Developing Regional Transit in South Asia: An Empirical Investigation

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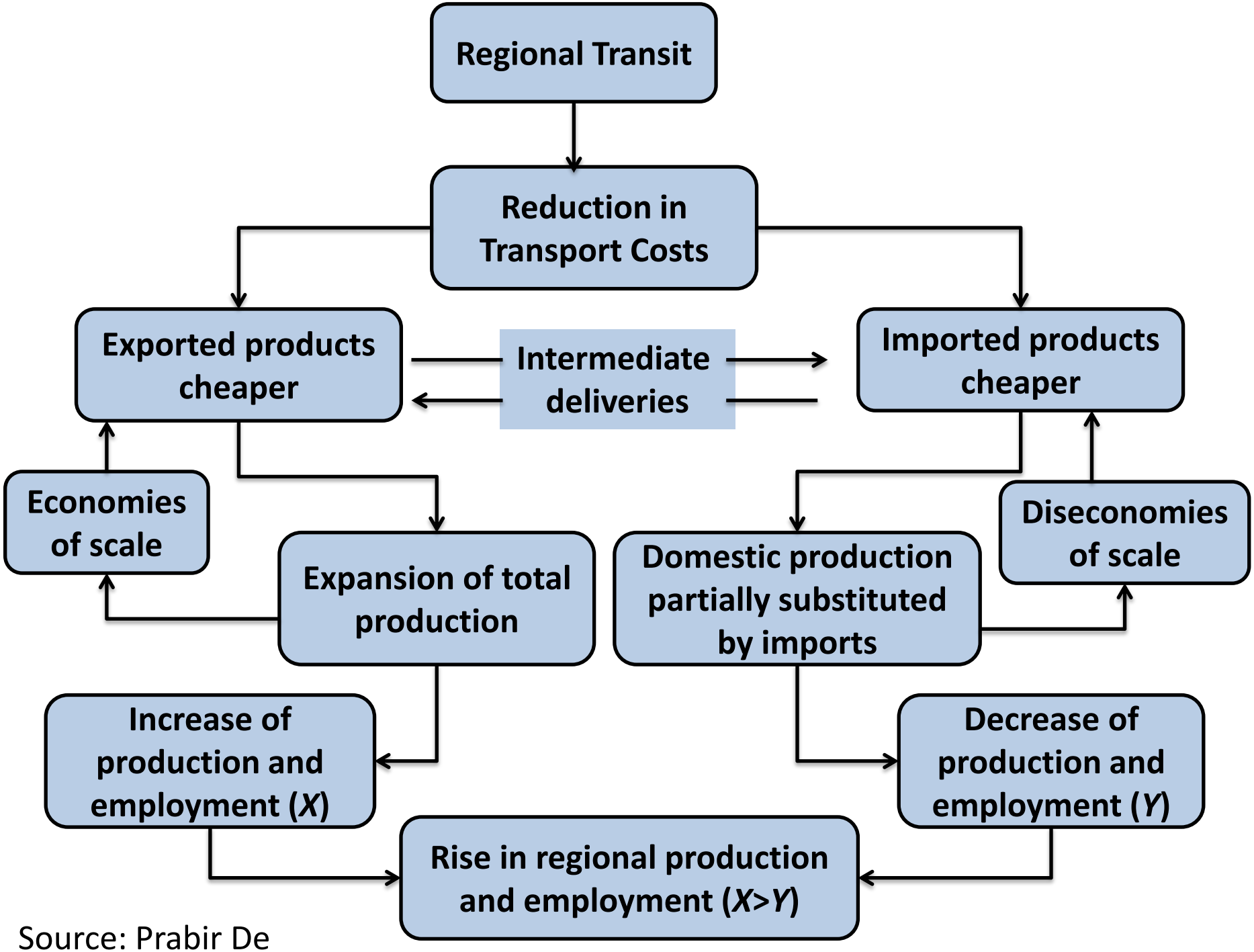
Outline

- Understanding transit
- Transit trade flows – trends
- Research questions and approach
  - Given transit, the best efficient corridor
  - Transit revenue estimation
- Concluding remarks



