049591 | 0.0137257 | 1.0021247 | 0.0128573 | 0.0020206 | 0.0402684 | 0.1487175 | 0.0068285 | 0.0025113 | 0.0151253 | 0.0735572 | 0.0042855 |
| Electric & Gas | 0.0075802 | 0.0421895 | 0.0070203 | 1.1619442 | 0.0087288 | 0.0204185 | 0.0043613 | 0.017984 | 0.0035108 | 0.023212 | 0.0620686 | 0.0057189 |
| Trade | 0.0610088 | 0.1764938 | 0.0271463 | 0.0560197 | 1.0093049 | 0.0473592 | 0.0105443 | 0.0470732 | 0.0030932 | 0.038069 | 0.1202231 | 0.0079255 |
| Transport | 0.0186348 | 0.043773 | 0.0069857 | 0.019568 | 0.004474 | 1.043298 | 0.0078348 | 0.0129525 | 0.0017888 | 0.053551 | 0.1277473 | 0.0044787 |
| Housing | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Health | 0.0001336 | 0.0007094 | 0.0001087 | 0.0002708 | 0.0006551 | 0.0006017 | 0.0023726 | 1.000186 | 1.295E-05 | 0.0001757 | 0.0445122 | 0.0002333 |
| Education | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Public Adm. | 0.0043622 | 0.0083573 | 0.0013111 | 0.0075941 | 0.0041114 | 0.0189687 | 0.0063934 | 0.0025627 | 0.0018265 | 1.0202403 | 0.1169864 | 0.0060305 |
| Banking & Ins. | 0.0030409 | 0.0161425 | 0.002473 | 0.0061623 | 0.0149064 | 0.0136916 | 0.0539917 | 0.0042317 | 0.0002947 | 0.0039982 | 1.0129226 | 0.0053092 |
| Prof. & Misc. | 0.005825 | 0.0250598 | 0.0038505 | 0.0248794 | 0.0079992 | 0.0122958 | 0.0180164 | 0.0072402 | 0.0005479 | 0.0443861 | 0.3291951 | 1.0088653 |

Table 12

Linkage Effect of Services and other Sectors of the Bangladesh Economy

| | Backward Linkages L_{Bj} | Forward Linkages L_{Fi} | Total Direct Linkages $L_B + L_F$ | Total Direct & Indirect Linkages L_{Ti} | Rank L_{Bj} | Rank L_{Fi} | Rank $L_B + L_F$ | Rank L_{Tj} |
|------------------------------|-------------------------------|------------------------------|--------------------------------------|--|------------------|------------------|---------------------|------------------|
| Agriculture | .251 | .236 | .487 | 1.396 | | | | |
| Industry | .705 | .811 | 1.514 | 2.321 | | | | |
| Construction | .158 | .049 | .207 | 1.361 | 5 | 7 | 7 | 7 |
| Electricity & Gas | .432 | .800 | 1.232 | 1.922 | 1 | 2 | 1 | 2 |
| Trade | .068 | 1.000 | 1.068 | 1.159 | 7 | 1 | 2 | 8 |
| Transport | .331 | .201 | .532 | 1.706 | 2 | 4 | 4 | 3 |
| Housing | .199 | 0 | .199 | 1.371 | 4 | 9 | 9 | 6 |
| Health | .299 | .009 | .308 | 1.653 | 3 | 8 | 6 | 4 |
| Education | .023 | 0 | .023 | 1.049 | 9 | 9 | 10 | 10 |
| Pub. Adm. | .330 | .126 | .456 | 1.644 | 2 | 6 | 5 | 5 |
| Banking & Insurance | .149 | .534 | .683 | 3.221 | 6 | 3 | 3 | 1 |
| Professional Service & Misc. | .058 | .143 | .201 | 1.121 | 8 | 5 | 8 | 9 |

Table 13
Regression Results (Simple linear form)

| Eq No. | Dependent variable | | Independent variables | R2 | D-W | Marginal Returns | Rank |
|--------|--------------------|---|---|------|------|------------------|------|
| 1 | Service | = | -08.84 + .69 Ag. +3.96 Ind (-1.27) (1.62) (7.26)** | .987 | 1.02 | 4.65 | |
| 2 | Construction | = | - 3.63 + .06 Ag. + .42 Ind. (-.48) (1.07) (5.59)** | .977 | .754 | .48 | 5 |
| 3 | PGWS | = | - 14.39 + .05 Ag + .21 Ind. (-2.87)* (1.32) (4.04)** | .966 | .921 | .26 | 7 |
| 4 | TSC | = | -10.23 + .17 Ag + .74 Ind. (-.86) (1.78) (6.20)** | .984 | .763 | .91 | 2 |
| 5 | Trade | = | -42 + .05 Ag + .75 Ind. (-.03) (.44) (5.38)** | .970 | .791 | .80 | 3 |
| 6 | Housing | = | 6.44 + .08 Ag + .33 Ind. (.75) (3.60)* (6.02)** | .983 | .937 | .41 | 6 |
| 7 | Pub. Adm. | = | .22 + .05 Ag + .63 Ind (.02) (.78) (4.54)** | .940 | 1.55 | .68 | 4 |
| 8 | Banking & Ins. | = | -1.25 - .05 Ag. + .03 Ind. (-.37) - (1.87) (.87) | .875 | 1.47 | .08 | 8 |
| 9 | Prof. & Misc. | = | - 35.2 + .22 Ag + .89 Ind. (-2.69)* (2.13)* (6.73)** | .987 | 1.04 | .111 | 1 |

