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**Trade Liberalization in Producer Services: Case
Study of India?**
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Trade Liberalization in Producer Services: Case Study of India

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Introduction

- Services are the fastest growing sector of global economy
 - Constituting majority of national output
 - Increasingly important in international trade and investment flows
- Trade in services grown faster than goods over past decade
 - Growing interest in understanding economics of services, including services trade, both conceptually and empirically
- Services trade requires special attention due to two distinguishing features of services
 - Manner in which trade in services occurs through four modes of delivery
 - Cross-border supply
 - Consumption abroad
 - Commercial presence
 - Movement of natural persons
 - Restriction of services trade with aid of domestic or 'behind the border' regulations as opposed to border measures such as tariffs used to restrict goods

- Many 'behind the border' regulations in services trade aimed at realizing public policy objectives
 - Yet can become impediments to trade and investment flows in services due to
 - Their onerous nature
 - Administration and implementation mechanism
 - Can undermine the effect of liberalizing border regulations, such as investment and immigration policies
- Significant welfare gains from liberalization of these regulatory barriers
 - Several times greater than eliminating protectionist barriers in goods trade (Mattoo and Stern, 2008)
 - 50 percent reduction in such barriers may lead to five times larger welfare gains than trade liberalization in non services sectors (Robinson et al, 2008)
 - Could be same as from eliminating all remaining barriers to trade in agricultural and industrial products (Dee and Hanslow, 2001)

- Gains arise in many ways like
 - Productivity improvements and increased returns for incumbent service providers
 - Lower costs , improved quality, and greater variety for users
 - Increased FDI flows and associated technology transfer and innovation
 - Spillover effects to other goods and services owing to lower costs and increased availability of various services after liberalization
- This paper is an extension of recent empirical literature on services trade protection
 - Estimates incidence of regulatory measures, both 'at the border' and 'behind the border' for selected producer services in India
 - Assesses likely implications of liberalizing these measures for trade and investment flows in selected services and in related areas of economy

What Regulations?

- Two categories of regulations and protectionist measures in service sector
 - Restrictions or regulatory requirements affecting entry of foreign investors in host country (border level regulations)
 - Limits on foreign direct investment, restrictions on the form of entry, other entry level measures affecting foreign and domestic service providers differentially
 - Regulations affecting ongoing operations of foreign firms after their establishment in host country ('behind the border' regulations)
 - Licensing and authorization requirements, requirements concerning composition of Board of Directors, restrictions on purchase of immovable property
 - May or may not apply differentially to domestic and foreign service providers

- Regulatory measures affecting services trade can also be divided into discriminatory and non-discriminatory measures
 - Measures applying only to foreign providers and measures applying to both domestic and foreign service providers
- This paper differentiates between 'at the border' (henceforth AtB) and 'behind the border' (henceforth BtB) regulations
 - Assesses how these regulatory measures changed over 1995-2008 period for four selected producer services in India
 - Banking
 - Telecom (Fixed and Mobile)
 - Maritime Transport
 - Air Transport
- Does not differentiate between discriminatory and non-discriminatory regulations
 - Even when regulations are non-discriminatory in content and application, likely to affect foreign providers more due to administrative and procedural complexities and limiting effect on market contestability

Why Producer Services?

- Producer or intermediate services critical inputs in production, distribution, and consumption process of both goods and services
- More than half of international trade is in intermediate inputs, a rapidly growing category is of producer services (Markusen, 1989)
- Affect final price of goods and services in domestic market, shape latter's affordability
- Influence country's competitiveness in international market by shaping cost structure of final goods and services production and by influencing efficiency in related sectors

Scope and Objectives

- Objectives

- To assess importance of BtB regulations in determining total regulatory environment in these key producer services in India during 1995-2008 time period
 - To assess extent of liberalization in BtB component during this time period
 - To examine empirical relationship between total and BtB specific indices and trade and investment flows in these selected services and in related areas for India
- Examines representative set of producer services that highlight role of various BtB regulations in service sector, with implications for goods and services trade
 - Banking, telecommunication, maritime transport and air transport services
- Quantifies incidence of trade restrictions in each of these four producer services by creating restrictiveness indices for each sector and distinguishing between contribution of BtB versus AtB regulations in these indices over time
- Four different points of time taken into consideration - 1995, 1999, 2004 and 2008
 - Year selection motivated by the fact that significant policy changes have been made in India in the four selected services in these years

Methodology

- Methodology relies on collection and analysis of secondary data and construction of some empirical indices
 - Secondary data sources include information and published reports by government authorities and multilateral, regional and country agencies
- Empirical analysis builds on existing work on restriction indices for services by OECD and academics at World Bank and Australian Productivity Commission
 - Calculated Mode-wise restrictiveness indices by assigning scores to different regulatory barriers such as FDI limit, composition of Board of Directors etc
 - Assigned weights to various sub categories in that mode with a total weight of one to that particular mode
 - Calculated aggregate trade restrictiveness indices by giving specific weights to each mode and the sub categories within that mode with a sum total of one for all four modes together
 - Weights assigned using statistical technique of factor analysis
- Some important studies - McGuire and Schuele (2000), Dihel and Shepherd (2007), McGuire, Schuele and Smith (2005), and Findlay and Zhang (2008) for constructing indices for banking, telecom, maritime and air transport services respectively

- Calculates these indices **mode-wise** and **composite (across all modes)**, In each case there is a
 - **Total Restrictiveness Index (TRI)** which includes all kinds of regulatory restrictions
 - **BtB Index** which is constructed only for BtB regulatory restrictions
- Country selection motivated by
 - Considerable liberalization in trade and investment regime in India since initiation of reforms in 1991
 - Contribution of services in India's GDP and exports
 - Risen from 43% (1990-91) to 58% (2007-08) (Economic Survey, 2008)
 - Share in total exports grown from 20% (1990-91) to 37% (2007-08) (UNCTAD Handbook of Statistics ,2008)
 - Share of services in India's total exports expected to rise to about 50.4%, likely to surpass merchandise exports by 2012 (FICCI Survey, 2007)

- Selection of four aforementioned producer services motivated by
 - Each a vital input in production or distribution process for either goods or services or both
 - Telecommunication services affect competitiveness in other sectors of economy, have bearing on trade in areas such as IT and IT-enabled services
 - Air transport services have bearing on goods trade as well as tourism and business travel related services trade
 - Maritime transport services affect competitiveness in merchandise trade
 - Banking services affect efficiency of financial intermediation and thus indirectly transactions in both goods and services
 - Varying degrees of liberalization in these four services in India over past two decades, thus providing scope for comparisons regarding role of BtB restrictions in liberalization process across these services
- Considers only non prudential regulations as prudential regulations are imposed with primary objective of meeting certain public policy objectives