Source: Prabir De

Intra-subregional Transit Trade

Exporting country	Partner	Transit through	1991	2000	2006	2012
			(US$ million)			
Bangladesh	Bhutan, Nepal	India	11.84	2.22	6.00	22.37
			(0.702)	(0.040)	(0.051)	(0.101)
Bhutan	Bangladesh, Nepal	India	3.90	4.53	10.69	25.77
			(6.171)	(4.410)	(2.580)	(4.368)
Nepal	Bangladesh, Bhutan	India	0.12	1.90	3.24	36.78
			(0.047)	(0.264)	(0.391)	(4.217)
Total			**15.86**	**8.65**	**19.93**	**84.92**

Extra-subregional Transit Trade

Exporting Country	Partner	Transit through	1991	2000	2006	2012
			(US$ million)			
Nepal	Rest of the World*	India	239.73	411.60	263.37	319.63
			(93.171)	(57.111)	(31.747)	(36.648)
Bhutan	Rest of the World*	India	58.79	77.85	275.34	381.42
			(93.037)	(75.796)	(66.459)	(64.647)
Total			**292.52**	**489.45**	**538.71**	**701.05**

Trade and Transit Arrangement

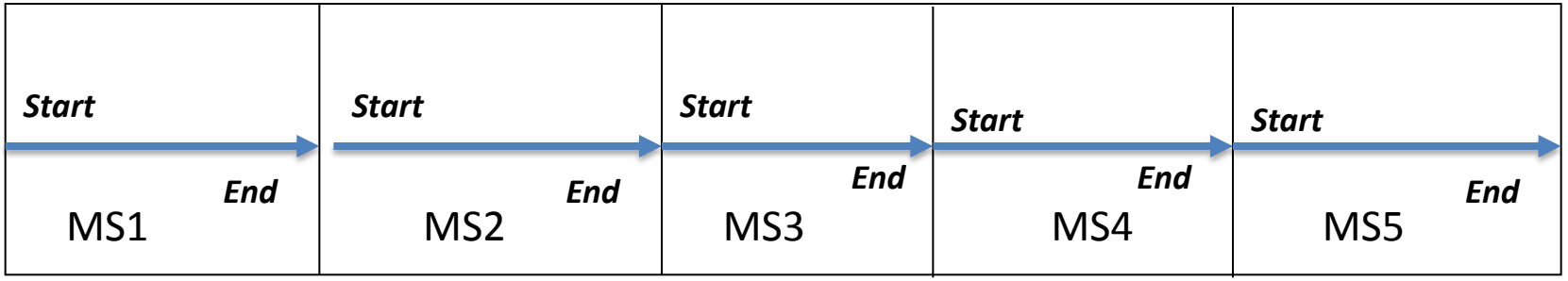
Agreement	Type	MFN Trade	MFN Transit	Signatories
India-Bangladesh	Bilateral	Yes	No	Yes
India-Nepal	Bilateral	Yes	Yes	Yes
India-Bhutan	Bilateral	Yes	Yes	Bhutan – observer
India-Pakistan	Bilateral	No*	No	Yes
Pakistan-Afghanistan	Bilateral	Yes	Yes	Afghanistan – observer
Bangladesh-Nepal	Bilateral	Yes	Yes	Yes
Bangladesh-Bhutan	Bilateral	Yes	Yes	Bhutan – observer
Bhutan-Nepal	Bilateral	Yes	No	Bhutan – observer

Overland Transit Agreements

Bangladesh-India Agreement	No route officially announced	Not working
India-Nepal Agreement	12 routes	Working with restrictions
Bhutan-India Agreement	Four routes	Working with restriction
Bangladesh-Nepal Agreement	Banglabandha (Bangladesh)-Phulbari (India)-Khakarbitta (Nepal)	Working
Bangladesh-Bhutan Agreement	Burimari (Bangladesh) - Changrabandha (India) - Jaigaon (India) -Phuentsholing (Bhutan)	Working
Pakistan – Afghanistan Agreement	• Karachi – Peshawar – Torkhum • Karachi – Chaman – Spin Boldak	Working with restrictions

Current Transit Process

Traditional transit procedure - a series of standardized national transit procedures



