

A Quantitative Assessment of Economic Impact of Trade Delays on Regional Integration in South Asia:

A Computable General Equilibrium Approach (GTAP)

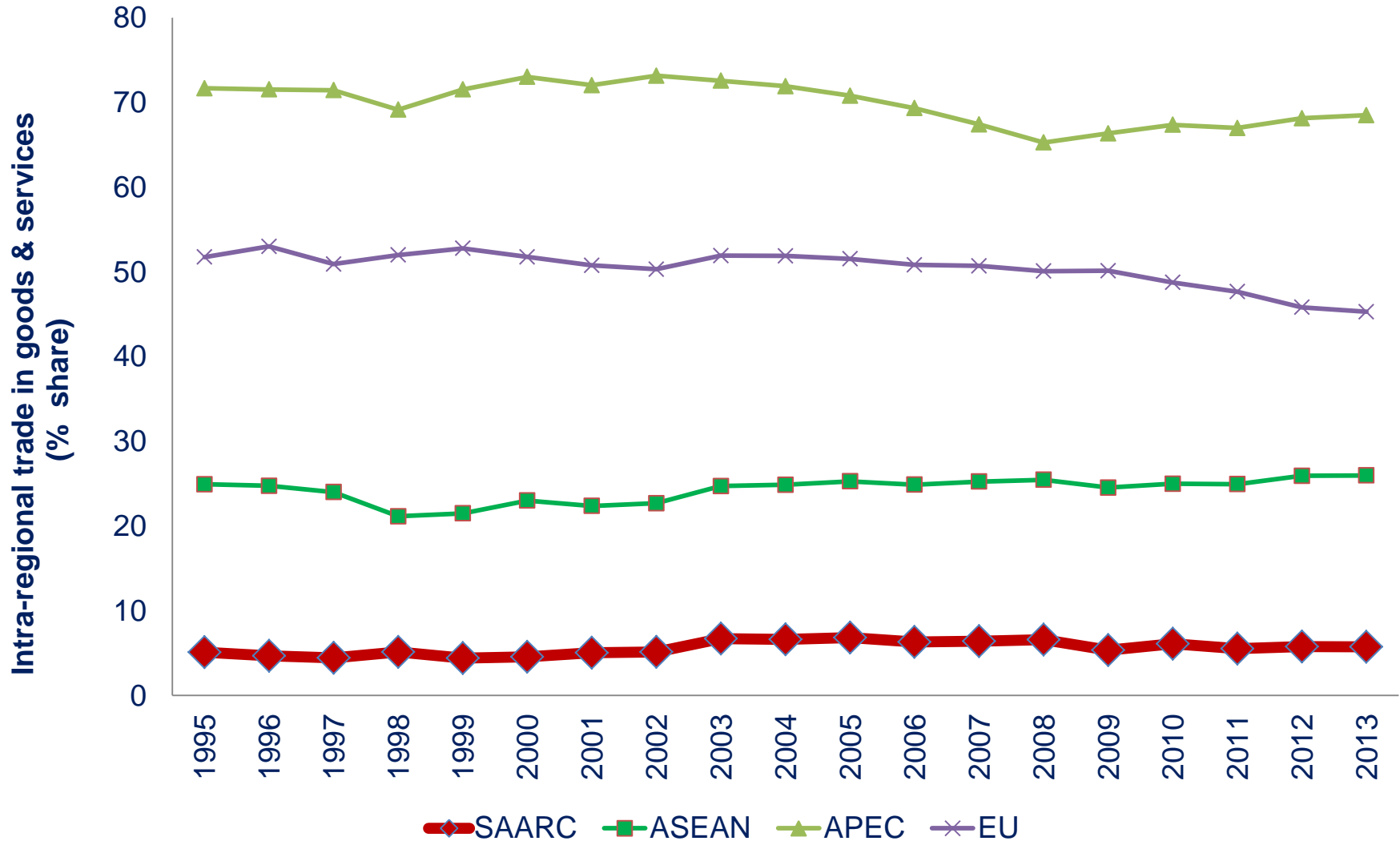
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Outline

- Stylized Facts
- Motivation
- Estimation of Time Delays Database
- Model Implementation
- Simulations
- Results
- Way Forward

Intra-regional Trade in South Asia



Why Does Intra Regional Trade in South Asia Remain Low?

Tariff Barriers ??

