Determinants of India's Services Exports: A Static and Dynamic Analysis

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The service exports of our country have been increasing at a rapid pace in recent years. The service exports of India as a percentage of world export of services is more than 2%. India is far ahead of Mexico, Turkey and Poland, other competitors in service exports. The present study made an attempt to understand the growth, structure and determinants of India's service exports. The study shows that rate of growth of service exports is much higher than that of rate of growth of exports in trade in goods, in recent years.

The study also reveals that there is a structural change in India's trade in services and the share of miscellaneous services, which includes software services, is on an increase over the years. The major conclusions of the study based on static and dynamic models are:(i) The factors determining the trade in services in India are (a) trade in goods and (b) value of service sector in GDP, (ii) Trade in services show dynamic relationship only with the value of service sector GDP, and, (iii) the value of service sector GDP has a substantial influence in determining trade in services in the long-run.

Keywords: *Service Exports, Trade in Goods, Static and Dynamic Models.*

Introduction

The post-reform period witnessed an annual rate of growth of exports around 10% and India's share in world exports increased from 0.5% in the first half of 1990s to almost 1.00% in 2006. Even so, exports have not exhibited the momentum required for them to act as an engine of growth. The total contribution by service exports has also been increasing at a rapid pace over the years. The majority of which is contributed by software services. If we look at the trend in current account of Balance of Payment for the last decade we see that trade in invisibles, the major component of that being trade in services, have always shown a surplus except in 1990-91 and in this way it has been partially able to tie over the deficits in current account of Balance of Payment arising due to deficit in trade balance.

The importance of service sector in the development of the economy is realized by Government of India and the government is making efforts to improve the provision of services. However, the investment requirement is enormous and is beyond the means available to the government. Therefore, India has liberalized its Foreign Direct Investment regime in services since the 1990's, foreign equity up to 51% is now automatically allowed in restaurants and hotels, support service for land and water transport, parts of refinancing and leasing, business services including software and health and medical services. Government also allowed automatic approval provision for foreign equity up to 74% in the case of mining services, non-conventional energy generations and distribution, land and water transport, storage and warehousing.

The insurance sector has recently been opened to private sector. India's schedule under the GATS provides for specific commitments covering business services, communications, construction work for civil engineering, financial services, health and social services and tourism services. The extent of commitment varies across sectors, with certain restrictions on market access and national treatment under four modes of supply of services (Chadha, 2000).India further liberalized its commitments in basic telecommunication services in early 1998. India was among 43 countries participating in the Information Technology Agreement covering computers, telecommunication equipment, semiconductors, manufacturing equipment for semi conductors, software and scientific instruments. India's share in services trade is higher than its share in manufacturing trade (Chakraborty & Jayachandran, 2001).

India has a competitive advantage in several service sectors. There is potential for poverty alleviation from services trade, although this has been largely ignored. It is a fact that services may not employ people below poverty line directly; however liberalization of the service sector has made a number of services accessible at reasonable prices to a large number of people, including the poor. In addition, the potential for employment of unskilled personnel in some services sectors such as telecommunication, tourism and audio-visual is very high. It is interesting to note that nearly two-thirds of the employment in the telecommunications sector is of those with low or no skills. The case is almost similar in the tourism sector. It is thus essential to lock in commitments on services liberalization so that there is no backlash and increase in protection that would restrict outsourcing to India. India also wants to obtain assured market access commitments especially for labour movement. Internally, India needs to impose Universal Service Obligations on service providers to help ensure that rural and backward areas also benefit from the liberalization of services (Jha, Nedumpara, Gupta, 2004).

Modes of Service Supply under GATS

Under the GATS framework the international trade in services is classified into four modes, namely, Mode 1 cross border supply, Model 2 consumption abroad, Mode 3 commercial presence and mode 4 movements of natural persons.