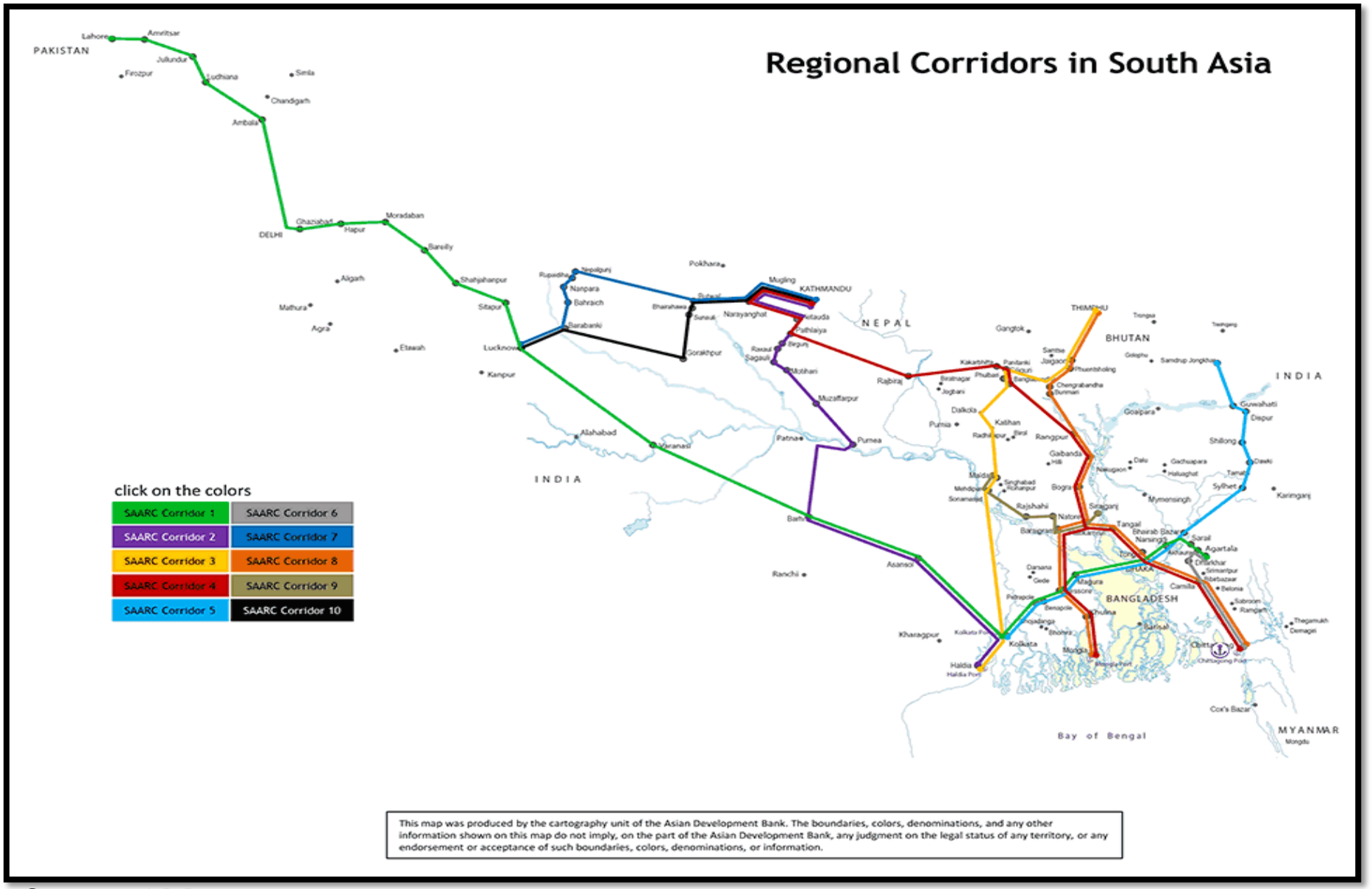
What we want - one single procedure from start to finish

Research Questions

1. Given transit, what would be the efficient regional corridor?

2. How much economic benefits transit can generate?

Regional Corridors



click on the colors

SAARC Corridor 1	SAARC Corridor 6
SAARC Corridor 2	SAARC Corridor 7
SAARC Corridor 3	SAARC Corridor 8
SAARC Corridor 4	SAARC Corridor 9
SAARC Corridor 5	SAARC Corridor 10