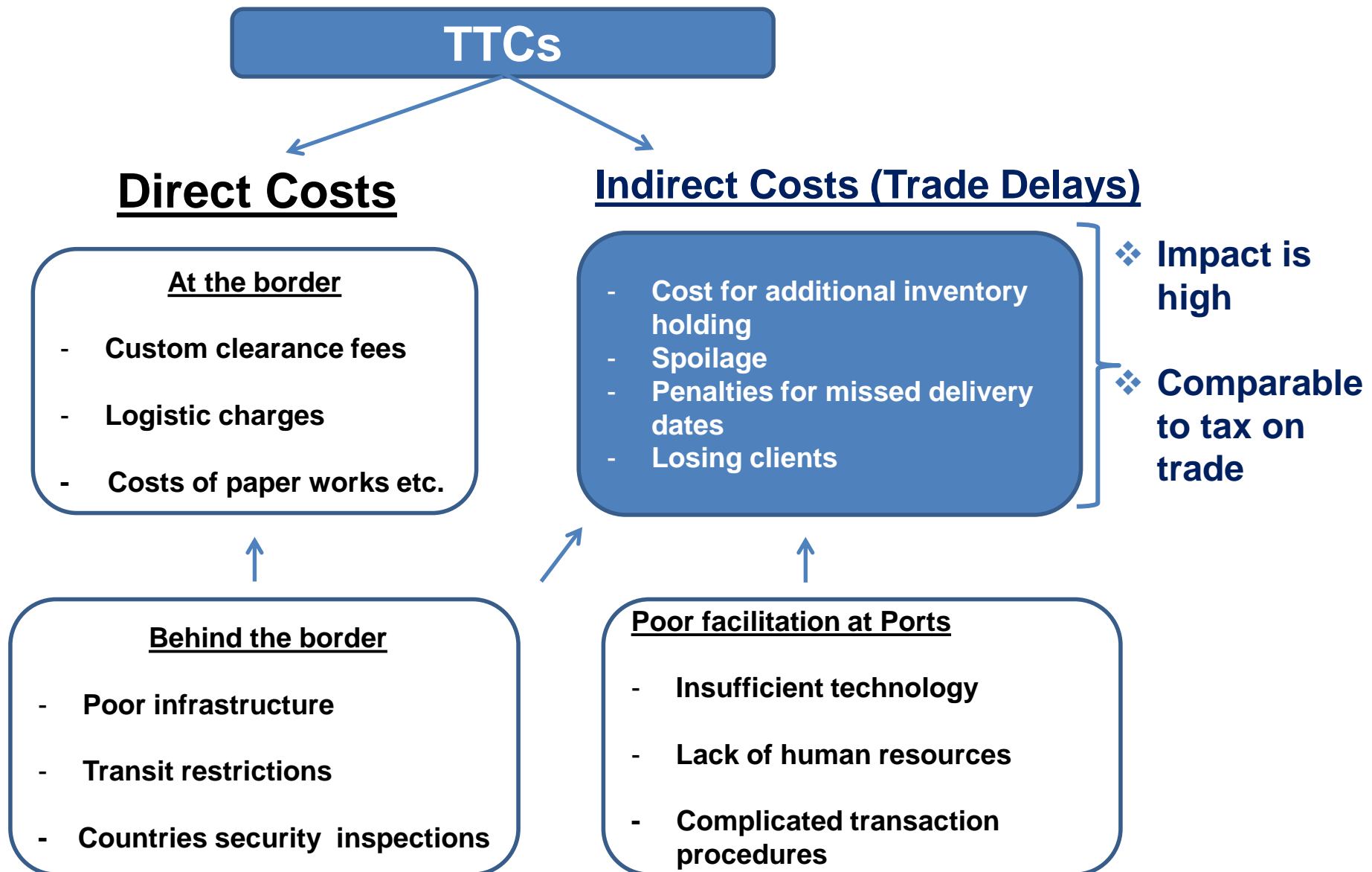
Poor trade facilitation !!!

What is Trade Facilitation (TF)