Cross border supply refers to a situation where the service flows from the territory of one member country into the territory of another member country. It crosses the sovereign national barriers much like that of international trade in goods. In these cases trade in services takes place and this is equivalent to cross border movement of goods. In the case of consumption abroad the consumer of a service moves in to the territory of another member country to obtain the service. This will involve tourist visiting another country or a student joining any educational institution abroad. Commercial presence implies that service suppliers of a member country establish a territorial presence in another member country with a view to providing their services.

In this case, the service supplier establishes a legal presence in the form of a joint venture / subsidiary / representative / branch office in the host country and starts supplying services. It includes services such as banking, legal advice, insurance etc. Movement of Natural

Persons refers to temporary movement of natural persons, where a foreigner moves temporarily into a country to supply a service. Software developers from India moving to US to provide software services, a professor giving series of lectures in some other nation, etc., come under Mode 4. GATS covers only temporary movement and not citizenship, residence or employment on a permanent basis in the foreign country. The national government has power to regulate this mode of service supply by granting or refusing visas to the prospective service providers (Goyal A. 2000).

India has vast potential to grow under mode one, two and four, i.e., cross border supply of services, consumption abroad and movement of natural persons. Movement of natural persons, especially professionals, is of special importance to India as it enjoys a distinct comparative advantage in this area covering a whole range of services from computer and related services to hotel, health, engineering, construction and other professional services. The process of economic liberalization involving opening up of capital intensive services such as banking, telecommunications etc., must be matched by increased access for the temporary movement of country's professionals, in services of export interest to the nation (Ministry of Commerce, 1999).

Service Exports: India and the World

The level of India's export in services, its growth rate and the share in world trade indicates that we have significant potential in trade in services. The sectors of importance could be computer and related services, professional services covering accountancy, auditing & book keeping services, architecture services, medical and dental services, audio-visual services, construction and engineering services, education services and tourism and travel related services. In these fields the Indian professional have core competence and competitive advantage, which needs to be actualized through liberalization of delivery of services through Mode 4 and Mode 1.

The group of miscellaneous services, which includes software, financial and management services, contributed $ 4264 million to total foreign exchange earnings in the year 2001-02 which increased to $ 28983 million in 2006-07. There is in existence significant opportunity for export of services under Mode 2 (i.e. consumption abroad), for instance, in case of health services the citizen of other countries who pay very high amount for surgery and other treatment, can come to India and avail such services at a fraction of a cost of obtaining such services in their own countries (Chatterjee, 2002).

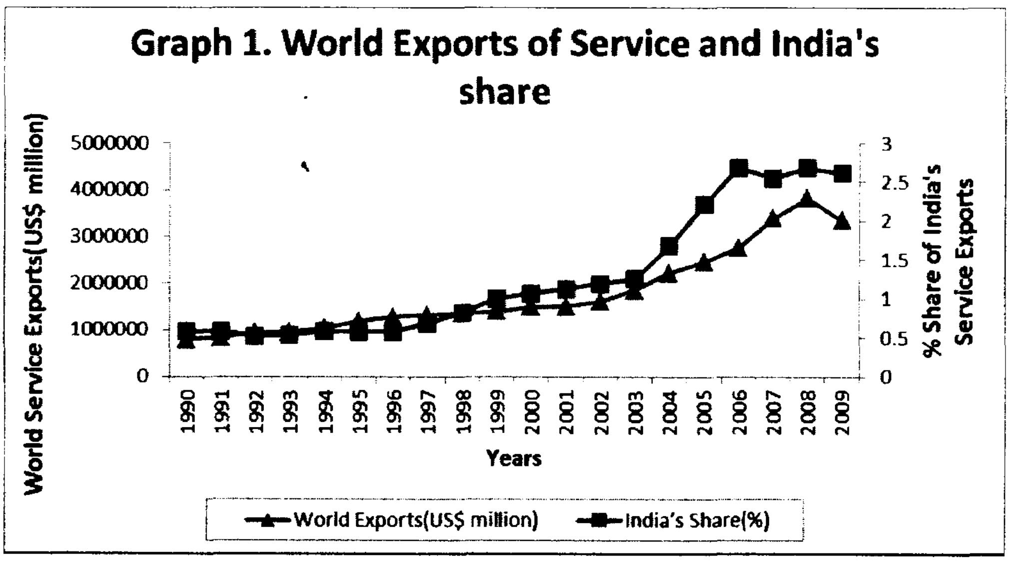
In the new millennium, when India is striving for 20% growth of exports per annum and an increase in its share (0.7% to at least 1%) in world trade of merchandise and services taken together, the country's initial condition in service exports is impressive.

