Barriers to Trade in Services in India

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ARTNeT Workshop on Gravity Modelling
Bogor
23-27 August 2010

Outline

- Why services trade so important?
- Services trade in India – trends, growth and distribution
- Motivation, data and methodology
- Estimated baseline results
- Conclusions

Why services trade so important?

- Technological advancement facilitating new means of services trade to grow faster across borders (Mattoo 2006, 2008).
- An efficient services sector is crucial for the growth and competitiveness of an economy, provided it is appropriately liberalised and implemented across countries (Copeland and Mattoo 2008).
  - India's 'services revolution' has been supported by deregulation of services sectors (Ghani and Kharas, 2010).
- Services provides bulk of employment, income, vital input for producing other goods and services, etc. in India (Rakshit 2005, Govt. of India, 2010).
- Service sector in India (e.g. IT-driven business services or communications sector) grown due to 'splintering' (Gordon and Gupta, 2004), supporting integration across border
  - Growing openness and integration helped India's services export.

India's services export

- Services sector in India contributes 57.2% of GDP in 2009-10.

- India's global exports of services in 2008-09 stood at over US$ 102 billion (11.1% of GDP and 36.68% of country's total export).

- India's share in world services export was around 2.67%, compared with 1.11% share in world merchandise trade.

- It increased by 80.43% per annum from a low level of US$ 11 billion in 1991 to US$ 160 billion in 2008.

- A large part of India's services sector is untapped and rarely explored in the international market.

Services trade growing faster than merchandise trade in India

		Export Volume* (US$ billion)			CAGR** (%)		
		1991	2001	2008	1991-1998	2001-2008	1991-2008
Export of goods	World	3494.03	6141.93	16031.30	5.59	12.74	8.83
	India	17.87 (0.512)	45.43 (0.740)	177.70 (1.108)	8.24	18.59	13.61
Export of services	World	853.16	1522.19	3858.58	6.37	12.33	8.75
	India	4.93 (0.577)	17.34 (1.139)	102.95 (2.668)	11.41	24.94	18.39

Notes: *Numbers in parentheses are India's share in global export (%). **Compound annual growth rate.
Source: Calculated based on Direction of Trade Statistics Online, IMF.

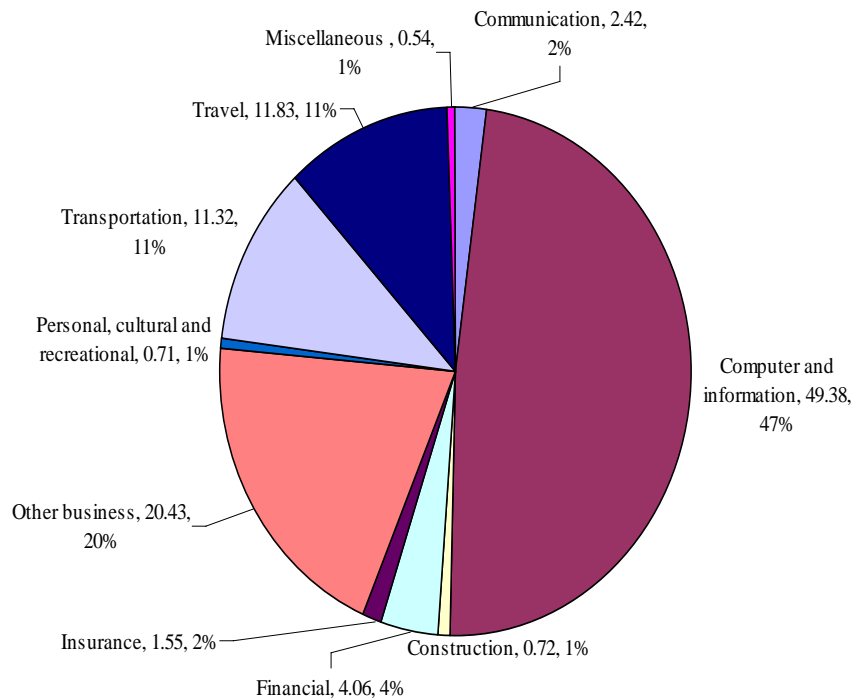# India's services exports growing faster than services import