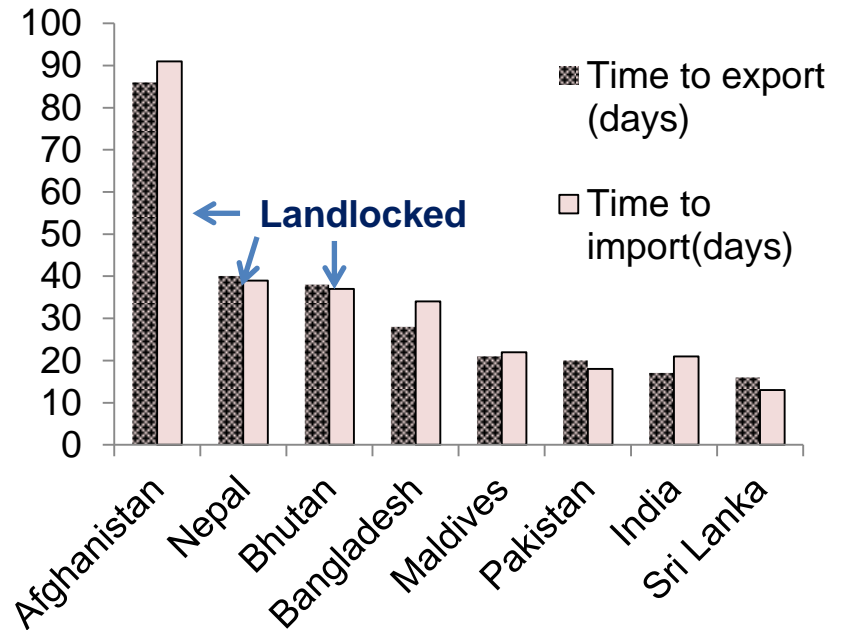
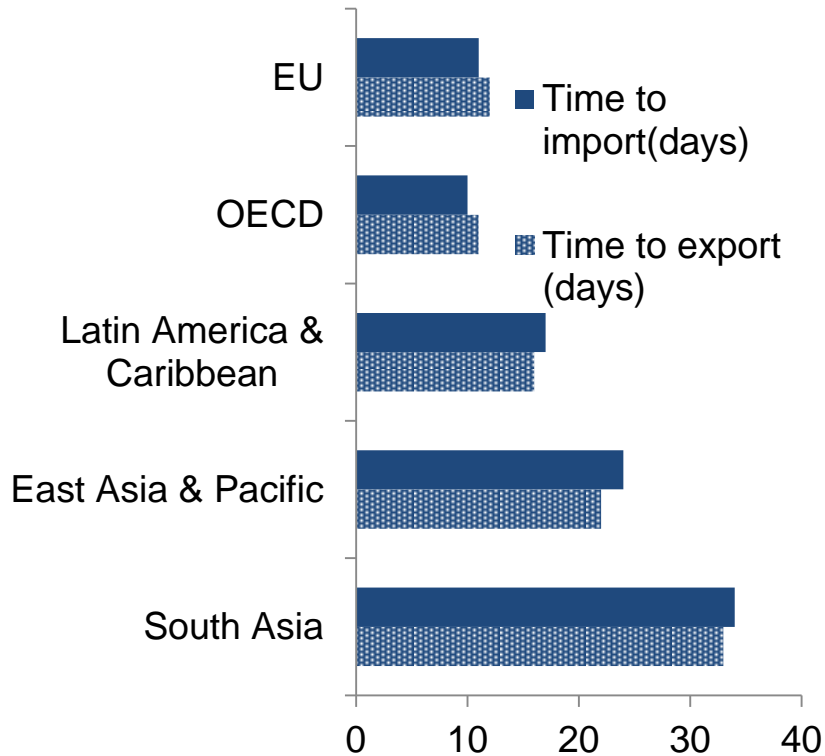
TF refers to simplification and harmonisation of export and import processes and expediting the movement, release and clearance of goods including goods in transit **(WTO,2015)**

Minimize trade transaction costs (TTCs)

Trade Transaction Costs (TTCs) in South Asia



Time to trade in South Asia



Source: Doing Business Report (World Bank, 2015)

