GATS AND DEVELOPING COUNTRIES: A CASE STUDY OF INDIA*

(DRAFT: COMMENTS WELCOME)

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ABSTRACT

The General Agreement on Trade in Services (GATS) is the first multilateral agreement, under the auspices of Uruguay Round, to provide legally enforceable rights to trade in a wide range of services along with their progressive liberalization. Though very little liberalization was actually achieved, the negotiations on trade in services established the institutional structure for negotiating liberalization in the future. Many of the developing countries have not been very receptive to the conception of GATS mainly due to non-existence of such rules in the past and also because many of the service sectors had always enjoyed heavy protection. The present paper argues that GATS provides developing countries with an opportunity to integrate into the global economy through adopting more liberal policies with regard to trade in services. Both the developing as well as the developed countries would gain through liberalization of various service-sectors. In fact, inefficiencies in the service-sectors of a developing economy impact negatively on the export competitiveness of its agriculture and manufacturing sectors, through forward linkages, thus becoming one of the contributory factors leading to unfavorable balance of current account. The present paper employs a multi-country computable general equilibrium model to demonstrate potential gains in welfare for the developing countries from their liberalization of trade in services. The gains get enhanced further when developed countries also undertake similar liberalization. The paper examines salient features of India's commitments under GATS along with a case study of India's brilliant success in software services. Unilateral moves by the Indian government towards liberalizing imports of computer software and hardware along with facilitating inflow of FDI into these sectors during the 1990s have been the major contributory factors in this success story.

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I. INTRODUCTION

The preamble to the GATS states that the general goal of participants is to establish a multilateral framework of principles and rules for trade in services with a view to expanding such trade under conditions of transparency and progressive liberalization. This would promote the economic growth of all trading partners and the development of developing countries. The agreement expresses desire the "to facilitate the increasing participation of developing countries in trade in services and the expansion of their service exports including, *inter alia*, through the strengthening of their domestic services capacity and its efficiency and competitiveness". The preamble clearly recognizes the right of all parties to regulate the supply of services within their territories. It takes "particular account of the serious difficulty of the least-developed countries in view of their special economic situation and their development, trade and financial needs".

The objective of this paper is to analyze the growing importance of the service sectors in the developing countries and identify the developing-country specific features implicit in GATS. The relative comparative advantage of the developing and the developed countries has also been examined for various types of services through calculating the revealed comparative advantage. India's commitments in GATS have been highlighted along with a discussion of how protected and inefficient service sectors reduce the competitiveness of India's manufacturing sectors. At the end, we discuss the success story of the software sector in India's economy and trade. The potential gains to some of the developed countries/regions of the world as well as the Asian developing countries/regions, which are expected to accrue as result of successful implementation of the Uruguay Round's trade liberalization commitments in goods and service sectors, have also been highlighted. This is done through using a multi-country multi-sector computable general equilibrium (CGE) model of world production and trade. Particular attention is paid to analysis of the impact on India's economy.

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II. GATS: IMPLICATIONS FOR DEVELOPING COUNTRIES

II.1Growing Importance of Services in Developing Countries

World exports of goods and commercial services averaged $6.6 trillion annually during the triennium ending 1997, including $1.3 trillion worth of exports of services accounting for 20 per cent of total world exports (IMF, 1998)[1]. While the export of services accounts for 17 per cent of developing-country export, the corresponding share is higher at 21 per cent for industrial countries. The share of developing countries in the world export of services increased from 22.3 per cent in 1991 to 29.3 per cent in 1997. The share of Asian developing countries in total world exports increased from 9.9 per cent to 15.2 per cent during this period.

The share of value added by services has been rapidly increasing in the GDP of low and middle-income economies as compared with high-income economies since 1980 (World Bank, 1998/99).[2] While the share of value added by services in GDP increased from 38 per cent in 1980 to 42 per cent in 1997 for the low-income economies, the corresponding figures were 40 and 50 per cent for the middle-income economies and above 60 per cent for the high-income economies. The services sector has been growing at a rate faster than that of GDP for the low and middle-income economies but not for high-income economies.[3]

In the case of India, the share of value-added by services in GDP increased from 36 per cent in 1980 to 43 per cent in 1997. While GDP grew at an average annual rate of 5.8 per cent during the period 1980-90 and by 5.9 per cent during 1990-97, the corresponding growth rate figures for value-added by services were 6.7 and 7.5 per cent, respectively (WDR, 1998/99). India's share in world exports of services increased from 0.55 to 0.65 per cent during this period.

In order to estimate the index of comparative advantage of export of major services by the developing-groups, we have computed their revealed comparative advantage in such exports. The revealed comparative advantage (RCA) of a `service' for a country / region is the ratio of share of export of this `service' in country's / region's services exports to the share of world exports of this `service' to total world services exports. The value of RCA indicates whether the country / region has relative comparative advantage in such exports compared with the world average. Thus, the RCA value above one is indicative of relative comparative advantage. The developing countries have revealed comparative advantage (RCA) in "freight" and "travel" while the industrialized countries have RCA in "passenger services", "other transport" and "other services" (Table 1).[4]

II.2 Relevance of GATS to the Developing Economies[5]

The General Agreement on Trade in Services (GATS) is the first multilateral agreement under the auspices of Uruguay Round to provide legally enforceable rights to trade in a wide range of services along with their progressive liberalization. The main objectives of GATS are the expansion of trade in services, progressive liberalization of such trade through negotiations, transparency of rules and regulations, and increasing participation of developing countries. Though very little liberalization was actually achieved, the negotiations on trade in service sectors established the institutional structure for negotiating liberalization in the future.[6]

The core principles of the GATT, namely MFN and NT, apply generally to the GATS. However, these are highly qualified (Srinivasan, 1998). First, a member can exempt any service from the application of MFN and seek further exemptions within sixty days beginning four months after entry into force of the Uruguay Round agreement. Second, a member can improve, modify or withdraw all or part of its specific commitments on financial services during this period. Third, NT applies only to sectors and sub-sectors listed in the member's schedule.

The GATS imposes few limitations on national policy, with the only requirement that there should be no discrimination across alternative sources of supply (Hoekman, 1995). The participating countries are not required to alter regulatory structures or to pursue an active antitrust or competition policy. The positive-list approach enabled many developing countries to accede to GATS with minimal commitments. Accordingly, the GATS may affect developing countries only in a limited way since its rules apply only if specific commitments are made.