- This study contribute to existing literature by
 - Differentiating between border level and 'behind the border' regulations and estimating separate indices for total and 'behind the border' regulations
 - Modifying existing templates of earlier studies, which focus on overall regulations, to include BtB regulations such as
 - Freedom to purchase immovable property, tax structure, complexity of tax laws
 - Capturing relationship between BtB liberalization and trade and investment flows in the selected service sector and in related parts of economy
 - Assessing likely implications for welfare and gains from service sector liberalization
 - Estimating incidence of regulations for selected services at four points in time over a relatively long time period of 1995-2008, compared to most previous studies which involve one or two points in time estimations

Representative Set of 'At the Border' Regulations

Service Category	Mode1	Mode2	Mode3	Mode4
Banking Services	*	*	1.Restrictions on Foreign equity limits in domestic banks 2.Restrictions on joint venture agreements	Restrictions on work permits
Telecom Services	*	*	1.Restrictions on Foreign equity limits in domestic companies 2.Restrictions on joint venture agreements	Restrictions on work permits
Maritime Transport Services	*	*	1.Conditions on right to fly national flag 2.Form of commercial presence	Restrictions on work permits
Air Transport Services	*	*	1.Foreign equity participation in domestic airlines 2.Foreign equity participation in domestic airlines by foreign airlines	Restrictions on work permits

Source: Authors' selection based on UNCTAD, OECD and Australian Productivity Commission studies

** All the restrictions in this mode are of BtB types*

Representative Set of ‘Behind the Border’ Regulations

Service Category	Mode1	Mode2	Mode3	Mode4
Banking Services	1.Cross-border borrowing from foreign banks 2.Cross border deposits with foreign banks	1.Taxes or registration/authorisation requirements on consumers travelling abroad	1.Non-discriminatory resource allocation requirements 2.Restrictions on Expanding the number of banking outlets	1.Composition of Board of Directors 2.Restrictions on temporary movement of people for shorter and longer stay
Telecom Services	1. Restrictions on Lease line or providing network 2. Connections of leased lines and private networks to the PSN	1.Restrictions on Call back services	1.Licensing Requirements 2.Level of competition	1.Composition of Board of Directors 2.Restrictions on temporary movement of people for shorter and longer stay
Maritime Transport Services	1.Restrictions on liner shipping 2.Restrictions on bulk and international shipping	1.Restrictions on consumption abroad on international routes	1.Restrictions on cabotage 2.Restrictions on transportation of non commercial cargoes	1.Composition of Board of Directors 2.Restrictions on temporary movement of people for shorter and longer stay
Air Transport Services	1.Restrictions on cross border supply on international routes 2. Restrictions on cross border supply on domestic routes	1.Restrictions on consumption abroad on international routes	1. Seventh Freedom Rights (Cargo) 2. Level of competition	1.Composition of Board of Directors 2.Restrictions on temporary movement of people for shorter and longer stay

Source: Authors' selection based on UNCTAD, OECD and Australian Productivity Commission studies

Results of Empirical Work for Selected Services

Banking

- No difference between TR Index and BtB Index for modes 1 and 2, differences between the two indices for modes 3 and 4

- All the regulatory barriers are of BtB types in modes 1 and 2

- A decreasing trend in the indices for all the modes excepting mode 2 and 4

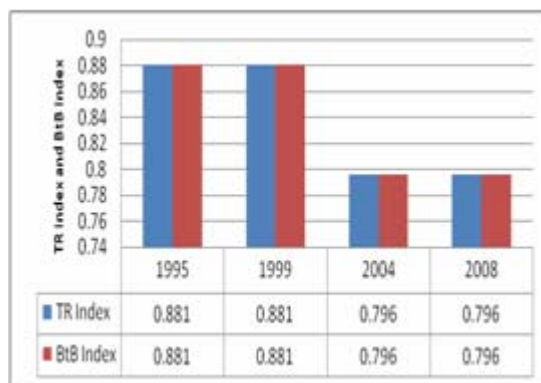
Mode-wise and Composite TR and BtB Indices for Banking Services in India

Year	Mode 1		Mode 2		Mode 3		Mode 4		Composite Index	
	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index
1995	0.881	0.881	0.33	0.33	0.518	0.3125	0.3577	0.3152	0.5571	0.4477
1999	0.881	0.881	0.33	0.33	0.518	0.3125	0.3577	0.3152	0.5571	0.4477
2004	0.796	0.796	0.33	0.33	0.4265	0.2625	0.3577	0.3152	0.4843	0.3973
2008	0.796	0.796	0.33	0.33	0.381	0.25	0.3577	0.3152	0.4603	0.3898

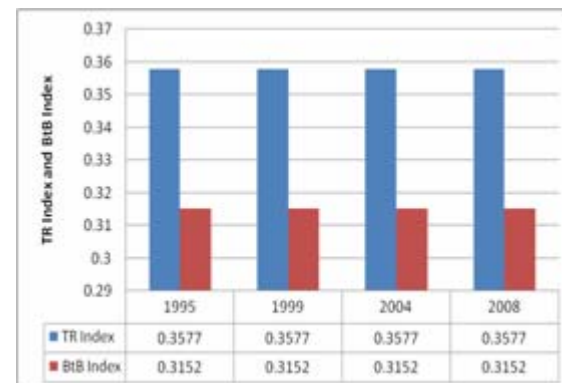
Source: Authors' Calculations

- Decrease most noticeable for mode 3
- Increased foreign equity participation in private banks and granting of establishment rights to wholly owned subsidiary of foreign banks in India

Mode1

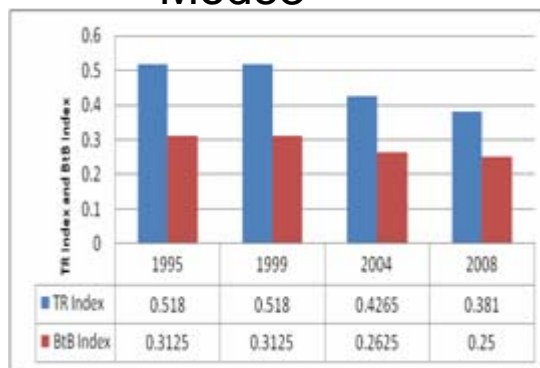


Mode4

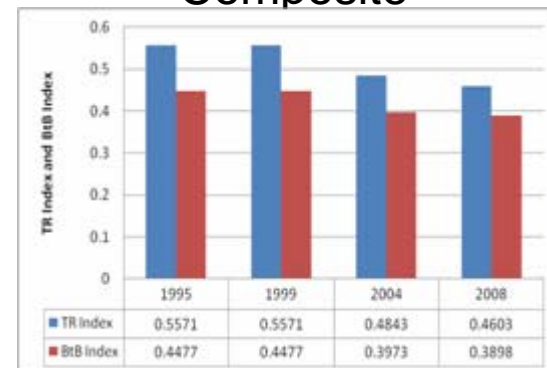


- Decreasing trend also in Composite TR Index and Composite BtB Index over time
- Decline in Mode 1 indices due to higher limits for external borrowings for corporates and liberalization measures in mode3