Reduction of trade delays



Lower trade transaction costs



Increase market access



Export diversification



Increase exports and imports



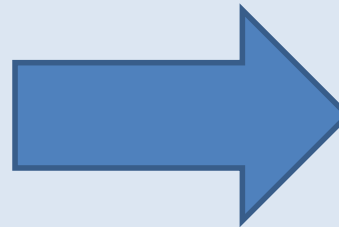
Producers and consumers better off



Increase intra-regional trade

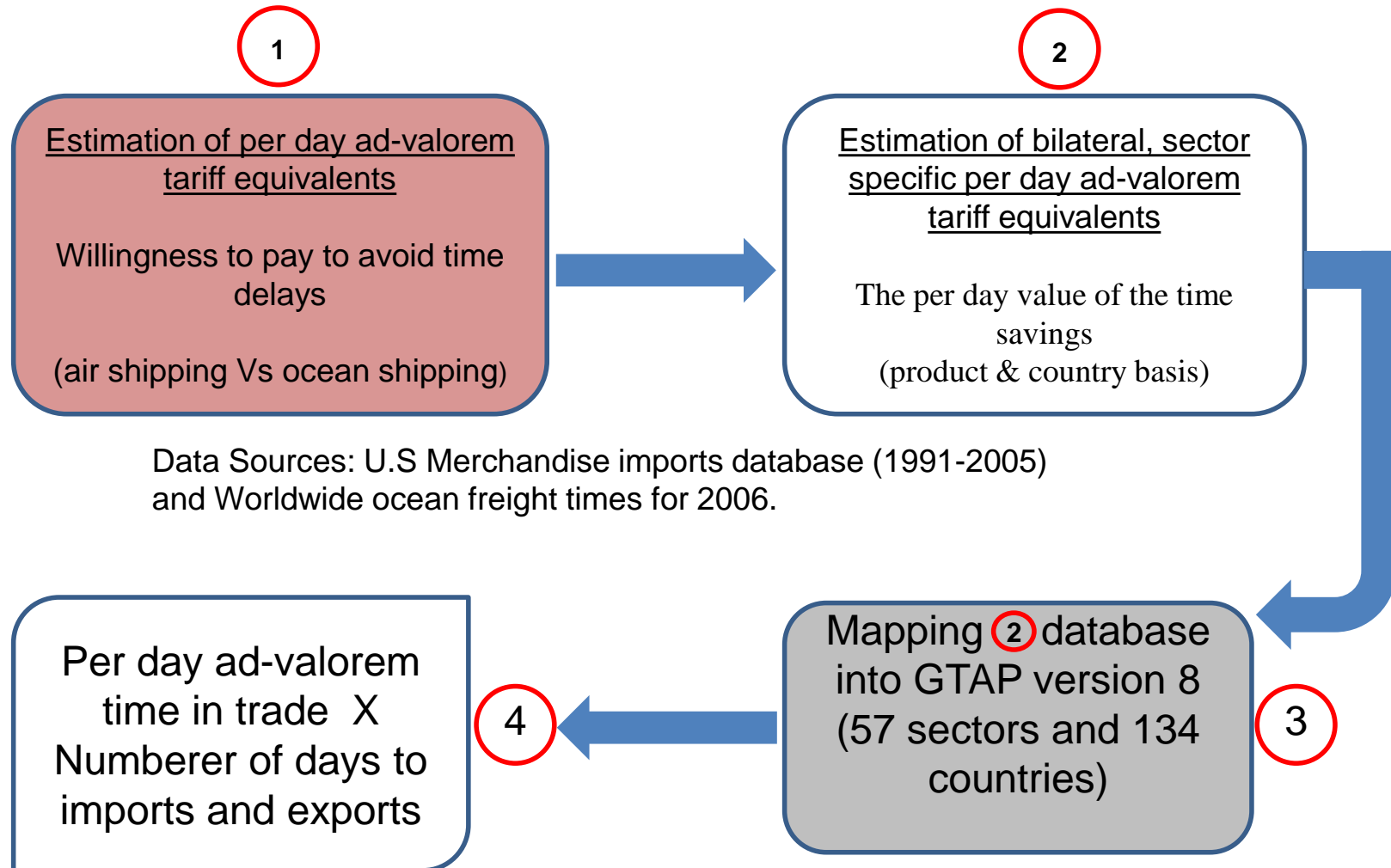


Faster economic growth



Quantitative Estimation of these impacts in South Asia based on GTAP

Estimation of Ad-Valorem Time in Trade Database (Minor and Hummels ,2013)



Data Sources: U.S Merchandise imports database (1991-2005)
and Worldwide ocean freight times for 2006.