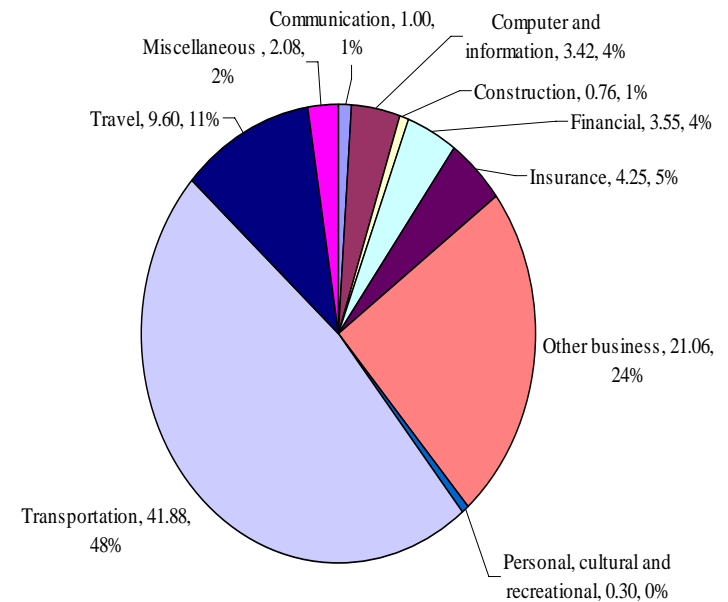| Year	Export	Import	Total
		(US$ billion)	
1991	4.925	5.945	10.871
1998	11.691	14.540	26.231
2001	17.337	14.483	31.820
2002	19.478	15.034	34.512
2003	23.902	17.425	41.326
2004	38.281	25.205	63.486
2005	52.527	32.549	85.076
2006	69.730	40.324	110.054
2007	86.965	47.592	134.558
2008	102.949	56.554	159.503
Average annual growth rate (%)			
1991-1998	19.62	20.65	20.19
2001-2008	70.54	41.50	57.32
1991-2008	117.067	50.075	80.429

Note: *Taken at current price
Source: Calculated based on Direction of Trade Statistics Online, IMF.

Higher concentration of selected services export and import

Services Export of India, 2008

- Communication, 2.42, 2%
- Miscellaneous , 0.54, 1%
- Travel, 11.83, 11%
- Transportation, 11.32, 11%
- Personal, cultural and recreational, 0.71, 1%
- Other business, 20.43, 20%
- Insurance, 1.55, 2%
- Construction, 0.72, 1%
- Financial, 4.06, 4%
- Computer and information, 49.38, 47%

Services Import of India, 2008

- Communication, 1.00, 1%
- Computer and information, 3.42, 4%
- Miscellaneous , 2.08, 2%
- Construction, 0.76, 1%
- Financial, 3.55, 4%
- Travel, 9.60, 11%
- Insurance, 4.25, 5%
- Other business, 21.06, 24%
- Transportation, 41.88, 48%
- Personal, cultural and recreational, 0.30, 0%

Note: *Taken at current price
Source: Calculated based on Direction of Trade Statistics Online, IMF.

India's import of transportation services outweighs its export of computer and information technology

- Transportation (import) and computer and information technology (export) services are two prominent sectors in India's services trade.
- Computer and information technology services in export side, increased from US$ 4.73 billion in 2000 to US$ 49.38 billion in 2008, grew by over 118% per annum
  - Contributed about 47% of India's total services export in 2008
- Transportation in import side contributes about 48% of India's total import (US$ 41.88 billion) in 2008.
- Services competitiveness would depend how India successfully manages these two sectors.

Changing pattern of export competitiveness of India's services trade

- Countries gain comparative advantage along with their level of development
  - Initial years: labour-intensive services (construction services, tourism, data processing etc.)
  - Developing years: higher-skilled and technologically advanced services (software, financial, etc.).

- India is no exception
  - It is gaining revealed comparative advantage in financial services, and information and communication technology, but losing advantages in traditional areas such as transport, travel and tourism services.

Estimated RCA scores of services exports from India

Sector	1991	2001	2007
Transport services	1.68	1.25	0.98
Travel services	2.24	1.40	1.42
Communications services		6.37	7.35
Construction services		0.56	0.78
Computer and information services*		28.19	31.66
Financial services	0.99	1.11	1.34
Total services		0.15	0.21

* Includes software services.

Source: Raychaudhuri and De (2010)

Some important lessons

1.   Services export from India has been growing faster than imports in the last decade

     (i)   rising positive balance of trade

     (ii)   export has grown more rapidly in liberalised sectors

2.   The challenge for India is quality expansion of services export

     (i)   Being traded invisible, it faces many complicated barriers.