Note: Figures in the brackets give t-values. *indicates that the co-efficient is statistically significant at 95% level and ** indicates that the the coefficient is significant at 99% level.

Table 14
Regression Results(Log-linear form)

| Eq No. | Dependent variable | Independent variables | R2 | D-W | Input-elasticity | Rank |
|--------|--------------------|--|------|-------|--------------------|------|
| 1 | Service | .51 + 1.35 Log Ag + .83 Log Ind. (.37) (.97) (6.19)** | .981 | .816 | .35 + .43= 1.18>1 | |
| 2 | Construction | -.80 + .19 Log Ag + .82 Log Ind. (-.49) (.44) (5.04)** | .968 | .637 | .19 + .82=1.01 >1 | 6 |
| 3 | PGWS | -14.44 +1.76 Log Ag + 1.76 Log Ind. (-1.71) (.80) (2.13)* | .895 | .628 | 1.76 + 1.76=3.52>1 | 1 |
| 4 | TSC | -.65 + .37 Log Ag + .71 Log Ind (-2.21) * (1.13) (5.68)** | .979 | .644 | .37 + .71=1.080>1 | 5 |
| 5 | Trade | -.15 + .16 Log Ag + .81 Log Ind. (-.10) (.39) (5.36)** | .971 | .905 | .16 + .81=.97<1 | 7 |
| 6 | Housing | .23 + .28 Log Ag + .50 Log Ind. (.28) (1.3) (6.20)* | .982 | .852 | .28 + .50=.78<1 | 8 |
| 7 | Pub. Adm. | .87 - .76 Log Ag + 1.57 Log Ind. (.21) - (.71) (3.87)** | .912 | 1.388 | .76 + 1.57=2.33>1 | 2 |
| 8 | Banking & Ins. | -3.43 + .94 Log Ag + .20 Log Ind. (-1.42) (1.49) (.82) | .841 | 1.427 | .94 + .20=1.14>1 | 4 |
| 9 | Prof. & Misc. | -2.93 + .60 Log Ag + .95 Log Ind. (-1.55) (1.22) (5.09)** | .975 | .660 | .60 + .95=1.55>1 | 3 |

Note: Figures in the brackets give t-values. * indicates that the co-efficient is statistically significant at 95% level and ** indicates that the coefficient is significant at 99% level.

Table 15

Use and Procurement-Source of Services in RMG Manufacturing Firms of Bangladesh

| Services | Degree of Adoption (Percent of the firms using the service) | Sources (Percent of total supply) | | | |
|---|--|--------------------------------------|---------|-------|--------|
| | | Internal | Private | Govt. | Import |
| Production Planning, Management, Accounting | 100.0 | 100.0 | | | |
| Input Procurement | 87.0 | 87.0 | 13.0 | | |
| Quality control | 100.0 | 82.0 | 18.0 | | |
| Banking: Financial Service (L/C etc.) | 100.0 | | 26.0 | 56.0 | 18.0 |
| Working Capital | 98.0 | 2.0 | 20 | 74.0 | 4.0 |
| Machines, Equipment | 57.0 | 43.0 | 15.0 | 42.0 | |
| Insurance: Imports (Inputs) | 87.0 | | | 17.0 | 83.0 |
| Machines, Plants | 100.0 | | | 100.0 | |
| Exports | 15.0 | | | 73.0 | 27.0 |
| Shipping | 87.0 | | | 14.0 | 86.0 |
| Shipping Agent | 87.0 | | 100.0 | | |
| Harbor Service | 87.0 | | | 100.0 | |
| Transport: Wheel transport | 100.0 | 2.0 | 98.0 | | |
| Railway Service | 68.0 | | | 100.0 | |
| Communication: Telephone | 100.0 | | 1.0 | 99.0 | |
| Telex, fax | 100.0 | 84.0 | 14.0 | | |
| Travelling & Entertainment | 100.0 | | 25.0 | | 75.0 |
| Electricity | 100.0 | 1.0 | | 99.0 | |
| Legal & Fiscal Services | 85.0 | | 67.0 | | 33.0 |
| Sales and Distribution | 85.0 | 1.0 | | | 99.0 |
| Security & cleaning | 100.0 | 100.0 | | | |
| Housing Service | 95.0 | | 100.0 | | |

| | | | | |
|-----------------|-------|-------|------|--|
| Data processing | 100.0 | 100.0 | | |
| Photocopy | 100.0 | 30.0 | 70.0 | |

Source: Sample Survey. Note: Govt. supply of banking, insurance and shipping services refers to those supplied by Govt.-owned banks, insurance and shipping corporations.