There are certain Articles in the GATS, which deal with specific provisions relating to developing countries (UNCTAD-World Bank, 1994). These include Article III (transparency), IV (increasing participation of developing countries), V (economic integration), XII (measures to safeguard the balance of payments), XV (subsidies), XIX (negotiation of commitments) and XXV (technical collaboration). Articles IV and XXV deal exclusively with developing countries. The Annex on telecommunications contains a special article on technical cooperation in the telecommunications industry.[7]

GATS Article IV seeks increasing participation of the developing countries in world trade in services through negotiated specific commitments for access to technology on a commercial basis, improved access to distribution channels and information networks, and the liberalization of market access in sectors of export interest to developing countries. With regard to transparency, the industrialized nations were asked to establish contact points within two years of the entry into force of the agreement. These points would facilitate the access of developing country services suppliers to information relating to the commercial and technical aspects of

specific services, requirements for registration, recognition and obtaining of professional qualifications, and the availability of services technology. The final provision of Article IV states that special priority shall be given to least developed countries in the implementation of provisions of Article IV.

GATS Article XXV on technical cooperation reaffirms the access of developing country services suppliers to contact points to be established in developed countries (Article IV). It further states that technical assistance to developing countries shall be provided at the multilateral level by the competent Secretariat and shall be decided upon by the Council for Trade in Services. Apart from the secretariat, other multilateral organizations, such as the United Nations and the World Bank, could also be involved in providing such assistance.

Although the developing countries are accorded limited special and differential treatment under GATS, this agreement contains no provisions similar to Part IV of the GATT on more favorable treatment of developing countries. GATS Article XIX allows developing countries to make fewer specific commitments than industrialized nations. The developing countries have limited flexibility to offer less liberalization of services than developed countries but they are not allowed a free ride. The GATS is based on the argument that if the national governments have concern for economic efficiency, the optimal policies would be the same both for developed as well as developing countries.

II.3 TRADE IN SERVICES: INDIA'S CASE STUDY

Efficient services are crucial to an economy's global competitiveness. We have seen in the previous section that the benefits to a developing economy are greatly enhanced when the trade in service sectors is liberalized. Yet another way of exploring the inefficiencies in the service sectors is to calculate how protection in services affects effective rates of protection (ERPs).[8] It has been pointed out that the actual effective protection to manufacturing sectors may turn out to be lower if adjustment for high protection to service sectors, due to regulatory policies, is also taken into account (Hoekman and Djankov, 1997).[9] We have computed such ERPs for the manufacturing sectors of India for the year 1997-98 using Hoekman's "guesstimates" of tariff equivalents of implicit protection on India's service sectors. The results for the 30 input-output sectors, which account for more than 20 per cent share of services in total intermediate inputs, are reported in Table 2. We note that in 25 out of 30 sectors, the inefficient-services adjusted ERP is less than the normal ERP with the difference becoming large in some sectors. In the case of electrical machinery, the adjusted ERP is negative at –6.6 per cent compared with original value at 26.2 per cent. The difference is substantial also for coal tar

products, steel and ferrous alloys, fertilizers and woolen textiles. The upshot is that the inefficient service sectors may thus act as a tax on manufacturing and thereby reduce the effective protection.

The Indian government is aware of the need to improve the provision of services, and that the investment requirement is beyond the means available with government. Hence, the government is looking forward to private support (Mohan, 1996). India has liberalized its FDI regime during the 1990s.[10] Foreign equity up to 51 per cent is now automatically allowed in restaurants and hotels; support services for land and water transport; parts of renting and leasing; business services including software; and health and medical services. The automatic approval provision for foreign equity is 74 per cent in the case of mining services, non-conventional energy generation and distribution, land and water transport, and storage and warehousing. The limit is 100 per cent in the case of electricity generation, transmission and distribution. However, foreign equity is limited to 49 per cent in telecommunications, 40 per cent in domestic airlines and to 20 per cent in banking services. Railway transport continues to remain among four industries reserved for the public sector. The insurance sector has only recently been opened to private sector.

India's schedule under GATS provides for specific commitments covering business services; communications; construction work for civil engineering; financial services; health-related and social services; and tourism services (WTO, 1998, p.152). The extent of commitments varies across sectors with certain restrictions on market access and national treatment under the four modes of supply of services. India has not made any commitments on services relating to: distribution; education; environment; recreational, cultural and sporting; transport; and other services not included elsewhere. In all, India has made commitments in 33 activities, compared with an average of 23 for developing countries (GATT, 1994). These commitments generally bind India's existing policy framework, though in some cases, the applied policy may be more liberal than the binding commitments.[11] India has listed some MFN exemptions under Article II of the GATS and reserves the right to offer more favorable treatment to some WTO members in communication, recreational and transport services.[12] India further liberalized its commitments in the basic telecommunication services in early 1998. It is among 43 countries participating in the Information Technology Agreement covering: computers; telecommunication equipment; semiconductors; manufacturing equipment for semiconductors; software and scientific instruments. India has offered zero duty on 217 information technology related tariff lines at the HS 6-digit level by 2005.[13]

India's Success Story: Software

The GATS Services Sectoral Classification List (GNS List) includes "computer and related services" as a component of "business services" (GNS code 1B). Computer and related services include a) consultancy services related to the installation of computer hardware; b) software implementation services; c) data processing services; d) database services; and e) others.[14] However, uncertainty prevails with respect to computer software concerning where to draw the line between "software" and "services".[15] In the case of India's commitments under "computer and related services", the modes of *cross-border supply* and *consumption abroad* are unbound both under market access and national treatment. *Commercial presence* gets national treatment but *market access* is possible only through incorporation with foreign equity. The *presence of natural persons* is unbound except as indicated in horizontal section.

India possesses the world's second largest pool of scientific manpower which is also English speaking. Moreover, Indian software is of high quality and with relatively low cost. The software industry has emerged as one of the fastest-growing and most vibrant segments of India's economy during the 1990s. Domestic software market increased from US$160 million in 1992-93 to US$944 million in 1997-98 thus registering an average growth rate of 43 per cent per annum (NASSCOM, 1999). The exports of software increased from US$225 million in 1992-93 to US$1,750 million in 1997-98, which is an average annual growth rate of 51 per cent.[16] A National Task Force on Information Technology and Software Development was set up in May 1998 consisting of ministers, bureaucrats, scientists, academicians and industry representatives.[17]

India has already acquired a substantial market share in the global cross-country customized software development market. Its share in the global market has increased from 11.9 per cent in 1991 to 18.5 per cent in 1998. India has been recognized as an important base for software development. In 1997-98, more than 158 of Fortune 500 companies outsourced their software requirements to India. Quality has become the hallmark of the industry with more than 109 Indian software companies having acquired international quality certification. Two out of six companies in the world, which have acquired SEI (level 5) are in India, namely Motorola and Wipro. After a major success in servicing the Y2K issue in the international market, India has already set its eyes on servicing Euro currency solutions, with 82 Indian software companies already participating in this effort. The strategic "12-hour" time difference with the US provides India with a unique opportunity to facilitate a 24-hour working day to many of the US companies who would prefer to "follow the sun".