India's exports of services in relation to world exports are given Table 1 and Graph 1. The Table 1, shows that the share of India's service exports to world exports has increased from 0.58% in 1990 to 1.07% in 2000 and to 2.61% in 2009. India's export in services in absolute terms also has increased from US$ 4610 million in 1990 to US$ 16030 million in 2000 and US$ 87434 million in 2009.

Table 1: Exports of Service: India and the World

Year	India's Exports: US$ million	World Exports US$ million	India's Share (%)
1990	4610	793100	0.58
1991	4906	838200	0.59
1992	4894	945700	0.52
1993	5034	949600	0.53
1994	6031	1036800	0.58
1995	6763	1188900	0.57
1996	7179	1270600	0.57
1997	8926	1319900	0.68
1998	11067	1351500	0.82
1999	14006	1406400	1.00
2000	16030	1493600	1.07
2001	16799	1498900	1.12
2002	19125	1608400	1.19
2003	23092	1842900	1.25
2004	37185	2212900	1.68
2005	54382	2458800	2.21
2006	73839	2755900	2.68
2007	86648	3387900	2.55
2008	102562	3826400	2.68
2009	87434	3350200	2.61

Source: WTO Annual Reports



Source: WTO Annual Reports

The graph I shows the growth of world export of services and India's share in it. Since 2000, the world exports of services have shown a sudden spurt. India's share in world's export of services has also shown the same pattern, that is, from 2000 onwards it is showing a rapid rise.

In 2006, the share of service exports in total exports of India was 38.04% contrary to general belief, the share of services in total exports of China was only 8.62%. Among other regions, South Africa (16.6%), Mexico (6.08%) and Russia (9%) all had much less share. The share of services work out to little over 18% and 17% to total exports including re-exports in the case of Hong Kong & Singapore respectively. The share is low at 15.86% in case of Japan, compared to over 27%, 33% and 19.19% share for the US, UK and Italy respectively. It is low at 13.18% in Germany. At the world level the share is less than 20%. (WTO, 2007)

The share of services other than travel and transport, in total service exports of India is more than 57%, a feature unique among the major developing trading countries, paralleled only by Malaysia, Turkey and Brazil and which is similar to the major advanced trading countries like US (46.3%), UK (56%), Germany (53.4%) and Japan (60%). The share of tourist and transport is significant in service exports of China, South Korea, Thailand and also of Poland, Mexico, South Africa and Russia.

India is in a good position in the league of service exporters among the developing countries. The share of services in the total exports increased during 1990-98 in a significant way by 3.6%, while it declined incase of Thailand, Ireland, Singapore and Philippines, change was marginal incase of Hong Kong, South Africa, Malaysia and South Korea. The world level increase was less than 1%. The recent 50% plus growth in exports of software is an important indicator (Raipura, 2001). India has still a great potential to grow.

India's major competitor as of now appear to be, Mexico, Poland and Turkey but soon Brazil, China and some of the far eastern countries will be competing with India. Since India's service exports increased at the rate of 24.61% during 1990-2006, compared to 7.8 % growth of world exports, its share increased from 0.58% to 2.68% over the period. Thus, India has crossed 2.5% share limit, a feat yet to be achieved in merchandise exports.