Mode3



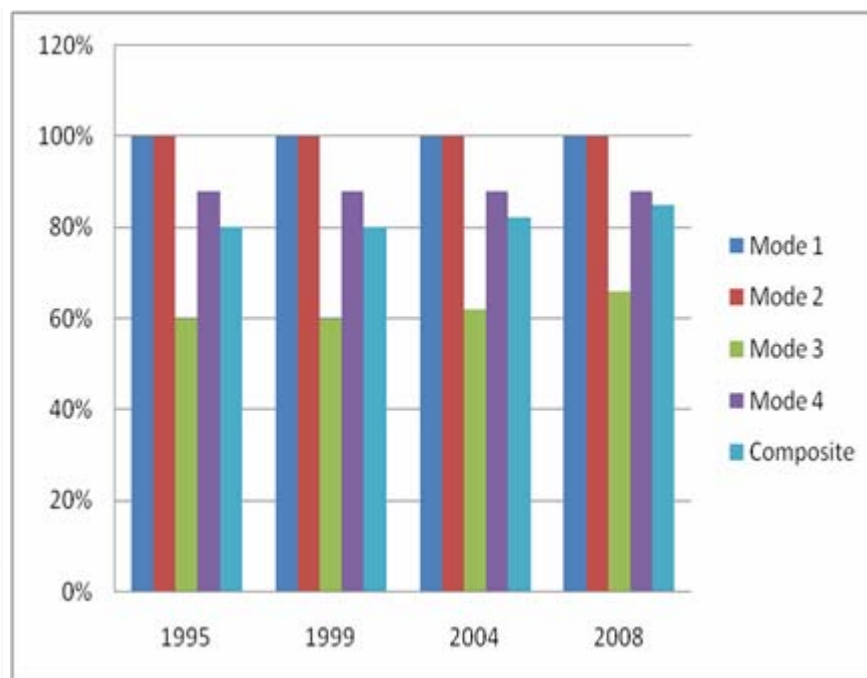
Composite



Source: Authors'
Calculations

- BtB Contribution increased for mode 3 and composite mode
 - More liberalization in border level regulations

Year	Mode 1	Mode 2	Mode 3	Mode 4	Composite Index
1995	100%	100%	60%	88%	80%
1999	100%	100%	60%	88%	80%
2004	100%	100%	62%	88%	82%
2008	100%	100%	66%	88%	85%



Source: Authors' Calculations

Telecom Services (Fixed)

- No longer any restrictions on cross border supply (mode1) of fixed telecom services since 2004

- Complete swing due to permitting of lease line and connections of leased lines to public service network and IP telephony which was not allowed prior to 2004

- Significant decline in both TR and BtB indices over the years for mode3, the most important mode for telecom services

- Increased FDI in fixed line telecom services (at present 26%)
- Removal of restrictions on joint venture agreements
- Lifting restrictions on the provision of value added services
- Introduction of easier tax laws and abolition of government monopoly

Mode-wise and Composite TR and BtB Indices for Telecom Services (Fixed) in India

Year	Mode 1		Mode 2		Mode 3		Mode 4		Composite Index	
	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index
1995	1	1	0	0	0.7963	0.49	0.2475	0.2000	0.7497	0.6215
1999	1	1	0	0	0.7193	0.413	0.2475	0.2000	0.6827	0.5545
2004	0	0	0	0	0.4541	0.302	0.2373	0.1898	0.3187	0.2607
2008	0	0	0	0	0.3176	0.198	0.2373	0.1898	0.2097	0.1692

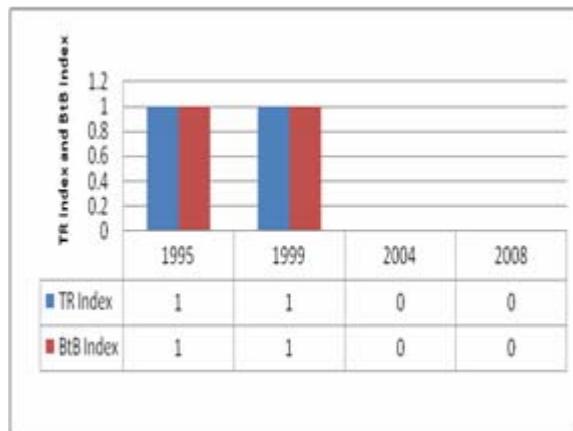
Source: Authors' Calculations

- Marginal drop in both the TR and BtB indices for mode4 over the period of study

- Significant decline in the composite Trade Restrictiveness and BtB Indices

- Driven by liberalization in modes 3 and 1
- Very low index value in 2008 showing that fixed telecom sector is highly liberalized in India
- Reflected in cheap and easy availability of fixed telecom services in India today