The cost competitiveness of India is there to stay for at least another decade. The relaxed H1-B visa numbers from 65,000 in 1998 to 115,000 for 1999 and 2000 may revert back to the

original figure in 2001 with the demise of Y2K. Given the continued shortage of software skilled U.S. manpower, U.S. companies should increasingly outsource their work to India. However, we do not see a major disadvantage to the software trained Indian workforce in view of the continued H1-B visa restrictions as work would "reach" India due to its reputation as one of the best outsourcing destinations. The often quoted lower wages of Indian software development and support manpower in comparison with their US counterparts should not discourage the Indian workforce since the myth of these figures should be clearly understood. Let us assume that Indian wages are about 10 per cent of the corresponding US wages (Mattoo, 1999). Firstly, for an Indian, this figure should be read as 40 per cent, instead of 10 per cent, under the `purchasing power parity' paradigm (World Bank, 1998). This figure gets enhanced to about 60 per cent if one accounts for `implicit' wage discrimination against the `alien' H1-B visa holders by about 30 per cent.[18] This may further increase over the next ten years with the United States and some other developed countries outsourcing their software-related work to India.

III. SERVICE SECTORS LIBERALIZATION AND DEVELOPING COUNTRIES

Brown, Deardorff, Fox and Stern (Brown et al, 1996a) analyzed the potential impacts of the liberalization of trade in services. In view of no actual liberalization of trade in services having occurred during the UR negotiations, the focus of the study was hypothetical on examining what the effects of service-sectors liberalization might be when such liberalization finally occurs. The study used Hoekman's (1995) "guesstimates" of the size of trade barriers in services and calculated the effects of an assumed 25 per cent reduction in these barriers, which the study assumes as the plausible magnitude that may eventually be achieved.[19] To provide a benchmark for comparison, the study also calculated the effects of the liberalization in tariffs for industrial products that were actually negotiated. The study confined itself to the world's major trading countries/regions. These countries/regions are expected to gain from liberalization of trade in services, with gains increasing further when tariffs on industrial goods are reduced simultaneously.

We make a similar attempt in the present study to compare gains in welfare, trade, resource allocation, and real returns to factors of production from liberalization of trade in services for the developed as well as the developing countries/regions. To estimate the potential results of liberalization in trade in services as well as in industrial products, we use a specially constructed version of the Michigan Brown-Deardorff-Stern (BDS) computable general equilibrium (CGE) Model of World Production and Trade (Brown et al, 1996b). The developing countries/regions included in this study are India (IND), Rest of South Asia (RSA), ASEAN-4

(ASN) and NIE-4 (NIE).[20] The developed countries/regions include the European Union (EUN), Japan (JPN) and the United States (USA).[21] The closure of the model is achieved by assigning the remaining countries to a residual rest-of-world (ROW). In each country or region, the model covers 25 sectors and all of these are "tradable". These include one sector of agriculture, sixteen of manufacturing and eight of services and government. Thus, there are eight regions in all including ROW. However, ROW is not modeled and only the remaining seven countries/regions are modeled.

Most of the assumptions made here are similar to the ones made by Brown et al (1996). For the sake of brevity, we shall not repeat them in detail here. [22] The model is based on some of the basic assumptions of new trade theory, namely, imperfect competition, increasing returns to scale and product heterogeneity. It is assumed in the model that the agricultural sector is perfectly competitive, and that the manufacturing and services sectors are monopolistically competitive with free entry.[23] We also experiment with perfectly competitive structure in the service sectors. [24] Under perfect competition, goods/services are differentiated by country of production. Under monopolistic competition, goods/services are differentiated producing firm.[25] The reference year for the database of the model is 1995 and most of it is based on Global Trade Analysis Package (GTAP) Release-4 (McDougall et al, 1998). The details of database and documentation as well as a full statement and description of the model are available from the author on request.[26]

Model Simulations

We conduct two experiments in the present exercise. The liberalization of goods trade is taken as the benchmark in the first experiment. In the second experiment, we examine the welfare gains for various developing and developed countries / regions when there is comparable liberalization of trade in services also. In order to simulate the reduction or elimination of non-tariff barriers on agricultural and industrial products, the most desirable way is to convert non-tariff barriers into tariff equivalents and then assume that they would be reduced to zero. However, sufficient data are not available to enable us to perform this exercise. If tariffs are reduced and non-tariff barriers continue to apply, the effects of trade liberalization would be dampened. Alternatively, we could set our non-tariff barrier coverage ratios at zero, thus assuming that tariff liberalization would not be dampened (Brown et al, 1996a). The proposed bilateral reduction of 25 per cent on "hypothetical" tariff equivalents of service barriers is accompanied here by an equal bilateral reduction in average import tariff rates, culled from the GTAP database, on agricultural and industrial products. We perform the following experiments:

Simulation 1 Bilateral reduction of 25 per cent in average import tariffs rates of 1995 on agriculture, mining and the manufactured goods sectors. Agriculture is assumed to be under perfect competition with all manufactured goods and service sectors under monopolistic competition (this excludes the effects of the elimination of the MFA).

Simulation 2 Simulation 1 plus reduction of 25 per cent in *ad valorem* tariff-equivalents on service sectors.

Aggregate Impacts of Trade Liberalization Scenarios

Economic Welfare The aggregate results measure impacts of liberalization on the terms of trade, welfare, trade and factor payments for our seven countries/regions (Table 3). The impact on economic welfare, "equivalent variation", is of special interest. It may be observed that the gain in economic welfare is positive for all participating countries/regions under both experiments. The liberalization of goods trade enhances the economic welfare with the Asian developing countries gaining more in proportional terms (Simulation 1). The welfare gains are higher when service trade is also liberalized simultaneously (Simulation 2). The developed countries / regions gain more in proportional terms under the services liberalization compared to the goods liberalization. The overall proportional gains are substantial for the Asian developing countries. Under simulation 2, the economic welfare of the rest of South Asia (RSA) increases by 3.0 per cent followed by 2.9 per cent in ASEAN-4, 2.5 per cent in NIE-4 and 1.4 per cent in India. The developed countries/regions also gain in welfare. The United States and Japan gain by 1.2 per cent each and the European Union (EU) by 1.0 per cent. In terms of US dollars, the absolute gains are $84 billion for the United States, $79 billion for the EU, $60 billion for Japan, $22 billion for NIE, $14 billion for ASN, $3 billion for RSA and $ 4.8 billion for India. Our results for the gain in economic welfare in dollar terms are somewhat bigger than Brown et al (1996a). This may be due to the fact we have used a different database (GTAP), and also since we have assumed a 25 per cent bilateral reduction in tariffs on agriculture and manufactured goods sectors rather than the values used by Brown et al.