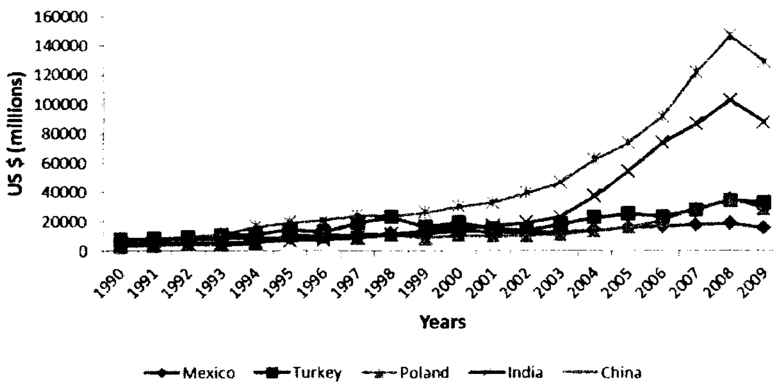
Table 2: Export of Services: India and its Major Competitors (in US$ Million)

Year	Mexico	Turkey	Poland	India	China
1990	7222	7882	3200	4610	5696
1991	7876	8163	3687	4906	6790
1992	8150	9262	4773	4894	9048
1993	8296	10518	4201	5034	10945
1994	8687	10723	4522	6031	16237
1995	8786	14475	10637	6763	19130
1996	10516	12927	9700	7179	20567
1997	10997	19238	8898	8926	24504
1998	11534	23204	10810	11067	23879
1999	11606	16230	8331	14006	26165
2000	13567	19267	10395	16030	30146
2001	12550	15084	9745	16799	32901
2002	12474	13979	10030	19125	39381
2003	12477	17909	11170	23092	46375
2004	13973	22706	13437	37185	62056
2005	16098	25552	16181	54382	73909
2006	16483	23521	20497	73839	91421
2007	17598	28253	28694	86648	121654
2008	18474	34492	35309	102562	146446
2009	15420	32759	28815	87434	128600

Source: WTO Annual Reports

In Graph 2, during 1990 till 2003 Mexico, Poland and Turkey were close competitors of India. In 1990 Mexico exported services worth US$ 7222 million, Turkey's exports were US$ 7882 million while that of Poland and India were US $ 3200 million and US $ 4610 million respectively. Since 2004, India is marching quite ahead of these nations with respect to exports of services. In fact in 2009 the combined service exports of Mexico, Turkey and Poland were less than India's service exports. These nations together exported services worth US $ 76994 million while India alone registered service exports of US $ 87434 million. But this would not mean India can have laid-back attitude, because there are other nations like china which is major threat to India's service exports.

Graph 2. Export of services from 1990 to 2009: India and its Competitors



Source: WTO Annual Reports

Structural Changes in India's Service Exports

The structural change in India's service exports is analysed by examining the changing share of export earnings of different services included in India's BOP account.

The current account of India's BOP is divided into merchandise account and invisibles account. The trade in services is reflected in invisibles account. Invisibles account is further classified into three categories: a) services; b) transfers; and c) income. In this, what is more important in the study of international trade in services is category (a). There are five items in the category of services account of India: They are: (i) travel, (ii) transportation, (iii) insurance, (iv) G.n.i.e (government not included elsewhere) and, (v) Miscellaneous. These five categories taken together are called non-factor services.

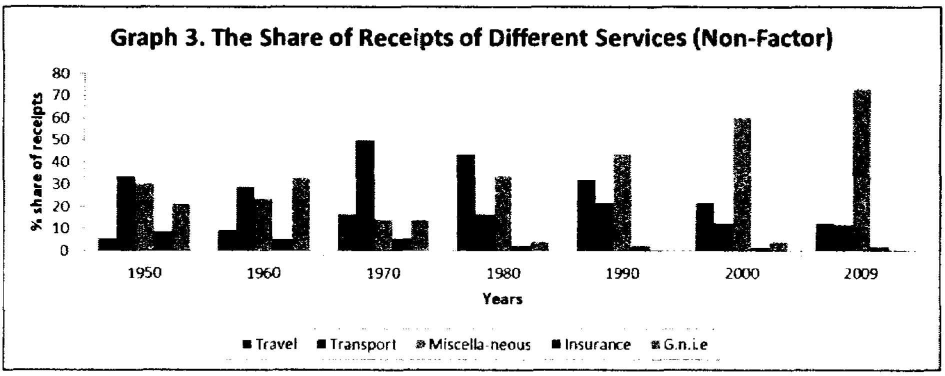
Table 3: The Share of Receipts of Different Services (Non-Factor)