Table 16

Output and Service-use by RMG Manufacturing Firms of Bangladesh

(Thousand Taka)

| | Dhaka Zone | | | | Chittagong Zone | | | | Large Total Dhaka+Chittagong | Medium Total Dhaka+Chittagong | Average Total Dhaka+ Chitta gong | Total |
|------------------------|------------|--------|---------|---------|-----------------|--------|---------|---------|------------------------------------|-------------------------------------|---|---------|
| | Large | Medium | Average | Total | Large | Medium | Average | Total | | | | |
| No. of Units | 3 | 6 | 27 | 36 | 6 | 9 | 23 | 38 | 9 | 15 | 50 | 74 |
| Output | 428715 | 547633 | 2176412 | 3152760 | 1070394 | 908584 | 1410602 | 3389580 | 1499109 | 1456217 | 3587014 | 6542340 |
| Service Expenditure | 87742 | 134619 | 603713 | 826074 | 219893 | 197849 | 380038 | 797780 | 307635 | 332468 | 983751 | 1623854 |
| Transport | 40738 | 53865 | 240610 | 335213 | 85360 | 69686 | 131096 | 286142 | 126098 | 123551 | 371706 | 621355 |
| Shipping | 35150 | 53869 | 242405 | 331424 | 101806 | 88535 | 160546 | 350887 | 136956 | 142431 | 402924 | 682311 |
| Post service | 2986 | 5286 | 21668 | 29940 | 10021 | 8973 | 12609 | 31603 | 13007 | 14259 | 34277 | 61543 |
| Telephone/Fax/E-mail | 2017 | 3834 | 14758 | 20609 | 4312 | 5818 | 13679 | 23809 | 6392 | 9652 | 28374 | 44418 |
| Travelling | 2486 | 4038 | 14919 | 21443 | 4431 | 6317 | 13940 | 24688 | 6917 | 10355 | 28859 | 46131 |
| Banking & Insurance | 525 | 1008 | 4122 | 5655 | 1556 | 1389 | 2613 | 5558 | 2081 | 2397 | 6735 | 11213 |
| Rent for Plant-premise | 810 | 2015 | 16473 | 19298 | 1381 | 2121 | 12756 | 16258 | 2191 | 4136 | 29229 | 35556 |
| Legal Service | 515 | 1110 | 4985 | 6610 | 1632 | 1785 | 3971 | 7388 | 2147 | 2895 | 8956 | 13998 |
| Security & Cleaning | 657 | 3355 | 16118 | 20130 | 2238 | 3571 | 9272 | 15081 | 2895 | 6926 | 25390 | 35211 |
| Photocopy | 122 | 510 | 2929 | 3561 | 490 | 912 | 2576 | 3978 | 612 | 1422 | 5505 | 7539 |
| Fair Participation | 612 | 991 | 3206 | 4809 | 1720 | 1825 | 1543 | 5088 | 2332 | 2816 | 4749 | 9897 |
| Association Fee | 112 | 205 | 885 | 1202 | 241 | 362 | 707 | 1310 | 353 | 567 | 1592 | 2512 |
| Electricity | 1012 | 4533 | 20635 | 26180 | 4705 | 6555 | 14730 | 25990 | 5717 | 11088 | 35365 | 52170 |

Source: Sample Survey

Table 17
Service Costs in RMG Industry of Bangladesh 1989-90
(Million Taka)

| Items | Costs |
|---------------------------|---------|
| 1. Non- industrial Costs | 1136.0 |
| 2. Shipping costs | 1574.3 |
| 3. Transport costs | 1288.1 |
| 4. Electricity | 165.3 |
| 5. Payment others | 77.0 |
| 6. Repair & maintenance | 131.4 |
| a. Total Services | 4372.1 |
| b. Total Industrial costs | 14412.9 |
| c. Total Raw materials | 14312.1 |
| d. Total Output | 20717.3 |

Source: Computed from the CMI 1989-90, Input-Output Tables for Bangladesh
Economy (1976-77 and 1986-87) and Statistical Yearbook of Bangladesh
(various years)

Table 18

Balance of Payment of Bangladesh, 1989-90 to 1996-97

(Current Account)