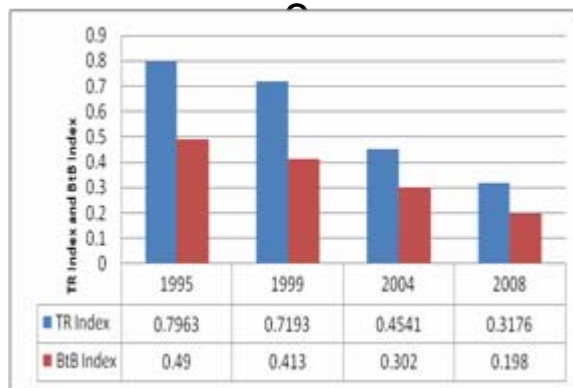
Mode1



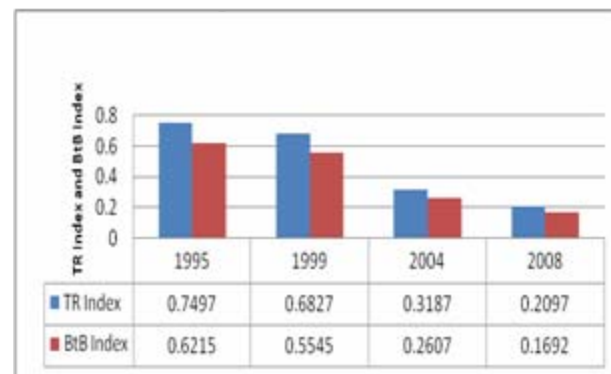
Mode4



Mode



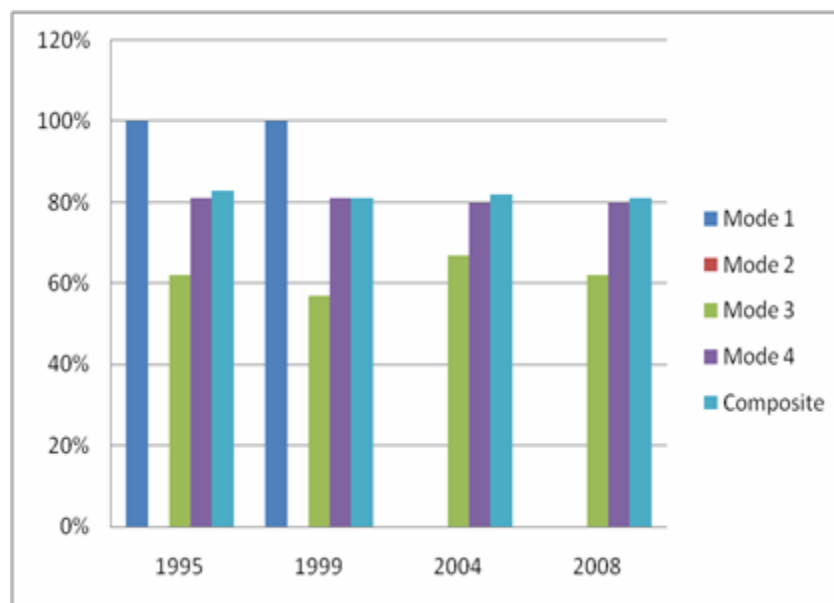
Composit



Source: Authors' Calculations

Contribution of BtB Regulations in Modal & Composite TRI for Telecom Services (Fixed) (%)

Year	Mode 1	Mode 2	Mode 3	Mode 4	Composite Index
1995	100%	**	62%	81%	83%
1999	100%	**	57%	81%	81%
2004	*	**	67%	80%	82%
2008	*	**	62%	80%	81%



Source: Authors' Calculations

*All the restrictions in mode1 have been removed in 2004

** Mode2 is restriction free since the beginning of the study

Telecom Services (Mobile)

- Broadly similar liberalization trends in the calculated indices for mobile and fixed line telecom services
- Mode3 (TRI and BtB) experienced more liberalization in the case of mobile services
 - Removal of all restrictions on the provision of value added services
 - Emergence of a highly competitive market for mobile telecom services over the years

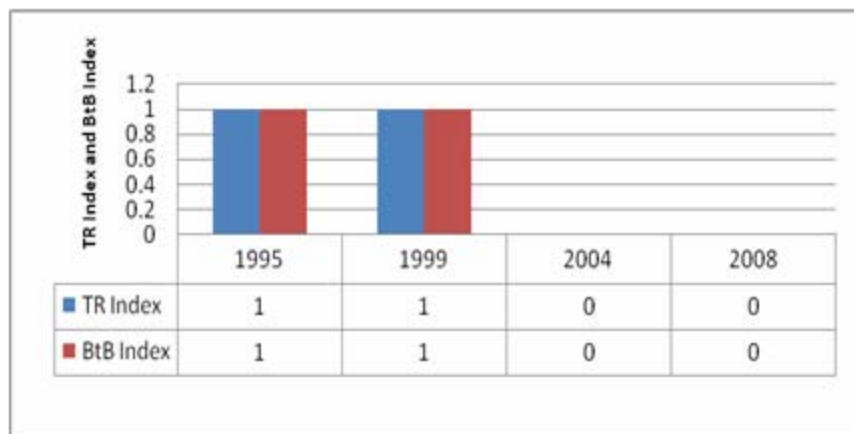
Mode-wise and Composite TR and BtB Indices for Telecom Services (Mobile) in India

Year	Mode 1		Mode 2		Mode 3		Mode 4		Composite Index	
	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index
1995	1	1	0	0	0.7963	0.49	0.2475	0.2000	0.7497	0.6215
1999	1	1	0	0	0.7193	0.413	0.2475	0.2000	0.6827	0.5545
2004	0	0	0	0	0.4351	0.283	0.2373	0.1898	0.2987	0.2407
2008	0	0	0	0	0.2796	0.16	0.2373	0.1898	0.1697	0.1292

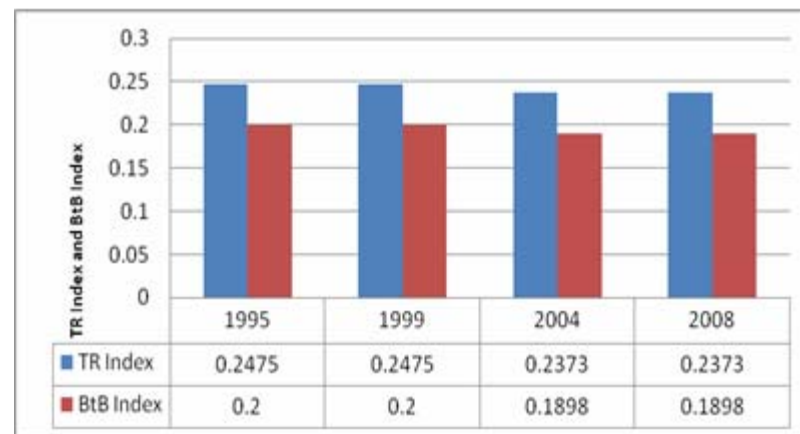
Source: Authors' Calculations

Mode-wise and Composite TR and BtB Indices for Telecom Services (Mobile) in India