Year	Travel	Transport	Miscellaneous	Insurance	G.n.i.e	Total
1950	5.61	33.7	30.33	8.98	21.34	100
1960	9.61	28.8	23.71	5.128	32.69	100
1970	16.51	50	14.22	5.5	13.76	100
1980	43.52	16.29	33.90	2.30	3.97	100
1990	31.98	21.60	43.64	2.43	0.33	100
2000	21.54	12.56	60.23	1.66	4.01	100
2009	12.63	11.89	73.31	1.71	0.46	100

Source: RBI Annual Reports

The Table 3 and Graph 3, show the shares of receipts from exports of different categories of services in the export of total non-factor services (commercial services). The share of receipts of travel has gone up over the years from 5.61% to 12.63%. In 1980, it had reached a highest percentage share of 43.52% and thereafter it declined to reach a level of 12.63% in 2009. The share of transport services has come down from 33.7% to 11.89%. The miscellaneous services, which include, tourism, financial services, consultancy services, software services, etc., has gone up from 30.33% in 1950 to 73.31% in 2009. The share of insurance service also has come down from 8.98% to 1.71%.

The share of services under G.n.i.e. has also fallen. Here we can see a structural change in the service exports. The traditional service exports like transportation have lost its significance. The case is same with services included under G.n.i.e. However, the increasing share of miscellaneous services shows that the importance of new varieties of services in India's export of services. The miscellaneous services category is showing major share because the software services are included in the miscellaneous.



Source: RBI Annual Reports

Growth of Service and Merchandise Exports: 1956-2006

The growth rates of service and merchandise exports have been analyzed using the following model

$\log Y_t = \beta_0 + \beta_1 t + u_t$

Y= receipts from exports expressed in rupee terms (crores)

t = time period

The estimate of β_1, in the above model shows the instantaneous growth rate. For a better understanding of growth of service and merchandise exports, we would also need to estimate compound growth rate. The compound growth rate is e^{β}-1 (Gujarati, 2007).

Comparison of Exports of Goods and Services

It would be interesting to compare the annual compound growth rates of exports of services and goods for different periods, viz, 1956-72, 1973-89 and 1990-2006 to know their relative export performance and the changes that are taking place over the periods. Here an attempt is made to understand the growth differences in exports of goods and export of commercial services using compound growth rates. The growth rates of service and merchandise exports over three periods are given in Table 4.

Table 4: Growth of Service (Non-factor) and Merchandise Exports

Time Period	Growth of Service Exports			Growth of Merchandise Exports			N
	β_1	Compound Growth Rate	R^2	β_1	Compound Growth Rate	R^2	
1956-1972	0.045 (7.88)*	4.60	0.79	0.08 (11.65)*	8.33	0.89	17
1973-1989	0.18 (17.93)*	19.72	0.95	0.12 (20.70)*	12.75	0.96	17
1990-2006	0.22 (35.66)*	24.61	0.99	0.16 (32.64)*	17.35	0.98	17

Figures in Parenthesis are 't' values *-significant at 1% level

The comparison of service and merchandise exports in Table (4) shows that during the period 1956-72 the service export was just 4.60% per annum as compared to 8.33% per annum growth in the case of merchandise exports. The situation has changed during the periods 1973-89 and 1990-2006. During the period 1973-89, the services exports have grown by 19.72% compared to only 12.75% growth in merchandise exports. The recent period 1990-2006 also witnessed a higher growth rate in services exports. The services exports grew by 24.61% as compared to 17.35% growth in merchandise exports. The results show that exports of services are very important for India as it grows faster than the merchandise exports.