     (ii)   Removal of these barriers through liberalisation, and complementary policy reforms can lead to both sectoral and economy-wide improvements in performance and generate pro-poor growth.

     (iii) This in fact motivates us to assess the barriers to India's services export in this study.

Dealing services trade barriers: stylized facts

- Restrictions on trade in services reduce welfare because they create a wedge between domestic and foreign prices, thereby squeezing the consumer surplus.
- Services trade competitiveness relies more on substantial liberalisation carried out through the removal of trade and investment barriers.
- Barriers to international trade in services are high, and the gains from reform large (Shepherd and Miroudot, 2010)
- Removal of barriers to trade in services is likely to result in lower prices, improved quality and higher competitiveness.
- Non-price factors, such as the quality of services, play a pivotal role in determining the bilateral trade in services.
- Trade liberalization has to be actively supported by trade facilitation in order to maximize the welfare gain.
- Falling short of adequate trade facilitation would lead to suboptimal trade, or, in other words, the trade potential would remain unlocked.
- Properly estimated services trade barriers help support countries to take necessary policy measures.

Application of gravity model in assessing services trade barriers

- Francois (1999, 2001), Francois et al. (2003), Francois and Hoekman (2009)

- Grunfeld and Moxnes (2003) applied a gravity model to the bilateral export of services and FDI flow using data from OECD.

- Kimura and Lee (2006) applied the gravity framework to services trade with the aim of comparing the results to the estimates for trade in goods.

- Lejour and de Paiva Verheijden (2004) used gravity model estimates for trade in goods and services, examining intra-regional trade in Canada and EU using the OECD services trade database.

Gravity model

$$X_{ij} = \frac{Y_i Y_j}{Y^w} \left(\frac{t_{ij}}{\prod_i P_j} \right)^{1-\sigma}$$

$$Ln(X_{ij}) = \alpha_{ij} + \beta_1 Ln(PCI_i) + \beta_2 Ln(PCI_j) + \beta_3 Ln(RQ_i) + \beta_4 Ln(RQ_j) + \beta_5 Ln(GCI_i) + \beta_6 Ln(GCI_j) + \beta_7 Ln(STFI_i) +$$

$$\beta_8 Ln(STFI_j) + \beta_9 Ln(ER_i) + \beta_{10} Ln(ER_j) + \beta_{11} Ln(D_{ij}) + \beta_{12}(ADJ_{ij}) + \beta_{13}(LAN_{ij}) + \beta_{14}(RTA_{ij}) + \beta_{15}(LLD_{ij}) + \varepsilon_{ij}$$

- Panel data: 2000 – 2006
- 33 trade partners
- Covers 75% of services export

Data sources

Variables	Sources
Services export	*Statistics on International Trade in Services*, OECD
GDP per capita (PPP) of exporter and importer	*World Development Indicators 2009*, World Bank
Services trade facilitation indicators comprising (i) internet users (per 100 people), (ii) international internet bandwidth (bits per person), (iii) electric power consumption (kWh per capita) , (iv) air transport passengers carried (per 100 people), and (v) Fixed line and mobile phone subscribers (per 100 people).	*World Development Indicators 2009*, World Bank
Regulatory quality of exporter and importer	*Worldwide Governance Indicators*, World Bank Institute
Global competitiveness index of exporter and importer	*World Development Indicators 2009*, World Bank
Exchange rate of exporter and importer	*World Development Indicators 2009*, World Bank
Distance between exporter and importer	CEPII
Language dummy	CEPII
Landlocked dummy	Authors own calculation
RTA/FTA dummy	
Adjacency dummy	

Dealing Unobserved heterogeneity

- In panel data analysis of gravity models, we face possible heterogeneity and endogeneity issues.
- According to Cheng and Wall (2005), OLS suffers from heterogeneity bias in gravity model context.
  - Trade between any pair of countries is likely to be influenced by certain country-specific unobserved information (country effects). However, these country effects are appeared to be correlated with explanatory variables, thus making the OLS as biased.
- Explanatory variables are considered to be endogenous as they might be correlated with the error term.
- To overcome these shortcoming, according to Egger (2002, 2005), HTM is the most appropriate estimator for trade in goods/services.
- HTM fits panel-data random-effects models in which some of the covariates are correlated with the unobserved individual-level random effect. The estimators, originally proposed by Hausman and Taylor (1981)
- HTM employs an instrumental variable approach that uses information solely from within the dataset to eliminate the correlation between explanatory variables and the unobserved individual effects.