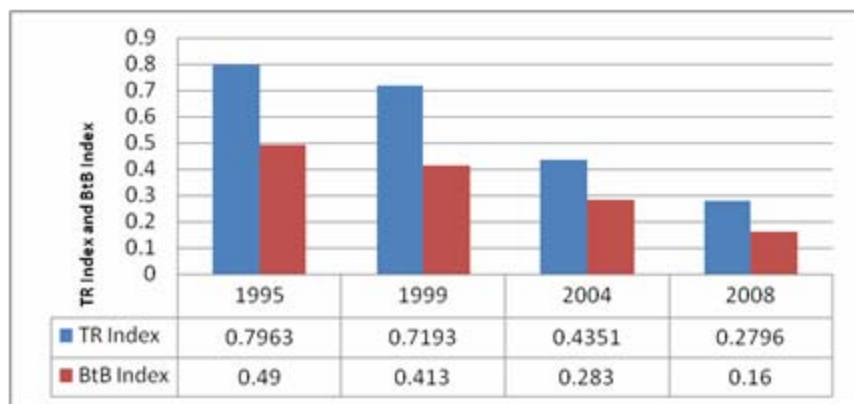
Mode1



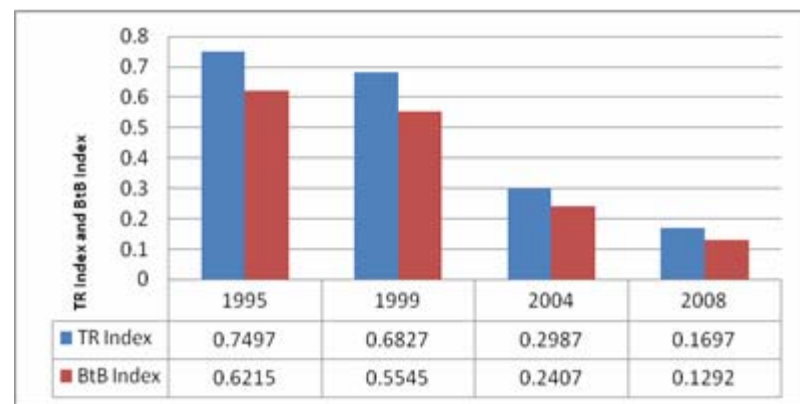
Mode4



Mode



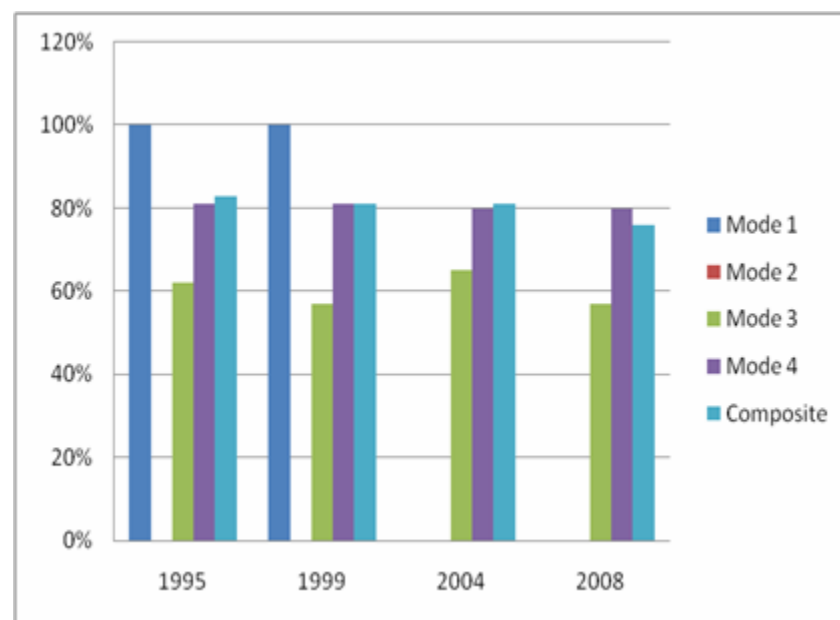
Composite



Source: Authors' Calculations

- Different pattern shown in contribution of BtB regulations in the mode-wise and composite trade restrictiveness index
 - Modes 1 and 2, same trend as in the case of fixed telecom services
 - Mode3, cycles of liberalization where at times AtB regulations have been liberalized more than BtB regulations, while at other times, reverse happened
 - Composite index, larger decline in the contribution of BtB regulations in total trade restrictiveness over the years
- For mobile telecom services, relatively more liberalization in BtB regulations than border regulations

Year	Mode 1	Mode 2	Mode 3	Mode 4	Composite Index
1995	100%	**	62%	81%	83%
1999	100%	**	57%	81%	81%
2004	*	**	65%	80%	81%
2008	*	**	57%	80%	76%



Source: Authors' Calculations

*All the restrictions in mode1 have been removed in 2004

** Mode2 is restriction free since the beginning of the study

Maritime Transport Services

- Different trend in restrictiveness indices (TRI and BtB) as compared to that seen for other services
- An upward trend in mode 1 restrictiveness indices
 - Additional restrictions imposed on foreign companies with regard to supply of maritime agency services
- An upward trend in mode3 restrictiveness indices
 - Value of these indices very high, much higher than in the case of the other services discussed
 - Restrictions on right to fly national flag, commercial presence, cabotage etc.

Mode-wise and Composite TR and BtB Indices for Maritime Transport Services in India

Year	Mode 1		Mode 3		Mode 4		Composite Index	
	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index	TR Index	BtB Index
1995	0.125	0.125	0.5755	0.2575	0.3577	0.3152	0.4548	0.2237
1999	0.22	0.22	0.6455	0.3275	0.3577	0.3152	0.5198	0.2887
2004	0.22	0.22	0.6225	0.3275	0.3577	0.3152	0.5037	0.2887
2008	0.22	0.22	0.6225	0.3275	0.3577	0.3152	0.5037	0.2887

Source: Authors' Calculations

- No change in mode 4 restrictiveness indices over time

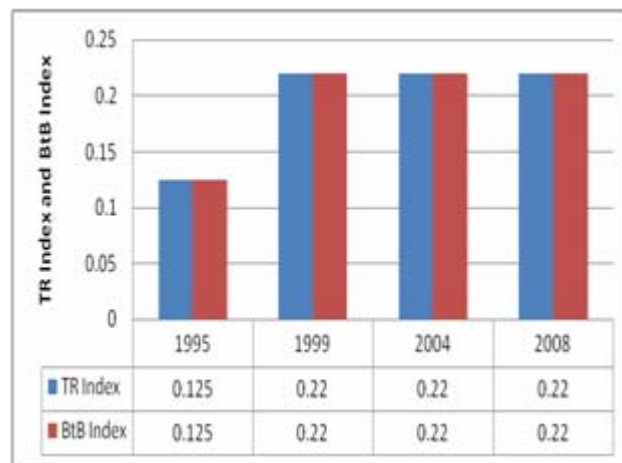
- Restrictiveness is much lower than in the case of mode 3

- An upward trend in composite restrictiveness indices

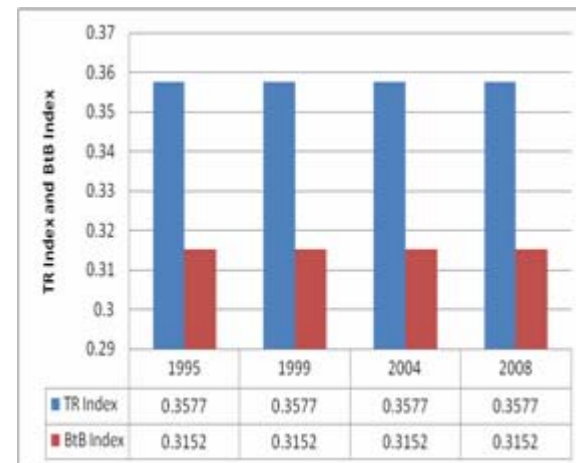
- Increased restrictiveness in modes 1 and 3

- Indicates maritime services are still highly regulated in India and restrictions take the form of both 'at the border' and 'behind the border' measures