(Million Taka)

| <u>Items</u> | 1989-90 | 90-91 | 91-92 | 92-93 | 93-94 | 94-95 | 95-96 | 96-97 |
|------------------------------------|---------|--------|--------|--------|--------|--------|---------|---------|
| Import (f.o.b) | 111250 | 111510 | 118920 | 139840 | 150599 | 210917 | 252600 | 271790 |
| Export (f.o.b) | 48930 | 59560 | 72630 | 83700 | 100976 | 139285 | 158791 | 188130 |
| Freight & Insurance | | | | | | | | |
| a) On Import | 12500 | 12290 | 13240 | 16210 | 17069 | 23656 | 28417 | 31259 |
| b) Earned | 80 | 90 | 80 | 130 | 191 | 196 | 477 | 638 |
| c) Net | -12420 | -12200 | -13160 | -16080 | -16878 | -23460 | -27940 | -30621 |
| Other goods and Services(net) | 420 | 2660 | 2540 | 2900 | 653 | -2336 | -4805 | 5413 |
| Balance | -74320 | -61490 | -56910 | -69320 | -65848 | -97428 | -126554 | -108868 |
| Instrument (net) | -4050 | -3660 | -3390 | -2860 | -1211 | -1632 | -242 | -4585 |
| Transfer by Bangladeshi Nationals | 26310 | 30170 | 3724 | 41660 | 49849 | 57303 | 60274 | 75613 |
| Grants, Donations etc. | 24620 | 29660 | 31170 | 32030 | 28404 | 35783 | 27672 | 31479 |
| Surplus/Deficit on Current Account | -27400 | -1660 | -25460 | -1510 | -11193 | -5974 | -38850 | 6361 |

Source: Statistical Pocket book 1994, Statistical Bulletin (Monthly) [various issues]

Table 19
Invisible Payments/Receipts of Bangladesh through Travel,
1989-90 to 1994-95

Tk. in Croes
(US\$ in million)

| | 1989-90 | 1990-91 | 1991-92 | 1992-93 | 1993-94 | 1994-95 |
|--|------------------|-----------------|------------------|------------------|------------------|-------------------|
| <u>Travel Pavements</u> | 369.6 (112.3) | 217.0 (60.8) | 417.2 (109.5) | 495.7 (126.3) | 612.6 (153.1) | 1063.8 (264.6) |
| 1. Business | 34.8 (10.60) | 21.6 (6.1) | 22.2 (5.8) | 20.9 (5.3) | 48.2 (12.0) | 143.2 (35.6) |
| a) Official | 11.1 (3.4) | 12.0 (3.4) | 7.3 (1.9) | 5.1 (1.4) | 6.2 (1.4) | 11.0 (2.7) |
| b) Commercial-travel | 23.7 (7.2) | 9.6 (2.7) | 14.9 (3.9) | 15.5 (3.9) | 42 (10.5) | 132.2 (32.9) |
| 2. Students & Training | 19.6 (6.0) | 25.8 (7.2) | 32.7 (8.6) | 39.9 (10.2) | 10.0 (2.5) | 53.8 (13.4) |
| 3. Medical treatment | 0.5 (0.1) | 0.3 (0.1) | 1.4 (0.4) | 1.4 (0.4) | 2.0 (0.5) | 7.6 (1.9) |
| 4. Others (including non-official delegation, foreign tourists, holiday, religious travel & others n.e.s.) | 314.7 (95.6) | 169.3 (47.4) | 360.9 (94.7) | 431.5 (110.4) | 474.2 (118.6) | 859.2 (213.7) |
| <u>Travel-Receipts</u> | 82.9 (25.2) | 79.3 (22.2) | 119.4 (31.3) | 124.4 (318.8) | 79.2 (19.8) | 90.8 (22.6) |
| 1. Tourists | 24.6 (7.5) | 17.0 (4.8) | 30.6 (8.6) | 57.6 (9.6) | 51.9 (13.0) | 58.4 (14.5) |
| 2. Commercial travel | 0.7 (0.2) | 4.0 (1.1) | 0.8 (4.2) | 0.8 (6.2) | 1.1 (0.3) | 1.2 (0.3) |

| | | | | | | |
|---|----------------|----------------|----------------|----------------|---------------|---------------|
| 3. Cost of ticket/passages for against encashment certificate of foreign currency a/c under WES | 54.0 (16.4) | 52.4 (14.7) | 80.0 (21.0) | 79.0 (20.2) | 18.4 (4.6) | 11.1 (2.8) |
| 4. Others (including official, students, training and others n.e.s.) | 3.6 (1.1) | 5.9 (1.6) | 8.0 (2.1) | 7.0 (1.8) | 7.8 (1.9) | 20.1 (5.0) |

Source: Statistics Department, Bangladesh Bank.