Real Wages and Return to Capital It may be observed from Table 3 that the real returns to the factors of production also increase for all the countries for both labor and capital. The returns increase as one moves from Simulation 1 to Simulation 2. The gains to capital are higher than the gains to labor in all the countries/regions except in the case of EU where the two are equal. Increases in returns to both labor and capital may seem inconsistent with the Stolper-Samuelson

theorem, which suggests that trade liberalization will increase the return to the more abundant factor in each country while making the other factor worse off. But in the context of the differentiated-products model with IRTS, such as in BDS model, other forces at work may be undermining the impact of the Stolper-Samuelson theorem. From this theorem, we expect that trade liberalization will raise the return to the abundant factor in each country while making the other factor worse off. However, in the context of the differentiated-products model with increasing returns to scale, like the one used in this study, other forces may be at work undermining Stolper-Samuelson theorem. Some of the assumptions of the new trade theory, namely increasing returns to scale, imperfect competition and product differentiation, can have important implications for the effects of protection on real wages. These effects may act in ways contrary to the Stolper-Samuelson theorem and can more than offset the prediction of this theorem about a negative effect of the imposition of tariff on the real wage of the scarce factor[27].

Sector Specific Impacts of Trade Liberalization Scenarios Sector-specific results for changes in employment, in all the seven countries/regions, are reported in Table 4 for Simulation 2. In each country/region, employment increases in some sectors and it decreases in others. In the case of India, employment increases in both experiments in such labor-intensive sectors as mining; food, beverages and tobacco; textiles; wearing apparel; and leather products. In the case of the United States and the EU, there is decline in employment in textiles and wearing apparel sectors.

The sector-specific results for India under Simulation 2 are reported in Table 5. It may be observed that there are large increases in the trade of services, although from a small initial base. The output gains are substantial in mining; food beverages and tobacco; textiles; wearing apparel; and leather products. The factors of production (labor and capital) tend to shift into these sectors. The change in output per firm (scale effect) is also positive in all these sectors. The output and employment would decline in manufacturing sectors like non-ferrous metals, machinery and equipment, and iron and steel.

Major Findings The liberalization of service sectors would lead to relatively large gains in economic welfare as well as trade in the service sectors themselves. The developing countries gain more than the developed countries in percentage terms. The gains are more when services trade liberalization is accompanied by liberalization of trade in agriculture and manufactured products. The additional gains from services trade liberalization high at $72 billion for the United States, $66 billion for the EU and $42 billion for Japan. The corresponding values are $15.3 billion for NIE, 9.4 billion for ASN, $2.4 billion for India and $0.9 billion for RSA. The

additional gains for the developed countries are relatively high under services trade liberalization than under goods trade liberalization.

IV. CONCLUDING REMARKS

The main objectives of GATS are the expansion of trade in services, progressive liberalization of such trade through negotiations, transparency of rules and regulations, and increasing participation of developing countries. The developing countries have revealed comparative advantage (RCA) in “freight” and “travel” while the industrialized countries have RCA in “passenger services”, “other transport” and “other services”. Efficient services are crucial to an economy's global competitiveness. High protection granted to the service sectors by an economy, through its regulatory policies, creates inefficient service sectors thus adversely affecting the effective protection to various sectors of production in the economy. India’s schedule under GATS provides for specific commitments covering business services; communications; construction work for civil engineering; financial services; health-related and social services; and tourism services. The extent of commitments varies across sectors with certain restrictions on market access and national treatment under the four modes of supply of services. India has not made any commitments on services relating to: distribution; education; environment; recreational, cultural and sporting; transport; and other services not included elsewhere. In all, India has made commitments in 33 activities, compared with an average of 23 for developing countries. India has demonstrated a success story in the export of software services. The CGE model used in this study clearly brings out the additional benefits, which the liberalization of trade in services can bring about for developing as well as developed countries / regions.

The main message for the developing countries is that they stand to gain through the liberalization of trade in services. The liberalization of trade in services is at a stage similar to where the liberalization of trade in goods sectors began more than fifty years ago. There should be no doubt that reduced barriers on trade in services in the future would bring benefits to both the developed as well as the developing economies, depending upon their respective degrees of comparative advantage in different service sectors in a liberalized world economy.

Stiglitz (1999) has asked the WTO members to have well balanced trade negotiations in the next round, which should reflect the interests and concerns of the developing world. The two key principles of the next round should be “fairness”, especially to the developing countries, and “comprehensiveness” such that sectors like construction and maritime services, which are of interest to the developing countries, must also get greater attention.

The next round of service negotiations requires a change in negotiating strategies (Mattoo, 1999). The developing countries need to push for liberalization of domestic service markets laying more emphasis on competition than a change of ownership. These countries should undertake domestic deregulation to encourage economic efficiency in remedying market failures and pushing social goals. Further, foreign service-markets need to be effectively liberalized by the elimination of both explicit restrictions and implicit regulatory barriers. The developed countries should play a responsible role by eliminating their barriers against imports from the developing countries. These efforts would lead GATS negotiations into a "virtuous cycle of mutually beneficial liberalization". India's dynamic and growing software sector would transform India into a global software powerhouse even if the developed countries continue to impose restrictions on the movement of foreign workers' labor force, maybe to their loss.

The developing countries should look forward to more active participation during the Millennium Round of negotiations, and in particular, furthering the cause of GATS. The developing countries need to take great initiative in the process of GATS negotiations to put forward their points of view lest they should have to accept sectoral agreements in which they did not fully participate. No doubt, the developed countries must listen to the needs and aspirations of the developing member countries and themselves also adhere to the basic lessons of comparative advantage. The gains are going to be shared by both, the developed as well as the developing countries, and both these groups should participate actively to ensure more equitable distribution of the resulting gains. Keeping in view specific provisions for freer movement of capital under GATS commitments, similar provisions must also address freer movement of labor. This is important since unlike in GATT, developing countries have not been provided with `special' preferential treatment under GATS. The future negotiations under GATS must focus on a `comprehensive' approach rather than a `case-by-case' approach to discussions. The negotiations during the last five years have been focussed on financial services, insurance and maritime transport. Simultaneous negotiations on almost all the services must proceed in parallel so as to keep the interests of the developing countries fully involved. The developing countries would have great interest, for example, in various segments of transport other than maritime, construction and related services, etc.