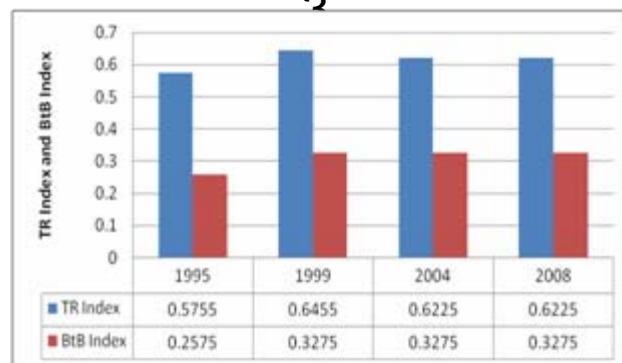
Mode1



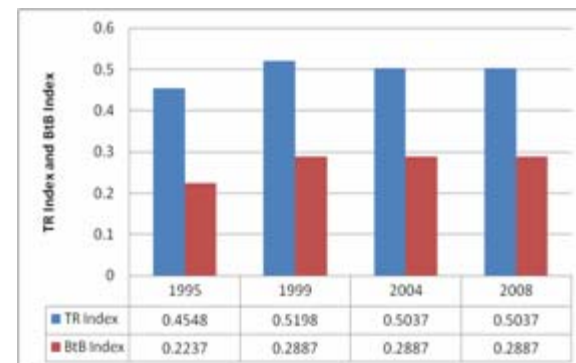
Mode4



Mode 2



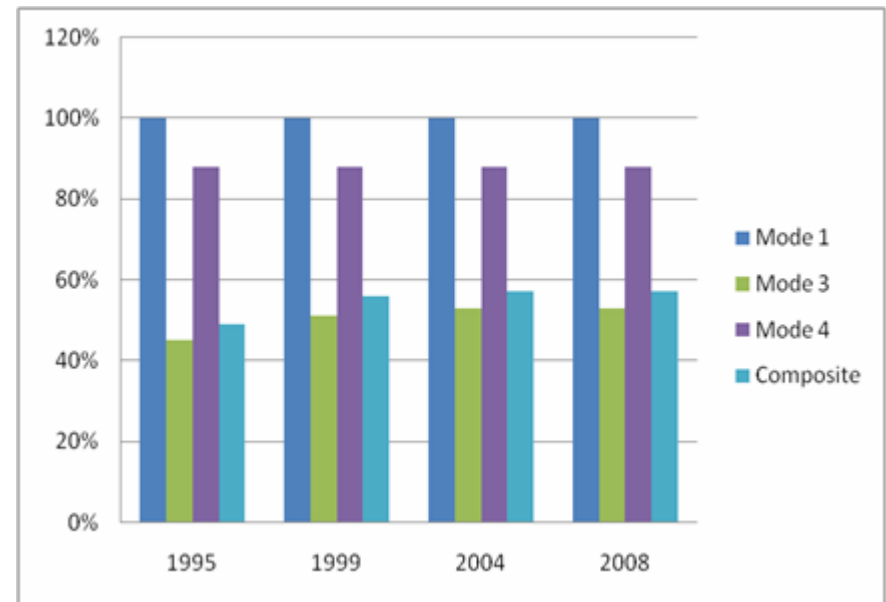
Composite



Source: Authors'
Calculations

Contribution of BtB Regulations in Modal & Composite TRI for Maritime Transport Services (%)

Year	Mode1	Mode3	Mode4	Composite
1995	100%	45%	88%	49%
1999	100%	51%	88%	56%
2004	100%	53%	88%	57%
2008	100%	53%	88%	57%

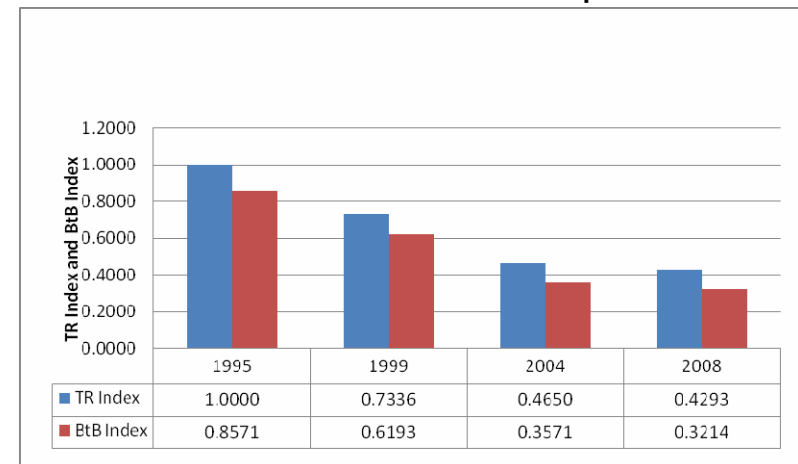


Source: Authors' Calculations

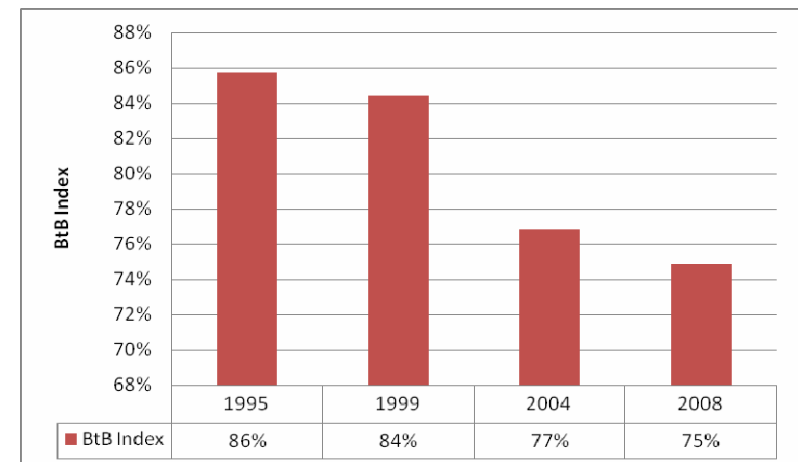
Air Transport Services

- Highly regulated sector in India a decade ago
- Significant degree of liberalization both in AtB and BtB regulations over the past decade
 - Sharp reduction in TR index and BtB index in 2004 and 2008
 - Increased foreign equity participation that has been permitted since 2004 in domestic airlines
 - Signing of an open skies agreement with the US
 - Granting of rights to private domestic airlines to fly international routes resulting in increased market shares for private players
 - Introduction of a new policy for air transport liberalization in 2004
- Considerable decline in contribution of BtB regulations in the overall TR index indicating relatively more liberalization of BtB measures in the air transport services sector