Factors Determining India's Trade in Services

In the context of growing significance of trade in services, it is important to know which factors determine the trade in services of a country. A pioneering regression based study conducted by Fieleke (1995), shows that trade in goods is an important factor in determining bilateral trade in services for United States. An attempt has been made in this paper to study the factors determining trade in services for India.

Regression Model

The study uses time series data for India for a period of 17years i.e. from 1990 to 2006. The reason for selecting the above years is because India trade in services has been flourishing since 1990s. The data has been collected from different issues of RBI bulletin. The variables included in the study are trade in services; trade in goods and share of service sector GDP. The variables are expressed in crores (1crore=10 millions) of rupees.

The study used static and dynamic econometric models. The static model (Model-I) is a log-log Multiple Regression model. It is depicted as follows:

Model-I: $\text{Log TS} = \beta_0 + \beta_1 \log \text{TG} + \beta_2 \log \text{VSS} + u_t$

The dynamic model (Model-II) is given in the form of partial adjustment model (Gujarati, 2007).

Model-II: $\text{LogTs} = \delta\, \beta_0 + \delta\, \beta_1 \log\text{TG} + \delta\, \beta_2 \log\text{VSS} + (1\text{-}\delta)\, \beta_3 \log\text{TS}_{t-1} + u_t$

The Model-II is short-run function that determines the export of services in the short run. The coefficients of the model are short-run or impact elasticities with respect to each independent variable. Once we estimate the short run function and obtain the coefficient of adjustment δ from the coefficient of $\log\text{TS}_{t-1,}$ we can easily derive the long run function and its coefficients(β*s) by simply dividing $\delta\beta_o$,$\delta\beta_1$ and $\delta\beta_2$ by δ and omitting the lagged term.

$\beta_o{}^* = \delta\beta_o/\delta$, $\beta_1{}^* = \delta\beta_1/\delta$, $\beta_2{}^* = \delta\beta_2/\delta$

Where,

TS = Trade in Services
TG = Trade in goods
VSS = Value of Service sector GDP
$\beta_1{}^*$= Long-run elasticity with respect to trade in goods
$\beta_2{}^*$= Long-run elasticity with respect to the value of service trade

In the model I, the dependent variable is of trade in services exports and independent variables are trade in goods exports and value of service sector GDP is included. Model II is partial adjustment model, in which the dependent and independent variables are same as in model I but with an addition of lag of trade in services. The values of all the three variables have been found to be stationary at second order difference, and hence the number of observations in each case is 15 years.

Results and Discussion

The results of the regression models are presented in table (5) and table (6).

Table 5: Regression results of the Static Model (Model-I)

Variable	Coefficient	t- value
Constant (β_o)	-6.75	(-2.80)
TG (β_1)	0.76	(2.92)**
VSS (β_2)	0.68	(1.89)*
F = 42.13; R^2 =0.85; DW = 1.31		

Values in Parenthesis are t- values
**significance at 5% level, *significance at 1% level.

Table 5 exhibits the results of multiple regression model in which trade in services is dependent variable and trade in goods and value of service sector GDP are independent variables. The model shows that both the independent variables are statistically significant. A one% increase in trade in goods will lead to an increase of 0.76% in trade in services. Whereas a 1% increase in value of service sector GDP leads to 0.68% increase in trade in services. A good fit of the model is explained by high coefficient of determination and the statistically significant F-test value shows the overall significance of the model. The DW statistic indicates that there is no autocorrelation problem in the data analysis.