Table 1 :Revealed comparative advantage in service exports

(three year moving average)

	Passenger services	Freight	Other Transportation	Travel	Other Services
Developing countries					
1992	0.83	1.14	0.99	1.13	0.91
1993	0.81	1.14	0.95	1.14	0.92
1994	0.77	1.12	0.96	1.13	0.94
1995	0.72	1.12	0.95	1.13	0.95
1996	0.68	1.10	0.95	1.12	0.97
Developed/ Industrialised countries					
1992	1.05	0.96	1.01	0.96	1.03
1993	1.07	0.96	1.02	0.96	1.03
1994	1.09	0.96	1.02	0.96	1.02
1995	1.11	0.96	1.02	0.95	1.02
1996	1.13	0.96	1.02	0.95	1.01
Developing countries: region- wise					
Passenger services					
Year	**Africa**	**Asia**	**Europe**	**Middle east**	**Western hem.**
1992	1.55	0.64	0.79	0.80	1.12
1993	1.58	0.61	0.78	0.76	1.14
1994	1.62	0.57	0.80	0.72	1.12
1995	1.62	0.50	0.71	0.74	1.16
1996	1.64	0.48	0.61	0.74	1.14
Freight					
1992	0.85	1.24	1.80	0.55	0.65
1993	0.80	1.22	1.75	0.72	0.66
1994	0.75	1.20	1.62	0.80	0.60
1995	0.68	1.20	1.55	0.84	0.58
1996	0.67	1.18	1.52	0.78	0.56
Other transportation					
1992	1.25	0.64	0.84	1.89	1.40
1993	1.22	0.65	0.76	1.76	1.43
1994	1.17	0.67	0.87	1.59	1.52
1995	1.14	0.65	0.98	1.51	1.55
1996	1.16	0.62	1.10	1.48	1.57
Travel					
1992	1.24	1.15	0.96	0.68	1.57
1993	1.29	1.12	1.07	0.72	1.52
1994	1.34	1.08	1.10	0.75	1.50
1995	1.40	1.04	1.20	0.80	1.48
1996	1.41	1.00	1.23	0.83	1.50
Other services					
1992	0.54	1.03	0.93	1.23	0.51
1993	0.52	1.04	0.89	1.20	0.55
1994	0.52	1.07	0.87	1.19	0.59
1995	0.50	1.10	0.80	1.17	0.63
1996	0.51	1.13	0.79	1.16	0.63

Source: IMF (1998).

Table 2: Protection in India 1997-98

(Per cent)

Sectors	Nominal Rate Of Protection (NRP)	Share of Services in Total Inputs	Effective Rate of Protection (ERP)	Adjusted ERP*
1 Cement	43.7	35.1	57.9	36.0
2 Coal Tar Products	30.6	31.5	43.4	7.1
3 Inorganic heavy chemicals	34.3	29.3	36.0	16.4
4 Other non metallic mineral prods.	42.1	28.5	48.3	37.9
5 Non ferrous basic metals	31.6	28.3	34.4	17.6
6 Electrical industrial machinery	29.1	27.8	26.2	-6.6
7 Organic heavy chemicals	33.8	26.6	34.8	17.7
8 Other transport equipments	45.0	26.4	49.5	51.9
9 Iron steel & ferro alloys	28.4	25.8	28.4	6.0
10 Paper, paper prods. & newsprint	33.4	25.6	35.3	22.2
11 Structural clay products	39.4	24.8	47.9	39.5
12 Iron & steel casting & forging	35.0	24.3	43.1	29.8
13 Cotton Textiles & Khadi	41.1	23.9	59.0	59.1
14 Watches & clocks	39.2	23.7	39.6	39.8
15 Ships & boats	32.9	23.3	32.7	28.6
16 Communication equipments	36.3	23.3	36.7	31.1
17 Jute,Hemp,mesta,textiles	45.0	22.9	52.9	49.3
18 Industrial machinery (others)	26.6	22.7	23.1	13.8
19 Paints, Varnishes & lacqers	35.0	22.6	35.1	26.7
20 Fertilizers	25.7	22.5	19.9	2.6
21 Iron & steel foundries	35.0	22.2	41.0	27.6
22 Electronic equipment (incl. TV)	29.7	22.1	27.3	18.2
23 Leather footwear	45.0	21.8	52.3	53.6
24 Leather & leather products	32.1	21.7	32.2	27.1
25 Art silk,synthetic fibre textiles	43.3	21.3	50.0	47.9
26 Industrial machinery (F & T)	31.7	20.9	24.3	16.2
27 Readymade garments	45.0	20.6	48.1	49.2
28 Motor cycles & scooters	45.0	20.5	51.1	51.0
29 Synthetic fibers,resins	40.0	20.4	44.7	39.3
30 Woolen textiles	23.2	20.3	12.8	3.9

***** Adjustment made for tariff equivalents for services.
Source: NCAER (1998), Hoekman (1995), Chadha (1998).

Table 3: Summary results of the trade liberalization: changes in trade, terms of trade, welfare, and real return to labor and capital

	Trade		***Equivalent Variation***			
Country	**Imports (Millions dollars)**	**Exports (Million dollars)**	**(Percent change)**	**(Million of dollars)**	**Real Wage Rate (Percent change)**	**Real return to Capitals (Percent change)**
Simulation 1:						
IND	1723	2211	0.7	2327	0.2	0.4
RSA	1445	1710	2.1	2229	0.5	1.0
ASN	5993	7081	0.9	4427	0.8	0.8
NIE	8514	8678	0.8	7093	0.5	0.6
USA	11663	10569	0.2	11516	0.0	0.1
JPN	9544	8672	0.4	17858	0.1	0.2
EUN	8958	8931	0.2	13090	0.0	0.1
Simulation 2:						
IND	2718	3274	1.4	4759	0.4	0.6
RSA	2028	2364	3.0	3153	0.8	1.4
ASN	13618	14984	2.7	13869	1.6	1.7
NIE	24744	24238	2.5	22343	1.4	1.5
USA	38910	35690	1.2	83713	0.3	0.4
JPN	25126	25517	1.2	59678	0.3	0.4
EUN	34009	36290	1.0	78919	0.2	0.2
Additional gain from service liberalization (Simulation 2 minus Simulation 1):						
IND	995	1063	0.7	2432	0.2	0.2
RSA	583	654	0.9	924	0.3	0.4
ASN	7625	7903	1.8	9442	0.8	0.9
NIE	16230	15560	1.7	15250	0.9	0.9
USA	27247	25121	1.0	72197	0.3	0.3
JPN	15582	16845	0.8	41820	0.2	0.2
EUN	25051	27359	0.8	65829	0.2	0.1