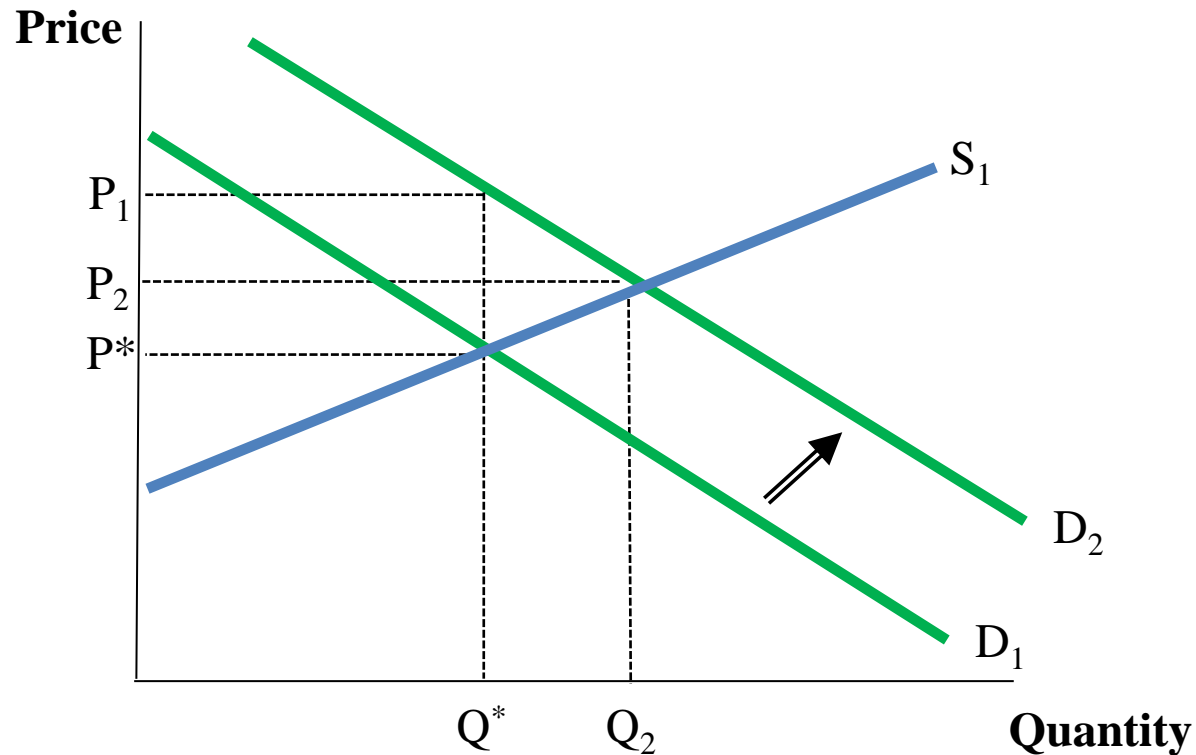
Data Sources: World Bank Doing
Business Data (2007)

Implementation of trade delays in the Standard GTAP model

Iceberg Approach

Implementation of trade delays in the standard GTAP model

Welfare impacts of reduction in trade delays



Source: Minor and Hummels (2013)

Implementation of trade delays in the Standard GTAP model

The import demand equation

$$qxs_{irs} = -ams_{irs} + qim_{is} - \sigma_m^i (pms_{irs} - ams_{irs} - pim_{is})$$

The import price equation

$$pim_{is} = \sum_r \theta_{irs} pms_{irs} - ams_{irs}$$

Where;

σ_m^i = Elasticity of substitution among imports of i

qxs_{irs} = Percentage change in bilateral exports of i from r to s

qim_{is} = Percentage change in total imports of i into s

pms_{irs} = Percentage change in price of imports of i from r in s

pim_{is} = Percentage change in average import price of i in s

ams_{irs} = Demand shift equal to the ad valorem value of trade delays of i from r to s