PCA weights

	2000	2001	2002	2003	2004	2005	2006
Internet users	0.506	0.505	0.515	0.516	0.527	0.510	0.524
Internet bandwidth	0.353	0.355	0.343	0.386	0.363	0.409	0.404
Electric power consumption	0.442	0.451	0.451	0.451	0.460	0.473	0.483
Air passengers	0.418	0.414	0.391	0.346	0.325	0.305	0.287
Telephone	0.500	0.498	0.511	0.512	0.522	0.502	0.497
Eigen value (component 1)	3.226	3.177	3.000	2.976	2.848	3.186	3.124
Proportion explained (%)	64.520	63.540	60.000	59.520	56.960	63.730	62.480

STFI is comprised of five indicators: (i) internet users (per 100 people), (ii) international internet bandwidth (bits per person), (iii) electric power consumption (kWh per capita) , (iv) air transport passengers carried (per 100 people), and (v) Fixed line and mobile phone subscribers (per 100 people).

Services trade facilitation index (STFI)

Country	2000 Score	2000 Rank	2001 Score	2001 Rank	2002 Score	2002 Rank	2003 Score	2003 Rank	2004 Score	2004 Rank	2005 Score	2005 Rank	2006 Score	2006 Rank
Norway	5.973	1	6.211	1	5.763	2	5.663	2	5.583	2	6.001	2	6.554	1
Luxembourg	4.467	8	5.097	4	4.979	4	4.98	5	5.519	3	6.555	1	6.499	2
Sweden	5.750	2	5.811	2	5.873	1	6.138	1	5.984	1	5.892	3	5.821	3
Netherlands	5.679	3	5.213	3	4.634	8	4.943	6	4.914	5	5.116	5	5.335	4
Denmark	4.342	9	4.855	5	5.467	3	5.432	3	5.481	4	5.323	4	5.332	5
Ireland	3.849	14	4.18	11	4.591	9	5.035	4	4.833	6	4.881	6	4.87	6
Canada	4.838	5	4.519	9	4.361	10	4.826	7	4.773	7	4.838	7	4.822	7
USA	4.842	4	4.701	7	4.684	7	4.602	9	4.627	10	4.629	9	4.622	8
Japan	3.141	18	3.266	19	3.469	18	3.465	18	3.688	18	3.674	18	4.615	9
Finland	4.553	7	4.677	8	4.874	6	4.8	8	4.677	8	4.529	11	4.562	10
Hong Kong	4.036	10	4.079	12	4.246	12	4.356	12	4.542	11	4.601	10	4.551	11
Australia	3.763	15	3.891	14	4.36	11	4.363	11	4.43	12	4.697	8	4.431	12
UK	3.887	12	3.899	13	4.065	13	4.32	13	4.306	13	4.349	12	4.357	13
Slovak	4.826	6	4.707	6	4.89	5	4.599	10	4.674	9	4.171	13	4.082	14
Germany	3.505	16	3.484	17	3.495	17	3.801	17	3.827	16	3.849	16	3.941	15

Services trade facilitation index (STFI)

Austria	3.854	13	3.747	15	3.847	14	4.015	14	3.905	14	3.875	15	3.922	16
Belgium	3.951	11	4.255	10	3.71	15	3.847	15	3.774	17	3.902	14	3.879	17
Korea	3.339	17	3.51	16	3.693	16	3.813	16	3.868	15	3.808	17	3.822	18
France	3.092	19	3.428	18	3.344	19	3.448	19	3.353	20	3.389	20	3.545	19
Italy	2.845	20	3.012	20	3.231	20	3.433	20	3.495	19	3.519	19	3.502	20
Czech	2.009	23	2.283	22	2.776	21	2.811	21	2.845	21	2.9	21	3.061	21
Portugal	2.354	21	2.448	21	2.574	22	2.79	22	2.707	22	2.791	22	2.901	22
Greece	2.167	22	2.265	23	2.57	23	2.544	23	2.607	23	2.614	23	2.699	23
Hungary	1.381	24	1.729	24	1.951	24	2.313	24	2.383	25	2.425	25	2.587	24
Singapore	1.348	25	1.68	25	1.868	25	2.266	25	2.428	24	2.511	24	2.558	25
Russia	0.812	28	0.874	28	1.002	28	1.272	27	1.68	27	2.067	27	2.332	26
Poland	1.053	26	1.191	26	1.685	26	1.791	26	1.923	26	2.072	26	2.327	27
South Africa	0.951	27	0.991	27	1.074	27	1.163	28	1.248	28	1.583	28	1.627	28
Brazil	0.669	29	0.756	29	0.891	29	0.989	29	1.122	29	1.317	29	1.489	29
China	0.364	30	0.461	30	0.606	30	0.749	30	0.875	30	0.974	30	1.084	30
Sri Lanka	0.149	31	0.168	31	0.189	31	0.224	31	0.271	31	0.347	31	0.501	31
India	0.097	32	0.106	32	0.141	32	0.166	32	0.221	32	0.306	32	0.418	32
Bangladesh	0.02	33	0.025	33	0.029	33	0.033	33	0.044	33	0.089	33	0.161	33