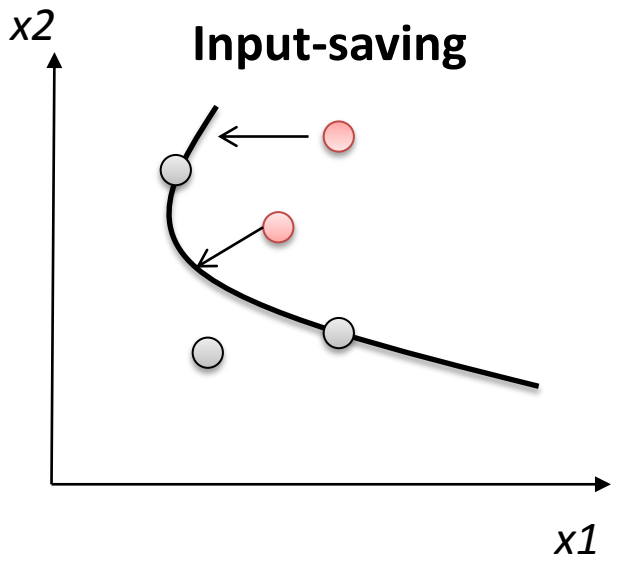
Source: ADB

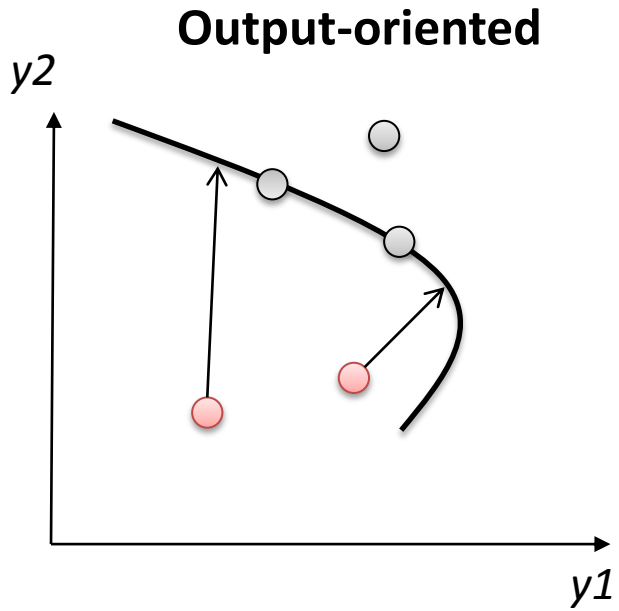
Selected Corridors

ID	Corridor
1	SAARC Corridor 1 (Lahore to Agartala)
2	SAARC Corridor 2 (Kathmandu to Kolkata / Haldia)
3	SAARC Corridor 3 (Thimpu to Kolkata / Haldia)
4	SAARC Corridor 4 (Kathmandu to Mongla / Chittagong)

Methodology

- Data Envelopment Analysis (DEA)
  - Applied linear programming to estimate an empirical production technology frontier (Farrell, 1957; Charnes, Cooper and Rhodes, 1978)
- We use both input-saving and output-oriented measures of efficiency of corridors
- Input-saving measure of efficiency implies fewest resources or lowest cost to produce a given level of output (here, trade), which in other words tells us given output, **input minimisation**.
- Output-oriented measure of efficiency indicates **output maximisation** with given resources.
- Under constant returns to scale (CRS), proportional changes in outputs require proportional changes in inputs.
- When an increase in inputs does not result in a proportional change in the outputs, we consider variable returns to scale (VRS).





Variables

Variable	Description	Definition
Output (Y_1)	Trade in volume	Trade carried in a corridor, calculated in terms of TEUs
Input (X_1)	Distance	Length of corridor in km
Input (X_2)	No. of border crossing	No. of customs border-crossing along a particular corridor
Input (X_3)	Transport standard	Standard follows the carrying capacity based on ESCAP Asian Highway database
Input (X_4)	Time to transport	Time to transport along a particular corridor in hours
Input (X_5)	Cost to transport	Cost to transport along a particular corridor in US$
Input (X_6)	No. of documents	No. of documents required for trade along a particular corridor

Baseline Technical Efficiency Scores, DEA

DMU / Corridor	Input-saving		Output-oriented	
	Normal (CRS)	Change in Tech. (VRS)	Normal (CRS)	Change in Tech. (VRS)
SAARC Corridor 1	**1.00**	**1.00**	**1.00**	**1.00**
SAARC Corridor 2	0.85	1.00	1.12	1.00
SAARC Corridor 3	0.64	1.00	12.11	1.00
SAARC Corridor 4	0.48	1.00	10.01	1.00

*Corridor with scores <1 is inefficient in input-saving, whereas corridor with scores >1 is inefficient in output-oriented.