Simulation 1: *Bilateral reduction of 25 per cent in average import tariffs rates of 1995 on agriculture, mining and the manufactured goods sectors. Agriculture is assumed to be under perfect competition with all manufactured goods and service sectors under monopolistic competition (this excludes the effects of the elimination of the MFA).*

Simulation 2: *Simulation 1 plus reduction of 25 per cent in ad valorem tariff-equivalents on service sectors.*

Table 4: Sectoral Employment Effects of Trade Liberalization
(Simulation 2)

(Per cent)

Sectors	IND	RSA	ASN	NIE	USA	JPN	EUN
Agriculture	-0.06	-0.04	-0.09	-1.77	2.05	-0.93	0.14
Mining	3.08	0.03	0.04	-2.17	-0.32	0.53	0.50
Food	0.39	-0.35	0.13	-0.56	0.39	-0.36	0.13
Textiles	0.89	3.20	1.51	1.28	-0.76	0.12	-0.06
Wearing Apparel	5.65	16.34	4.35	3.54	-1.85	-0.24	-0.55
Leather Products	5.41	8.38	4.12	0.11	-1.79	-0.89	0.23
Wood Products	-0.15	-0.73	-0.44	-1.23	-0.17	-0.04	-0.04
Paper, Printing, Publishing	-0.36	-2.47	-0.65	-0.20	0.05	0.06	0.02
Petroleum Products	-0.14	-0.16	0.30	0.32	0.14	0.33	0.06
Chemical Rubber Plastic	-0.57	-1.91	-1.15	-0.69	-0.17	0.39	0.25
Nonmetal min. prod.	-0.38	-2.07	-1.40	-0.86	-0.26	0.16	0.08
Iron, Steel	-1.24	-5.83	-2.44	-1.55	-0.56	0.70	0.36
Non Ferrous Metal	-2.30	-6.91	0.10	-1.66	-0.33	0.86	0.49
Ferrous Metal Products	3.40	-2.75	-2.26	-0.69	-0.14	0.19	0.01
Transport Equipment	-1.05	-6.39	-4.63	-0.96	-0.33	1.43	0.05
Manufactures Including Electronic	-1.02	-1.94	2.00	-0.56	-0.42	0.32	-0.17
Machinery & Equipment's	-3.65	-6.90	1.79	-1.40	-0.61	0.89	0.19
Electricity	0.24	0.99	0.54	0.30	0.14	0.22	0.01
Gas	0.24	0.91	0.28	0.16	0.12	0.22	-0.01
Water	0.24	0.95	0.52	0.24	0.14	0.17	-0.02
Construction	0.00	0.14	-0.29	-0.04	0.12	0.07	-0.02
Trade & Transport	-0.47	-0.94	0.64	2.41	0.15	-0.21	-0.33
Financial, Business, Recreation	-0.04	1.64	-0.57	-1.09	0.22	0.09	0.01
Public Admn., Defence, Education, Health	0.53	0.58	-1.98	-0.89	0.07	-0.04	-0.02
Dwellings	-0.12	-0.04	0.01	-0.17	0.02	0.15	-0.12

Table 5: Sectoral Effects on India of Trade Liberalization
(Simulation 2)

Sectors	Export	Import	Output	No. of firms	Scale Effect	Labor	Capital
Agriculture	6.40	1.09	-0.09	0.00	-0.09	-0.06	-0.10
Mining	6.27	-3.40	3.62	2.76	0.86	3.08	3.04
Food	6.47	9.80	0.41	0.13	0.28	0.39	0.18
Textiles	7.05	10.50	1.02	0.59	0.43	0.89	0.66
Wearing Apparel	10.76	11.31	5.73	5.26	0.47	5.65	5.42
Leather Products	8.37	8.54	5.69	4.89	0.79	5.41	5.18
Wood Products	4.13	13.50	-0.14	-0.28	0.13	-0.15	-0.39
Paper, Printing, Publishing	5.49	4.32	-0.26	-0.64	0.37	-0.36	-0.59
Petroleum Products	5.07	4.38	-0.13	-0.54	0.41	-0.14	-0.37
Chemical Rubber Plastic	4.87	6.60	-0.44	-0.95	0.51	-0.57	-0.80
Nonmetal min. prod.	6.27	13.96	-0.05	-0.50	0.44	-0.38	-0.61
Iron, Steel	5.20	7.51	-1.15	-1.54	0.39	-1.24	-1.47
Non Ferrous Metal	4.32	3.19	-2.24	-2.64	0.41	-2.30	-2.53
Ferrous Metal Products	6.76	5.83	3.92	3.23	0.69	3.40	3.16
Transport Equipment	5.36	11.09	-0.60	-1.17	0.56	-1.05	-1.28
Manufactures Including Electronic	4.38	12.87	-0.69	-1.24	0.55	-1.02	-1.25
Machinery & Equipment's	3.73	9.55	-2.99	-3.77	0.78	-3.65	-3.88
Electricity	41.89	28.40	0.27	0.00	0.27	0.24	0.01
Gas	00.00	00.00	0.27	0.00	0.27	0.24	0.00
Water	00.00	00.00	0.27	0.00	0.27	0.24	0.01
Construction	8.39	6.68	-0.21	0.00	-0.21	0.00	-0.25
Trade & Transport	29.77	24.79	-0.38	-0.74	0.36	-0.47	-0.78
Financial, Business, Recreation	16.44	15.97	-0.08	-0.21	0.13	-0.04	-0.27
Public Admn., Defence, Education, Health	16.77	7.65	1.04	-0.19	1.23	0.53	0.30
Dwellings	00.00	00.00	-0.45	0.00	-0.45	-0.12	-0.35

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ENDNOTES

[1] See Tables B-2 and B-3 in the `Balance of Payments Statistics - Yearbook', Parts 2 & 3, pages 20-23 (IMF, 1998). `Services' include `transportation' (sea; air; and other), `travel' (business; and personal), and `other services' (communications; construction, insurance; financial, computer and information; royalties and licence fees; other business services; personal, cultural and recreational services; and government n.i.e).

[2] According to the `World Development Report' (World Bank, 1998/99), the GNP per capita levels for the low, middle and high-income economies are as follows: low-income, $785 or less in 1997; middle-income, $786 to $9,655; and high-income, $9,656 and more (see pages 187and 210-14, WDR, 1998/99).