TR and BtB Index for Air Transport Services



% Contribution of BtB in Total regulations



Source: Authors' Calculations

Summary and Discussion of Results

- Greatest liberalization in the case of telecom services followed by banking services and an increase in restrictiveness for maritime transport services
- The extent of change in BtB has been divided by the extent of change in the TR index to show the extent of liberalization in BtB measures relative to border measures
 - Quotient less than 1 for banking services
 - Most of the changes have occurred in AtB regulations like increased foreign equity limits in private banks, forms of commercial presence etc
 - BtB regulations that have been liberalized include those pertaining to expansion of banking outlets and streamlining of tax law
 - Domestic regulatory control over banks remains the norm
 - Quotient nearly 1 for telecom services
 - Liberalization of both AtB and BtB measures to a comparable extent such as increased foreign equity participation, removal of restrictions on value added services, government monopoly etc
 - Explains increased investment flows not only in India's telecom services but also in related areas such as IT and IT enabled services benefited by the increased efficiency of the telecom sector (Ministry of Finance, Government of India, 2008)

- High quotient value for maritime transport services
 - BtB related restrictions have increased over the years in this sector like restrictions on cabotage, providing maritime agency services etc
 - High degree of restrictions in this sector led to inefficiencies reflected in
 - Lower average age of the Indian fleet compared to the global average (16 years compared to 19 years of the world fleet)
 - Lower productivity and inefficiency of Indian ports compared to other ports in the region (Colombo, Singapore, Hong Kong, etc) (Mukherjee & Sachdeva 2003)
- Quotient slightly greater than 1 for air transport sector
 - Considerable liberalization, especially when compared to maritime transport
 - Relatively more liberalization in BtB regulations
 - Reflected in increased air traffic, low air fares and vast improvement in various facilities in India's aviation sector today

Composite and Mode 3 specific total TR Indices for selected producer services

Service	Mode 3 TRI				Composite TRI			
	1995	1999	2004	2008	1995	1999	2004	2008
Banking	0.518	0.518	0.4265	0.3810	0.5571	0.5571	0.4843	0.4603
Telecom (Fixed)	0.7963	0.7193	0.4541	0.3176	0.7497	0.6827	0.3187	0.2097
Telecom (Mobile)	0.7963	0.7193	0.4351	0.2796	0.7497	0.6827	0.2987	0.1697
Maritime Transport	0.5755	0.6455	0.6225	0.6225	0.4548	0.5198	0.5037	0.5037
Air Transport*	-	-	-	-	1	0.734	0.465	0.429

Source: Authors' Calculations

**Only Composite TR Indices were constructed for Air Transport Services*

Composite and Mode 3 specific BtB Indices for selected producer services

Service	Mode 3 BtB Index				Composite BtB Index			
	1995	1999	2004	2008	1995	1999	2004	2008
Banking	0.3125	0.3125	0.2625	0.2500	0.4477	0.4477	0.3973	0.3898
Telecom (Fixed)	0.49	0.413	0.302	0.198	0.6215	0.5545	0.2607	0.1692
Telecom (Mobile)	0.49	0.413	0.283	0.16	0.6215	0.5545	0.2407	0.1292
Maritime Transport	0.2575	0.3275	0.3275	0.3275	0.2237	0.2887	0.2887	0.2887
Air Transport*	-	-	-	-	0.857	0.619	0.357	0.321

Source: Authors' Calculations

**Only Composite TR Indices were constructed for Air Transport Services*

Change in Total restrictiveness and BtB restrictiveness indices (%)

Service	TRI		BtB Index		Change in BtB/Change in TR Index	
	Mode3	Composite	Mode3	Composite	Mode3	Composite
Banking	-26%	-17%	-20%	-13%	0.76	0.75
Telecom (Fixed)	-60%	-72%	-60%	-73%	0.99	1.01
Telecom (Mobile)	-65%	-77%	-67%	-79%	1.04	1.02
Maritime Transport	8%	11%	27%	29%	3.33	2.72
Air Transport*	-	-57%	-	-63%	-	1.10

Source: Authors' Calculations

*Only Composite TR Indices were constructed for Air Transport Services

Relating Trade Liberalization in Services to Trade and Investment flows

- Examined relationship of calculated indices and trends in liberalization for the four selected producer services with trade and investment flows in goods and services
 - To show how liberalization of border and 'behind the border' regulations in producer services relates to trade flows, either in goods, or in services, or as may be relevant, in both as well as to investment flows in the concerned service sector
- A negative coefficient imply increased liberalization, i.e., a lower value for the TR or BtB indices, is associated with higher trade and investment flows
- Correlation results corroborated wherever possible with efficiency measures and performance indicators in the four selected services
 - To indicate how changes in regulatory environment affected their performance and subsequently had spillover effects in other sectors

Banking Services

- Negative relationship between TR and BtB indices and various measures of trade and performance
- Liberalization associated with improved efficiency and increased trade
- For most of coefficients, relationship is significant at either 1% or 5% significance level
- These coefficients particularly high and very significant for export credit, an important driver of trade in all goods and services
- Performance indicators for foreign banks also show same trend, indicating improved performance

Type of Trade Restrictiveness Index		Export Credit	Financial Services Trade	Foreign Banks Performance (as a %age of total assets)		
				Gross Profit	Net Profit	Net Interest Income (Margin)
Composite Banking TRI	Pearson Correlation	-.929(**)	-.457	-.689(*)	-.706(*)	-.647(*)
	Sig. (1-tailed)	0	.151	0.014	0.011	0.041
	N	14	7	10	10	8
Composite Banking BtB	Pearson Correlation	-.867(**)	-.457	-.625(*)	-.696(*)	-0.56
	Sig. (1-tailed)	0	.151	0.027	0.013	0.075
	N	14	7	10	10	8

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Source: Authors' Calculations based on data accessed from UNCTAD Handbook of Statistics 2008 and India Statistics Online Database

Telecommunication Services

- Correlation not significant for mode 3 total restrictiveness indices (TRI)
- But significant for mode 3 BtB restrictiveness indices
- Implies BtB liberalization has made possible an increasingly competitive market structure in telecom services and has helped attract FDI in this sector

Type of Restrictiveness Index		FDI in Telecom
Mode3 Fixed Telecom TRI	Pearson Correlation	-0.537
	Sig. (1-tailed)	0.068
	N	9
Mode3 Fixed Telecom BtB	Pearson Correlation	-.648(*)
	Sig. (1-tailed)	0.029
	N	9
Mode3 Mobile Telecom TRI	Pearson Correlation	-0.548
	Sig. (1-tailed)	0.063
	N	9
Mode3 Mobile Telecom BtB	Pearson Correlation	-.650(*)
	Sig. (1-tailed)	0.029
	N	9

* Correlation is significant at the 0.05 level (1-tailed).