Data

- Secondary data sources for domestic and international trade – Ministry of Commerce and Industry, Ministry of Shipping, Kolakata Port Trust, CONCOR, N F Railway, State transport commissioner, a.o.
- Secondary data source (single source) for intra-country movement of goods – rail, air and water – publicly available
- Secondary data source (single source) for intra-country movement of goods – road – not publicly available – Privately held data based on Indian Road Congress Statistics (Federation of Freight Forwarders' Associations in India and Central Institute of Road Transport)

Assumptions

1. India – Bangladesh bilateral transit – Reestablishing overland links between India's Northeastern Region (NER), Bangladesh and rest part of India in short run, which would eventually lead to full regional transit.
2. Diversion of traffic from Kolkata Port Trust (KoPT) to Bangladesh ports due to transportation costs advantage.
3. Subregional transit between Bangladesh, Bhutan, India and Nepal (BBIN) – e.g. Nepal's trade passes through Bangladesh.
4. NER's trade passes trough Bangladesh – e.g. Chittagong port as transshipment hub for NER.

Approach to Estimation

- Performance of Kolkata Port Trust
- Trade of Nepal and Bhutan through Kolkata Port Trust
  - Trade forecast [time trend]
- Movement of goods between NER and other parts of India
  - Trade forecast [time growth]

Proposition 1: Opening of Transit Leads to Cargo Movement between India's Northeastern Region and Other Indian Regions through Bangladesh

Benefit: Bangladesh earns transit revenues

Rail

AGR	12%	12%	12%	15%	15%	15%	15%	15%
FY	2013	2014	2015	2016	2017	2018	2019	2020
Box*	2160	2419	2709	3115	3583	4120	4738	5449
Transit fee (US$ million)								
10	21.6	24.19	27.09	31.15	35.83	41.2	47.38	54.49
20	43.19	48.38	54.18	62.31	71.65	82.4	94.76	108.98
30	64.79	72.56	81.27	93.46	107.48	123.6	142.14	163.47
50	107.98	120.94	135.45	155.77	179.14	206.01	236.91	272.44

*Container, taken in ‘000 TEUs

Road

AGR	14%	14%	14%	16%	16%	16%	16%	16%
FY	2013	2014	2015	2016	2017	2018	2019	2020
Box*	7482	8529	9723	11279	13084	15177	17606	20423
Transit fee (US$ million)								
10	74.82	85.29	97.23	112.79	130.84	151.77	176.06	204.23
20	149.64	170.59	194.47	225.58	261.68	303.55	352.11	408.45
30	224.46	255.88	291.7	338.38	392.52	455.32	528.17	612.68
50	374.09	426.47	486.17	563.96	654.19	758.86	880.28	1021.13

*Container, taken in ‘000 TEUs

Proposition 2: Opening of Transit Leads to Rail Cargo Movement between Nepal and Bangladesh through India

Benefit: India earns transit revenue and Bangladesh earns freight and port revenue

Rail

FY	2013	2014	2015	2016	2017	2018	2019	2020
Box*	54	58	61	64	68	72	76	79
Transit fees by India (US$ million)								
5	0.27	0.29	0.31	0.32	0.34	0.36	0.38	0.4
10	0.54	0.58	0.61	0.64	0.68	0.72	0.76	0.79
15	0.82	0.87	0.92	0.97	1.02	1.08	1.13	1.19
30	1.63	1.73	1.83	1.93	2.04	2.15	2.27	2.38
Freight by Bangladesh (US$ million)								
10	0.54	0.58	0.61	0.64	0.68	0.72	0.76	0.79
20	1.09	1.15	1.22	1.29	1.36	1.43	1.51	1.59
30	1.63	1.73	1.83	1.93	2.04	2.15	2.27	2.38
50	2.72	2.88	3.05	3.22	3.4	3.59	3.78	3.97
Container Handling Fees (US$ million)								
75	4.08	4.33	4.58	4.83	5.1	5.38	5.66	5.96
100	5.45	5.77	6.1	6.45	6.8	7.17	7.55	7.95
125	6.81	7.21	7.63	8.06	8.5	8.97	9.44	9.93

*Container, taken in ‘000 TEUs

Proposition 3: Opening of Transit Leads to Cargo Movement between India's Northeastern Region (NER) and Bangladesh