[3] The GDP of the low-income economies increased at an average annual growth rate of 4.3 per cent during 1980-90 and 4.2 per cent during 1990-97. The corresponding growth rates of value-added by services in these economies were higher at 5.0 and 5.6 per cent, respectively during the two corresponding periods. In the case of the middle-income economies, while the average annual GDP growth rates were 2.8 and 2.5 per cent during the two periods, the growth rates of value-added by services were 3.2 and 4.8 per cent, respectively. Thus, in the case of middle-income economies, the growth rate of value-added by services was nearly double that of GDP during the 1990s. However, in the case of high-income economies, the growth rate of value-added by services could not keep pace with growth rate of GDP during the 1990s. During the period 1980-90, the growth rate of value-added by services in high-income economies was 3.3 per cent per annum, which was slightly higher than 3.2 per cent growth rate of their GDP. The growth rate of value-added by services fell to 1.9 per cent per annum during the period 1990-97 while the GDP was still growing at 2.1 per cent per annum.

[4] Within developing countries, Africa and Western Hemisphere have RCA in passenger services. The developing countries of Asia and Europe have RCA in freight services, which has been declining during the 1990s. The developing countries of Africa, Middle East and Western Hemisphere have RCA in other transportation. While it has been declining in Africa and Middle East during the 1990s, the same has been increasing in the Western Hemisphere. The developing countries of Europe have achieved RCA in other transportation after the mid-1990s. In the case of travel, developing countries of Africa, Asia and Western Hemisphere have RCA. While RCA has been increasing in the case of Africa, it has been declining in the case of Asia and Western Hemisphere. In the case of other services, Asia and Middle East have RCA. While it has been increasing in the case of Asia, the same has been declining in the case of Middle East.

[5] Various theoretical aspects relating to trade in services have been discussed in detail in Bhagwati (1984), Grubel (1987) and UNCTAD-World Bank (1994). Issues relating to trade in services have been identified and discussed in Hindley (1988), Sampson and Snape (1985), and Sauvant (1990). Excellent discussion on the implications and analysis of GATS is provided in Brown, Deardorff, Fox and Stern (1996), Feketekuty (1998), Hoekman (1995, 1996), Hoekman and Braga (1997), Low (1995), Mattoo (1999) and Snape and Bosworth (1996).

[6] The structure of the GATS reflects both the special characteristics of services and services trade, and the scope and coverage of the agreement itself. It includes scope and definition of trade in services, general obligations and disciplines, specific (negotiated) commitments, progressive liberalization (through successive rounds of negotiations), and institutional and final provisions. The GATS thus consists of two major components, namely, (1) the framework agreement including the Articles of the Agreement and its Annexes and (2) the schedules of specific commitments on national treatment and market access along with lists of exemptions from MFN treatment submitted by member governments. (See WTO, 1995: *`The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts'* for details of GATS.)

[7] The developed countries are required to abstain from imposing conditions on the access to and use of public telecommunications transport networks and services. The conditions may, however, be imposed by the developed countries if necessary to ensure the availability of services to the general public, protect the technical integrity of networks or prevent the supply of services by countries that have not made specific commitments in the area of telecommunications. On the other hand, the developing countries may impose reasonable conditions on the access to and use of telecommunications networks that they consider necessary to strengthen domestic telecommunications infrastructure and capacity and to increase their participation in international trade in telecommunications services. The GATS members are expected to make available to developing countries information on international telecommunications services and developments in telecommunications and information technology in order to assist in the strengthening of their domestic telecommunications industries.

[8] The effective rate of protection (ERP) is a measure of the extent to which trade barriers protect domestic value added in production. The effective protection coefficient (EPC) is computed by dividing the value added at domestic prices by value added at world prices. The ERP = EPC – 1.

[9] Analogous to tariffs on traded inputs, the higher the tariff-equivalent of regulatory policies for services, the lower the effective protection for industries that use the service inputs involved (Hoekman and Braga, 1997).

[10] See Industrial Policy Statement, Ministry of Commerce, Government of India.

[11] India's commitments under GATS can be downloaded from the WTO website. These commitments are summarized in Tables AIV.3 and AIV.4 in WTO (1998).

[12] India had originally declared some MFN exemption in financial services (banking and insurance), which were later withdrawn during negotiations on financial services. India also increased the annual limit on foreign bank branches from eight to twelve.

[13] A detailed and very informative discussion of India's existing regulatory policies and commitments under GATS in financial, transportation, telecommunication, tourism and software services is provided in WTO (1998).

[14] Telecommunication services under GATS constitute a sector, which is very closely related to computer services. Telecommunication services constitute a component of `communication services' (GNS code 2C). With regard to telecommunications, there appears to be considerable overlap, particularly for the activities such as database and data processing services to be performed and/or supplied on line. Given the interplay between the two sectors' listed activities, it may not be clear when telecommunication-services, computer- services or both are supplied. While GATS directly addresses the progressive liberalization of computer and telecommunication services, the WTO agreements to eliminate tariff and non-tariff barriers on information and communication technology products are of great importance to both these services (1B and 2C).

[15] "Software" appears not covered under the existing GATS classification (GNS 1B). The provisional United Nations Central Product Classification (UNCPC) code 842 refers only to "consultancy" services related to "development and implementation" of software. The packaged or standardized software may be treated as a good but consultants or other professionals, hired by a firm producing packaged software, may get covered by GATS' mode-four commitments. Moreover, it is not clear whether the online supply of packaged or even customized software should be classified a good or a service. The provisional United Nations Central Product Classification (UNCPC) code 842 refers only to "consultancy" services related to "development and implementation" of software.

[16] The share of on-site development, which was about 90 per cent in 1998-99, reduced to 59 per cent in 1997-98. The offshore project development has been increasing since 1995 due to proliferation of Software Technology Parks, service of high speed data transfer provided by VSNL, liberalized economic policy, and visa restrictions by US and some Western European countries. While the share of products and packages in the domestic market has touched 52 per cent in 1997-98, it is only 8.8 per cent in the export market. Major components of software export activity include professional services (48.4 per cent) and projects (31.5 per cent). US accounted for 58 per cent of India's software exports and Europe 21 per cent.

[17] Government of India has been supporting the development of the software and hardware sectors during the 1990s. Electronic Hardware Technology Parks (EHTPs) and Software Technology Parks (STPs) have been established since 1992 so as to attract foreign investment. Compulsory industrial licensing for the electronic related industries was abolished in 1996. Investment in the electronics industry is unrestricted in terms of foreign share holdings or repatriation of profits. For export industries, there have been additional incentives such as a five-year tax holiday, tax exemption for income from exports, duty free imports of inputs and access to some imports through Special Import Licenses (SILs). There is no ceiling on the amount of foreign equity participation in EHTPs and STPs and export-processing zones (EPZs), or in 100 per cent export oriented units. There is almost a computer revolution in the country and both government and industry are getting more and more determined to strengthen the brand equity of Indian software industry and make the country as an IT superpower.