Source: Authors' Calculations based on data accessed from India Statistics Online Database and Department of Industrial Policy and Promotion (DIPP) reports and policy documents

Telecommunication Services

- TR and BtB indices highly negatively correlated with services trade data considered for analysis
- Correlation coefficients significant either at 1% or 5% significance levels
- Tele-density/ internet penetration in India remain below world averages, but significant gains made over the past decade

Year	Tele Density (Per 100 Inhabitants)		Internet Penetration (Per 100 Inhabitants)	
	India	World	India	World
1998 ^{a/}	1.16	12.14	0.01	1.05
2008	32.57	75.3	0.45	6.06

Type of Restrictiveness Index		Communication Services Trade	IT Software & Services Exports	ITES Exports	Total (IT & ITES) Exports	Other Business Services Exports	Other Business Services Imports
Fixed Telecom Composite TRI	Pearson Correlation	-.743(*)	-.786(*)	-.830(*)	-.799(*)	-.804(**)	-.907(**)
	Sig. (1-tailed)	.028	0.032	0.02	0.028	0.001	0
	N	7	6	6	6	12	12
Fixed Telecom Composite BtB	Pearson Correlation	-.743(*)	-.789(*)	-.833(*)	-.802(*)	-.800(**)	-.906(**)
	Sig. (1-tailed)	.028	0.031	0.02	0.027	0.001	0
	N	7	6	6	6	12	12
Mobile Telecom Composite TRI	Pearson Correlation	-.743(*)	-.794(*)	-.838(*)	-.808(*)	-.805(**)	-.907(**)
	Sig. (1-tailed)	.028	0.03	0.019	0.026	0.001	0
	N	7	6	6	6	12	12
Mobile Telecom Composite BtB	Pearson Correlation	-.743(*)	-.799(*)	-.841(*)	-.812(*)	-.801(**)	-.906(**)
	Sig. (1-tailed)	.028	0.028	0.018	0.025	0.001	0
	N	7	6	6	6	12	12

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Source: Authors' Calculations based on data accessed from UNCTAD Handbook of Statistics 2008 and India Statistics Online Database

Maritime Transport Services

- TR and BtB indices for maritime sector correlated with deadweight tonnage of Indian fleet and share of Indian fleet in total world fleet for both bulk cargo and general cargo

- Significant negative correlation between indices and these parameters

- Correlations more significant and larger for BtB indices indicating liberalization of BtB regulations likely to be more important in enabling merchandise trade

Type of Trade Restrictiveness Index		Deadweight tons of Indian Fleet		%age of Indian Fleet in Total World Fleet	
		Bulk Carriers	General Cargo	Bulk Carriers	General Cargo
Composite Maritime Transport TRI	Pearson Correlation	-.547(*)	-.663(**)	-.567(*)	-.651(**)
	Sig. (1-tailed)	0.026	0.007	0.022	0.008
	N	13	13	13	13
Composite Maritime Transport BtB	Pearson Correlation	-.705(**)	-.800(**)	-.734(**)	-.790(**)
	Sig. (1-tailed)	0.004	0.001	0.002	0.001
	N	13	13	13	13

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Source: Authors' Calculations based on data accessed from UNCTAD Handbook of Statistics 2008

Maritime Transport Services

- Productivity measures in this sector remain low
- Port efficiency as measured by crane and berth productivity for small and large vessels at major Indian ports remains much below than that for efficient ports such as Singapore

Port		Crane productivity for small vessels	Berth productivity for small vessels	Crane productivity for large vessels	Berth productivity for large vessels
India	Nhava Sheva	18	30	22	40
	Jawaharlal Nehru	16	24	20	36
	Tuticorin	14	14	-	-
Singapore		23	45	36	140

- Not Available

Source: 'UNCTAD Monographs on Port Management' Report 2002, Table 5, Page 13

Air Transport Services

- Liberalization very significantly and highly correlated with trade in travel, tourism, and business services trade and with other measures such as international passengers and air freight carried

- BtB indices show higher and more significant correlation than overall TR indices suggesting BtB liberalization of air transport services potentially has greater bearing on trade flows in these related services

Type of Trade Restrictiveness Index		Tourist Arrival to India	Share of India in World Tourism	Travel Services Exports	Travel Services Imports	Other Business Services Exports	Other Business Services Imports	International Passenger Carried	International Air Freight Carried
Air Transport TRI	Pearson Correlation	-.851(**)	-.648(*)	-.848(**)	-.923(**)	-.689(**)	-.822(**)	-.823(**)	-.701(**)
	Sig. (1-tailed)	0	0.011	0	0	0.007	0.001	0	0.004
	N	14	12	12	12	12	12	13	13
Air Transport BtB	Pearson Correlation	-.861(**)	-.666(**)	-.859(**)	-.928(**)	-.700(**)	-.832(**)	-.830(**)	-.705(**)
	Sig. (1-tailed)	0	0.009	0	0	0.006	0	0	0.004
	N	14	12	12	12	12	12	13	13

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Source: Authors' Calculations based on data accessed from UNCTAD Handbook of Statistics 2008 and India Statistics Online Database

Limitations of Study

- Weights used for constructing the indices
 - Weights based on the statistical technique of Factor Analysis rather than purely subjective judgment, may still not accurately reflect the actual economic importance of various regulations
 - Modification and readjustment of these weights in order to capture BtB regulations separately, further increases subjectivity of these weights
 - Weights taken to be invariant over the entire time period, although it is possible that technological changes may cause a shift in trade from one mode to another and thus changes in the relative importance of the factors over time
- Difficult to obtain accurate and consistent time series data for many of service sector parameters and regulations
 - At times, proxy information has been used
 - Limited number of data points for some of the selected services
- Indices do not capture yearly changes in the restrictiveness indices over the 1995-2008 period, attribute all changes to four particular points in time (i.e., 1995, 1999, 2004 and 2008)

Conclusion and Policy Implications

- Significant liberalization undertaken in selected services in India, excepting the case of maritime services, over the past decade or so
- Greater part of this liberalization has been at the border while many 'behind the border' restrictions continue
- Where liberalization has been consistent and significant, resulted in improved efficiency and performance in the concerned service sector, and also been positively associated with
 - Investment inflows into that sector
 - Trade in that sector
 - Trade in related services
 - Trade in goods
- Results confirm the importance of these producer services in shaping competitiveness and driving trade and investment flows
- Consistent with earlier studies which examined trends and implications of liberalization in India's service sector

- Indicates considerable potential gains to be realized from liberalizing services, not only from relaxing FDI ceilings but also from liberalizing the overall domestic regulatory environment including 'behind the border' regulations in services trade
- Liberalization probably easier to undertake at the border but more difficult to undertake 'behind the border', possibly because
 - Latter measures are often hidden and not explicit
 - Their ramifications for trade and investment flows may not be well recognized
- Domestic and foreign investors likely to be affected by similar 'behind the border measures' that shape the overall regulatory environment
 - One may need to consider domestic and foreign investment incentives along similar lines
- Policy makers need to be cognizant of interlinkages and spillover effects between different services and also between goods and services when designing policies so as to reap the full benefits of services liberalization

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Thanks