Benefit: India earns freight and Bangladesh earns freight and port revenue

Rail

FY	2013	2014	2015	2016	2017	2018	2019	2020
Box	6484	6654	6807	6943	7063	7165	7250	7318
Freight by India (US$ million)								
5	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
10	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07
15	0.1	0.1	0.1	0.1	0.11	0.11	0.11	0.11
30	0.19	0.2	0.2	0.21	0.21	0.21	0.22	0.22
Freight by Bangladesh (US$ million)								
5	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
10	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07
15	0.1	0.1	0.1	0.1	0.11	0.11	0.11	0.11
30	0.19	0.2	0.2	0.21	0.21	0.21	0.22	0.22
Container Handling Fees (US$ million)								
75	0.49	0.5	0.51	0.52	0.53	0.54	0.54	0.55
100	0.65	0.67	0.68	0.69	0.71	0.72	0.73	0.73
125	0.81	0.83	0.85	0.87	0.88	0.9	0.91	0.91

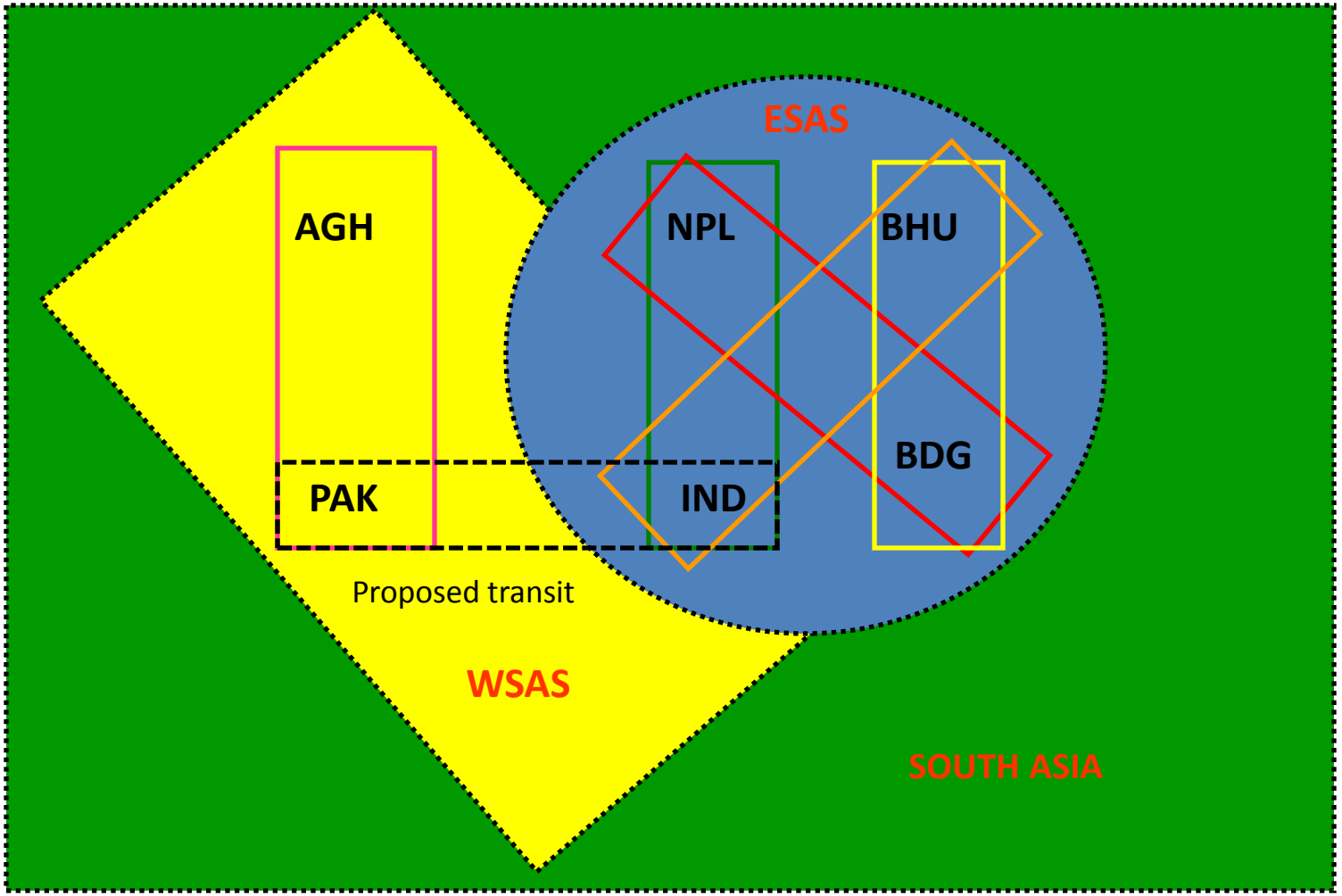
Road

FY	2013	2014	2015	2016	2017	2018	2019	2020
Box	85592	87341	89041	90697	92311	93887	95427	96933
Freight by India (US$ million)								
5	0.43	0.44	0.45	0.45	0.46	0.47	0.48	0.48
10	0.86	0.87	0.89	0.91	0.92	0.94	0.95	0.97
15	1.28	1.31	1.34	1.36	1.38	1.41	1.43	1.45
30	2.57	2.62	2.67	2.72	2.77	2.82	2.86	2.91
Transit fees by Bangladesh (US$ million)								
5	0.43	0.44	0.45	0.45	0.46	0.47	0.48	0.48
10	0.86	0.87	0.89	0.91	0.92	0.94	0.95	0.97
15	1.28	1.31	1.34	1.36	1.38	1.41	1.43	1.45
30	2.57	2.62	2.67	2.72	2.77	2.82	2.86	2.91
Container Handling Fees (US$ million)								
75	6.42	6.55	6.68	6.8	6.92	7.04	7.16	7.27
100	8.56	8.73	8.9	9.07	9.23	9.39	9.54	9.69
125	10.7	10.92	11.13	11.34	11.54	11.74	11.93	12.12

Summary

- Scenario 1: Benefits of transit are huge for Bangladesh.
  - Bangladesh may earn transit fees of about US$ 204 million to US$ 1021 million in 2020.
- Scenario 2: Both India and Bangladesh may earn revenue
  - Container handling revenue may increase from US$ 5.69 million (baseline) to US$ 9.93 million in 2020.
  - On freight, Bangladesh may earn US$ 3.97 million in 2020.
- Scenario 3: Benefits to Bangladesh large
  - By handling container at Chittagong port, Bangladesh could earn revenue of US$ 10 million (baseline) to US$ 12.12 million in 2020 when the cargoes are moved in road.