θ_{irs} = The Share of commodity i shipped from region r to region s

Data Aggregation

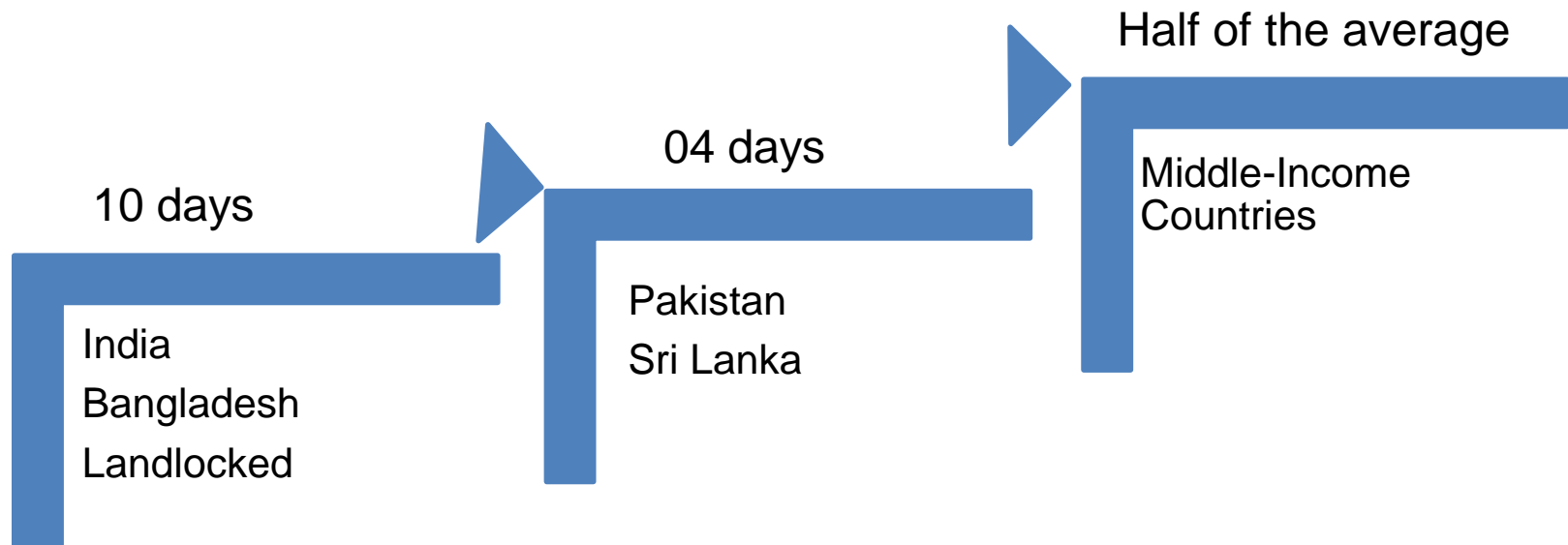
Regional aggregation

1. Pakistan
2. India
3. Bangladesh
4. Sri Lanka
5. Landlocked (Nepal, Bhutan, Afghanistan)
6. Unites States of America
7. European Union
8. China
9. Rest of the World

Sectoral aggregation:

1. Grains and Crops
2. Vegetable and Fruits
3. Livestock and Meat Products
4. Mining and Extraction
5. Processed Food
6. Textiles and Clothing
7. Light Manufacturing
8. Heavy Manufacturing
9. Utilities and Constructions
10. Transport and Communication

Simulations



Based on Hertel and Mirza (2009)

Simulations

Number of days to imports

Country	Customs Clearance	Port Handling	Inland Transport	Total
India	4	6	10	20
Pakistan	2	4	2	8
Bangladesh	9	13	2	24
Sri Lanka	4	2	2	8
Land-Locked Countries(South Asia)	5	5	10	20
USA	1	1	1	3
Eu28	1	2	2	5
UAE	1	1	1	3
China	4	2	3	9
Row	3	3	3	9

Simulated number of days to imports

Country	Customs Clearance	Port Handling	Inland Transport	Total
India	2	3	5	10
Pakistan	1	2	1	4
Bangladesh	5	8	1	14
Sri Lanka	2	1	1	4
Land-Locked Countries (South Asia)	2.5	2.5	5	10
USA	1	1	1	3
Eu28	1	2	2	5
UAE	1	1	1	3
China	4	2	3	9
Row	3	3	3	9

} No Change

Source: Minor and Hummels (2013)

Source: Authors' calculations based on Hertel and Mirza (2009)

Results

Percentage Change in Imports by Commodity in South Asia due to reduction in Trade Delays

Sectors	India	Pakistan	Bangladesh	Sri Lanka	Land locked	South Asia
Grain crops	6	1	16	32	176	13
Meat & livestock	36	43	44	41	138	52
Extractions	0.3	3	41	1	190	1
Processed foods	2	8	19	18	32	8
Vegetable & fruits	11	63	76	125	254	41
Textile &wearing-apparel	3	12	1	-7	34	4
Light manufacturing	3	16	37	23	64	12
Heavy manufacturing	0.3	1	7	5	17	1
Utilities &constructions	- 3	2	11	14	43	- 0.1
Transport& communications	0.3	2	11	10	36	3
Other services	0.3	2	10	15	36	1
All commodities	1	4	13	9	37	3