Table 6: Regression results of Dynamic Model (Model-II)

Variable	Coefficient (Impact elasticity)	t- value	Long-run Elasticity
Constant	-6.00	(-2.27)	
TG (β_1)	0.30	(0.87)	
VSS (β_2)	0.68	(1.88)***	1.24
TS_{t-1} (β_3)	0.45	(1.82)***	
F = 28.86; Adjusted R^2 =0.87; h = - 0.37			

*** significance at 10% level.

The results of partial adjustment model in Table 6 shows that except the coefficient of trade in goods, the other two independent variables are statistically significant. The impact elasticity of trade in service to value of service sector GDP is 0.68. However, the long run elasticity is 1.24. The high coefficient of determination shows the good fit of the model. The overall significance is revealed by statistically significant F-test value. The h statistics reveals the absence of autocorrelation problem. The comparison of the results of the Model-I and Model-II show that there is no dynamic behavior in the dependence between trade in service and trade in goods. However, there is dynamic or long run relationship between trade in services and the value of service sector GDP. Therefore, the results of the model reveal that in the long run the growth of service sector export will depend on the service sector growth.

Conclusion

Export of services has been very impressive, in recent years, as far as India is concerned. Trade in services has been growing rapidly over the years, so it is helping the nation to tie over its deficits in current account, which arises due to large deficits in trade balance. When India is struggling to get a 1% share in world trade, trade in services and particularly the service exports seem to provide a kind of assurance. The service exports of India as a percentage of world exports are increasing very fast and the percentage of India's service exports in the total world exports of services is more than 2%. India is marching far ahead in the league of service exports since 2004 compared to its competitors Mexico, Turkey and Poland. But, still India needs to keep a watch on emerging and existing software exporters, especially China.

It may be concluded from the study that there is a structural change in India's trade in services. The services whose share has been consistently growing over the years are miscellaneous services, which include software services, consultancy services, financial services, tourism services, etc. while that of insurance and some government services declined considerably over the years. The influence of software services in India's total service exports is evident, though not studied separately. A major conclusion from the study is that the rate of growth of service exports is very high during 1990-2006 as compared to 1973-1989 periods. Besides, comparison of rate of growth in trade in services with trade in goods reveals that, the rate of growth of trade in services is much higher during the above periods.

The study also tried to know the factors determining the trade in services of India using static and dynamic models. The results of this model revealed that the trade in goods and value of service sector GDP are the important determinants of trade in services in the short run. The results based on dynamic model lead us to conclude that there exists a dynamic relationship between trade in services and the value of service sector GDP. High long run elasticity with respect to the value of service sector GDP leads us to an important conclusion that in the long run India's service exports will depend on the growth of service sector.

An overall analysis of India's trade in services shows that India has vast potential in service trade. With objective and specific goal oriented trade policy with respect to service export and service sector, India is definite to gain in the world market for services in the years ahead.

References

- Chadha R. (2000). GATS & Developing Countries: A case Study of Indian Services in the International Economy, World Bank, pp:245-258.
- Chakraborty C. and Jayachandran C. (2001). Software Sector: Trends & Constraints, Economic & Political Weekly, 36(34), pp:3255-3262.
- Chatterjee D. (2002). Services Sectors of Importance to India, A Monthly Newsletter of Ministry of Commerce & Industry, Government of India, New Delhi, pp:3-4.
- Fieleke N.S. (1995). The Soaring Trade In Non-tradables, New England Economic Review, Nov/Dec, Federal Reserve Bank of Boston, pp:25-36.
- Goyal A. (2000). WTO in the New Millennium (ed.), 4th edition, Academy of Business Studies, World Trade Centre, Mumbai.
- Gujarati D., (2007). Basic Econometrics, 4th edition, McGraw-Hill International Editions, New York.
- Jha V., Nedumpara J. and Gupta S. (2004). The Doha Development Agenda: Impacts on Trade and Poverty, Overseas Development Institute, United Kingdom
- Ministry Of Commerce, (1999). India and the WTO, A Monthly Newsletter, Government of India, 1(6), New Delhi, pp:1-12.
- Raipuria K. (2001). Service Exports & Knowledge Bowl: Yet to Yield Major Gains, Economic & Political Weekly, 36 (35), pp: 3351-3352.
- RBI Annual Report, (2008). Reserve Bank of India, Mumbai
- WTO (2007) Annual Report, World Trade Organisation, Geneva.

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