  - NER traffic would yield transit revenue of US$ 2.40 million (baseline) to US$ 2.91 million in 2020.
  - Rail traffic would also provide equal benefits to Bangladesh.

Subregional transit better option to open regional transit



Source: Author

ESAS: Eastern South Asia Subregion

WSAS: Western South Asia Subregion

Conclusions

- ADB's SAARC Corridor 1 (Lahore to Agartala) has the potential to become a technically efficient corridor.
- India – Bangladesh – Nepal – Bhutan transit is a financially viable project.
- Both Bangladesh and India may earn huge revenue, ceteris paribus
- Dynamic benefits would be more.
- There are costs as well – e.g. environment
- Transit would transform South Asia from least integrated to highly integrated region.

Recommendations

- Transit trade shall be in container only
- If we implement the transit, it would eventually lead to SAARC economic corridors
- We also need Single Window in customs
- WTO TFA will help moving towards a transit regime
- A regional mechanism and also sectoral approaches may yield benefits

Vision for Single Market

SAARC Integration Next Stage: Economic Union

	Harmonized & integrated road and railway network	Maritime & waterways network	Aviation policy	One 'Customs'	Transit	Competition Policy
EU	✓	✓	✓	✓	✓	✓
ASEAN	×	×	✓	×	✓	×
NAFTA*	×	×	✓	✓	✓	✓
SAARC	×	×	×	×	×	×

* Between US and Canada

Regional Transit: Current Progress

- SAARC's Inter-Governmental Group (IGG) to provide advice on the facilitation of transportation
  - Harmonization of standards and mutual recognition in the transport sector are key issues
- Negotiation ongoing
  - Regional Transport and Transit Agreement
  - Regional Motor Vehicles Agreement
- SAARC Expert Group finalized the text of the Regional Agreement on Railways
- India's ICPs in Attari, Petrapole and Akhaura completed

Tasks Ahead

- To promote multimodal transportation and logistics
- To encourage express delivery system
- To improve the efficiency of border corridors
- To move towards a single customs (one customs) at land border
- To enhance investments in infrastructure
- To strengthen cross-border infrastructure

Thank you