[18] An Indian H1-B visa holder may get only $70 instead of $100 paid to a native for similar work. See Batuk Vora (1999) at www.indiatimes.com

[19] It is not possible to provide quantitative measures of commitments to liberalize trade in services in the same way as for goods since there are no comprehensive international data for trade in services by the four different modes of supply. Further, there is no equivalent of customs duties in services. The barriers to trade in services are camouflaged under quantitative restrictions, prohibition and the framework of government regulation with regard to the supply of services. The analysis of the economic impact of such measures or the effect of their removal thus does not lend itself to quantitative measurement. Hoekman (1996) provides "guesstimates" of the size of trade barriers in services. It is not encouraging to note that only 30.5 per cent of the GNS services sectors were declared with no restrictions on market access by the eighteen high-income countries (HICs) including the OECD, Hong Kong, Singapore and Korea. The corresponding figure for low and middle-income developing countries (LMICs) was 6.7 per cent. In the case of national treatment, the figure was 35.3 per cent for HICs and 8.5 per cent for LMICs. Hoekman's calculations of sectoral commitments adjusted for mode of supply, the proportion of service sectors exempted from liberalization, and the sector's weight in GDP indicates that the HICs committed 48.5 per cent of total number in the GNS list under market access and 53.0 per cent under national treatment. The corresponding figures were 11.4 and 12.6 per cent, respectively for the LMICs.

[20] Rest of South Asia (RSA) includes Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka. ASN includes Indonesia, Malaysia, the Philippines and Thailand. NIE includes Hong Kong, Singapore, South Korea and Taiwan Province of China.

[21] A similar study is being conducted on 19 developing and developed countries/regions. We expect to present its results in an International NCAER-World Bank Trade and WTO Conference due to be held on December 20-21, 1999 in New Delhi.

[22] The model makes five major assumptions. Refer to Brown et al (1996a) for details. These assumptions relate to (1) full employment; (2) balanced trade; (3) rents and revenues; (4) fixed relative wages; and (5) fixed labor supply. The aggregate, or economy-wide, level of employment is held

constant in each country. Each country maintains balanced trade (or, more accurately, that any initial trade imbalance remains constant) as trade barriers change. It is assumed that revenue from tariffs is redistributed to consumers in the tariff-laying country and spent like any other income. Similarly, the rents from non-tariff barriers and tariff equivalents of the service barriers are also assumed to remain within the importing country and to be spent like other income. While the model adjusts the economy-wide wage in each country so as to maintain the assumption of full employment, it keeps wages across sectors constant. Finally, the model assumes that total labor supply in each country is fixed, and that cross-border movement of labor does not exist.

[23] The BDS-CGE Michigan Model of world production and trade does not account for changes in FDI and cross-border movement of workers that might occur as the rate of return on capital and real wages change. The model does not make any allowance for dynamic efficiency changes and economic growth. In this paper, we are assessing only the liberalization of trade in goods and services while abstracting from dynamic changes in efficiency and economic growth. The analysis thus provides incomplete calculations of the full consequences of the Uruguay Round, which in fact involved many other things apart from removal of tariff and non-tariff barriers. In fact, it involved numerous changes and clarifications of existing agreements covering antidumping and subsidy/ countervailing duty procedures; new agreements covering TRIPs and TRIMs; and creation of the WTO, in part to strengthen dispute settlement procedures.

[24] Brown and Stern (1989) discuss issues relating to modeling market structures, in using different imperfectly competitive market structures. The present paper uses two variants of market structures, both assuming agriculture under perfect competition. In the first, it is assumed that there is monopolistic competition in all manufacturing and service sectors based on Helpman and Krugman (1985). In the second, all manufacturing sectors continue to have monopolistic competition but all service sectors are treated under perfect competition. Under monopolistic competition, firms do not face entry barriers, and each produces a different variety of a good/service at a fixed cost and constant marginal cost for primary and intermediate inputs.

[25] We use Dixit-Stiglitz (1977) aggregation function to enter varieties into both utility and production functions, with the implication that greater variety reduces cost and increases utility. See Brwon et al (1996a) for details.

[26] A large amount of data is required to run this model. The main source of data is the GTAP Release-4 (McDougall et al, 1998). This database is for the year 1995, which we use as the base year. We have extracted the following data sets from GTAP database:
bilateral trade flows across eight countries/regions in the model (including ROW); input-output tables for the seven regions (ROW is not modeled); components of final demand along with sectoral contributions for the seven regions; gross value of output and value added at the sectoral level for the seven regions; bilateral import tariff rates decomposed into 17 goods producing sectors; elasticity of substitution.

The tariff equivalents of barriers to trade in services by country/region have been computed from Hoekman (1995). Compared with trade barriers in goods, it is difficult to obtain systematic information on trade barriers on services. We followed Hoekman (1995) by constructing "guesstimates" of comparative trade restrictiveness across countries, on the assumption that each country "revealed" its policy stance with its commitments in GATS (see Brown et al, 1996a for details). Hoekman is aware of the limitations of these judgmental estimates, since it is not clear what the benchmark tariff vector for the "most restrictive" sector(s) should be, and the assumption that the coverage ratios of the country offers are correlated with actual policy stances is quite heroic. Given the arbitrariness of Hoekman's procedure, our main objective here is to get a sense of comparative importance of trade barriers in services. We also look into types of interactions that may emerge between goods and service sectors

under the assumption that services are tradable, and the countries open their service markets to foreign competition.

The monopolistic market structure in goods and services imposes additional data requirement of number of firms at this sectoral level for each of the seven regions. The data has been drawn from "International Yearbook of Industrial Statistics" (UNIDO, 1998). However, the International Yearbook of Industrial Statistics does not provide data for all the countries relevant to the regions included in the present study. For example, the data for number of firms are not available for Taiwan (NIE), Thailand (ASN), and Sri Lanka and Bangladesh (RSA). We have then used the figures of number of firms, which are available for the remaining countries of the relevant regions. We also need estimates of sectoral employment for the member countries/regions of our model. Data on this account has been drawn from the UNIDO (1995) and World Development Report (World Bank, 1997). The data for various countries at 3-digit ISIC classification were taken from UNIDO (1995) and have been aggregated according to our sectoral/regional aggregation scheme to arrive at the estimates of employed workers for manufactured goods sectors. The World Bank (1997) has been used to obtain similar data for service sectors. We also need data on supply elasticity from ROW and non-tariff coverage fraction of imports. For the present exercise, these are taken from Michigan Database.

[26] See Brown, Deardorff and Stern (1993) for details.