Services trade facilitation indicators: 2006

Country	Internet users		Internet bandwidth		Electric power consumption		Air passengers		Telephone	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Australia	1.553	4	0.000	32	1.012	7	0.302	6	1.563	17
Austria	1.066	14	0.326	13	0.703	11	0.141	14	1.686	11
Bangladesh	0.006	33	0.000	33	0.012	33	0.001	33	0.141	33
Belgium	0.992	17	0.605	6	0.750	8	0.046	22	1.486	20
Brazil	0.473	26	0.010	26	0.180	29	0.029	25	0.798	29
Canada	1.476	7	0.334	12	1.526	2	0.191	11	1.296	25
China	0.220	29	0.003	27	0.158	30	0.016	29	0.688	30
Czech	0.725	22	0.107	19	0.559	17	0.064	21	1.606	15
Denmark	1.226	10	1.713	1	0.587	16	0.014	30	1.791	7
Finland	1.167	11	0.212	15	1.420	3	0.192	10	1.570	16
France	1.033	15	0.162	17	0.700	12	0.129	15	1.521	18
Germany	0.985	18	0.337	11	0.627	14	0.161	13	1.831	5
Greece	0.386	27	0.049	22	0.462	23	0.113	17	1.689	10
Hong Kong	1.156	13	0.357	9	0.518	20	0.423	3	2.098	2
Hungary	0.731	21	0.049	23	0.333	27	0.034	24	1.441	22
India	0.165	31	0.001	30	0.044	31	0.005	32	0.203	32
Ireland	0.708	23	0.297	14	0.550	19	1.584	1	1.732	8
Italy	1.031	16	0.050	21	0.500	22	0.083	20	1.838	4

Services trade facilitation indicators: 2006

Japan	1.440	9	1.005	4	0.726	10	0.107	18	1.337	24
Korea	1.481	6	0.051	20	0.685	13	0.096	19	1.509	19
Luxembourg	1.543	5	1.016	2	1.408	4	0.268	7	2.265	1
Netherlands	1.871	1	1.007	3	0.616	15	0.224	8	1.618	13
Norway	1.837	2	0.457	8	2.215	1	0.387	4	1.658	12
Poland	0.606	25	0.028	25	0.303	28	0.013	31	1.377	23
Portugal	0.638	24	0.041	24	0.411	26	0.119	16	1.693	9
Russia	0.379	28	0.143	18	0.510	21	0.027	26	1.273	26
Slovak	0.805	20	0.346	10	0.737	9	0.581	2	1.613	14
Singapore	0.879	19	0.001	29	0.434	24	0.019	28	1.225	27
South Africa	0.199	30	0.001	31	0.427	25	0.036	23	0.964	28
Sri Lanka	0.045	32	0.001	28	0.034	32	0.021	27	0.400	31
Sweden	1.615	3	0.858	5	1.361	5	0.188	12	1.799	6
UK	1.164	12	0.569	7	0.551	18	0.215	9	1.857	3
US	1.460	8	0.163	16	1.203	6	0.323	5	1.473	21

STFI: major observations

- Among India's 33 services trade partners, developed and developing economies occupy the top and bottom positions in STFI, respectively. Their relative ranks over time also did not altered much barring few countries such as Belgium, Ireland and Japan.
- Performance of countries in services trade facilitation varies across countries. For example, Netherlands in Internet users, Denmark in Internet bandwidth, Norway in electric power consumption, Ireland in air passengers, and Luxembourg in telephone rank first in 2006.
- While countries performance in Internet users or telephone are relatively balanced than other indicators, the same in Internet bandwidth, electric power consumption or air passengers are relatively skewed towards top 11-12 countries.
- Services trade facilitation indicators focus on both the policy and market structure, where private sector is the main service provider.
- The assessment of the services barriers through PCA reflects a variety of barriers which might influence the trade flow.
  - We consider STFI in the gravity model as an exogenous variable in order to test the variability of its effect on services trade flow.