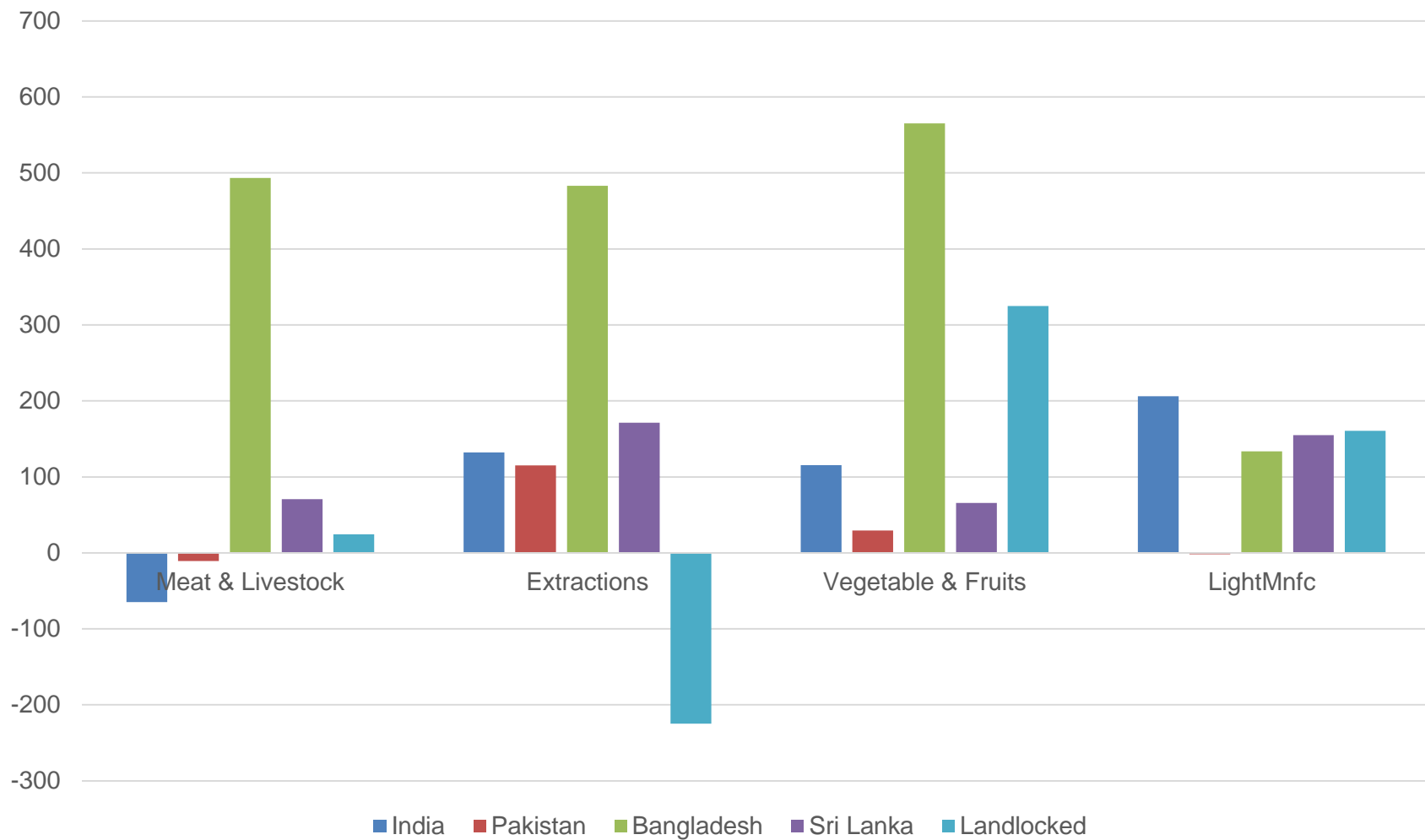
Source: Authors' calculations

Percentage Change in Exports by Commodity in South Asia due to reduction in Trade Delays

Sectors	India	Pakistan	Bangladesh	Sri Lanka	Land locked	South Asia
Grain Crops	3	8	63	2	236	10
Meat & Livestock	2	70	8,913	1,120	499	60
Extractions	2	141	1,048	56	(31)	11
Processed foods	1	1	38	2	52	4
Vegetable & fruits	16	70	2,764	202	403	100
Textile & Wearing-apparel	1	-1	-19	-16	51	-5
Light manufacturing	6	16	66	113	505	19
Heavy manufacturing	0	8	119	0	55	1
Utilities & constructions	0	-3	-24	-23	-83	-15
Transport & communications	0	-2	-15	-15	-56	-3
Other services	-1	-3	-18	-24	-75	-2
All commodities	0.4	3	8	-2	18	1

Source: Authors' calculations

Changes in Trade Balance in Selected Sectors in South Asia (US\$ million)



Percentage Change in Intra-Regional Trade in South Asia

Sectors	% Change
Grain crops	27
Meat & livestock	361
Extractions	288
Processed foods	18
Vegetable & fruits	162
Textile & wear-apparel	30
Light manufacturing	225
Heavy manufacturing	15
Utilities & constructions	-77
Transport & communications	-5
Other services	-4
All commodities	37