Baseline gravity estimates

Variables	OLS	OLS	HTM	HTM
GDP per capita (PPP) of exporter	8.92	3.067	5.062	3.067
	(9.277)	(4.165)	(6.75)	(7.119)
GDP per capita (PPP) of importer	-1.132**	5.797*	4.071	5.797*
	(0.574)	(3.242)	(2.89)	(3.164)
Services trade facilitation index of exporter	-0.863	-1.029	-1.071	-1.029
	(3.103)	(1.668)	(2.223)	(2.315)
Services trade facilitation index of importer	0.0916	0.452	0.125	0.452
	(0.540)	(0.912)	(0.738)	(0.790)
Regulatory quality of exporter	4.956	3.749	2.95	3.749
	(4.451)	(4.106)	(3.394)	(3.563)
Regulatory quality of importer	-0.794*	-0.156	-0.0677	-0.156
	(0.46)	(0.409)	(0.693)	(0.723)
Global competitiveness index of exporter	-14.92	-4.972	-4.965	-4.972
	(10.09)	(7.051)	(8.368)	(8.716)
Global competitiveness index of importer	8.765***	-3.176	-2.293	-3.176
	(1.793)	(4.113)	(4.585)	(4.801)
Exchange rate of exporter	16.37	16.63	13.15	16.63*
	(12.21)	(12.7)	(9.219)	(9.810)
Exchange rate of importer	-0.247***	-2.396	-0.869	-2.396*
	(0.0933)	(1.916)	(0.957)	(1.317)
Distance between exporter and importer	0.0285	-13.91	-2.013	-13.91**
	(0.475)	(10.13)	(3.593)	(6.047)

Baseline gravity estimates

Variables	OLS	OLS	HTM	HTM
Language dummy	1.250***	18.02**	2.491	-8.906
	(0.329)	(8.667)	(2.232)	(6.072)
Landlocked dummy	-2.382***	4.068***	-1.616	-22.86**
	(0.466)	(1.257)	(3.549)	(10.11)
RTA dummy	0.224	-0.799	-0.535	-0.799
	(0.634)	(0.651)	(0.768)	(0.813)
Adjacency dummy	0.671		10.63	
	(0.899)		(7.38)	
Constant	-93.08	-2.198	-83.76	24.73
	(87.76)	(67.13)	(73.39)	(78.80)
Observations	224	224	224	224
Adjusted R-squared	0.450	0.754		
Country effects	No	Yes	No	Yes
Wald Chi2 [p-value]			49.14 [0.000]	553.97 [0.000]

Notes: All continuous variables are expressed in logs. Robust standard errors are in parentheses. *significant at 10 percent, ** significant at 5 percent, ***significant at 1 percent.

Gravity results – some observations

- The size of importing countries income per capita strongly determines export of services from India.
  - 1% rise in importing country's income per capita (in PPP terms) would lead to 6% rise in India's export of services
- Negative sign suggests the stock of India's services trade facilitation negatively affects India's services exports.
  - India may suffer from poor quality of services trade infrastructure.
- Positive sign indicates India's partner countries services trade infrastructure are relatively improved.
- Exporting country's services trade infrastructure is more important than that of importing countries.
  - This result has to be interpreted cautiously since estimated coefficients are not significant.
- Importing country's exchange rate is negatively associated with services import whereas exporting country's exchange rate is positively associated with services export.
- India's services export to landlocked country is negatively affected by landlockedness of partner country.
- Regulatory quality is important for services trade.
  - India's services export is negatively affected by importing countries regulatory quality, whereas services export of exporting country is positively associated with its regulatory quality. But, none of the estimated coefficients is statistically significant.

Conclusions

- Income per capita of importing country is crucial for services export from India.
- Favourable exchange rate helps unlock the unrealized trade potential
- Services trade facilitation reform is affecting services export from India.
- Sectoral analysis is needed in order to understand the intensity of trade barriers, particularly a services sector which serves as vital input for producing other goods and services, and crucial for the overall growth of the Indian economy.
- Future study options:
  - Studies are needed to understand the relationship between disaggregated services trade facilitation indicators and services trade sectors.
  - An analysis of the causality between services export and services trade barriers such as STFI would also be worthwhile.
  - Analysis presented here could be verified with new STF indicators from alternative sources.
  - One can make an attempt to estimate tariff equivalent of STFI.
  - Counterfactuals and robustness checks are necessary to verify the results.