Source: Authors' calculations

Note: Intra-regional trade is calculated as total export sales from South Asia to South Asia

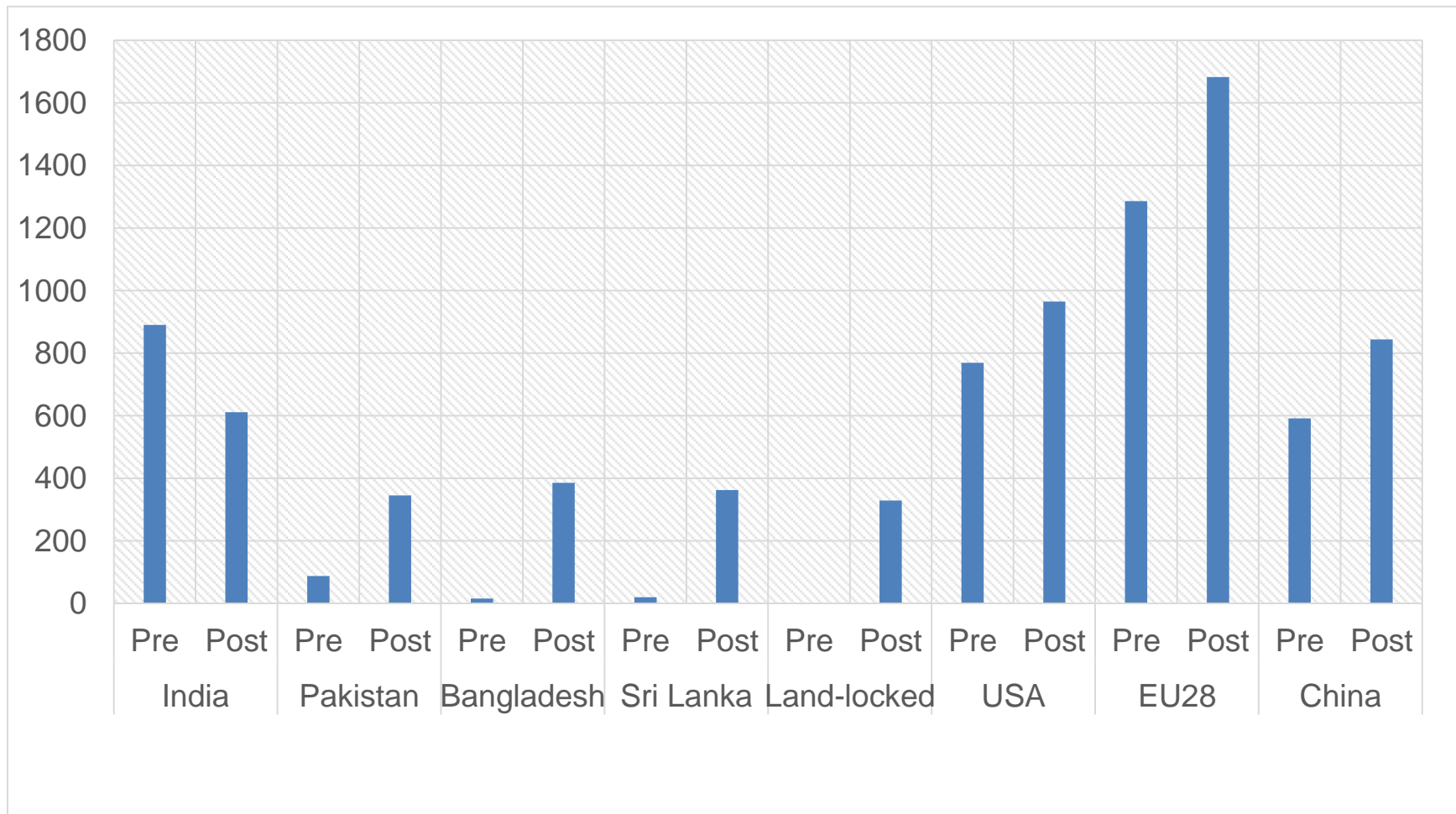
Percentage Change in Intra-Regional Trade due to Reduction of Three Elements of Trade Delays

Country	Reduction of Customs Delays	Reduction of Inland Transport Delays	Reduction of Port Handling Delays
India	9	5	13
Pakistan	17	8	20
Bangladesh	10	40	13
Sri Lanka	8	20	12
Landlocked	14	48	17
South Asia	11	11	15

Source: Authors' calculations

Note: Intra-regional trade is calculated as total export sales from South Asia to South Asia

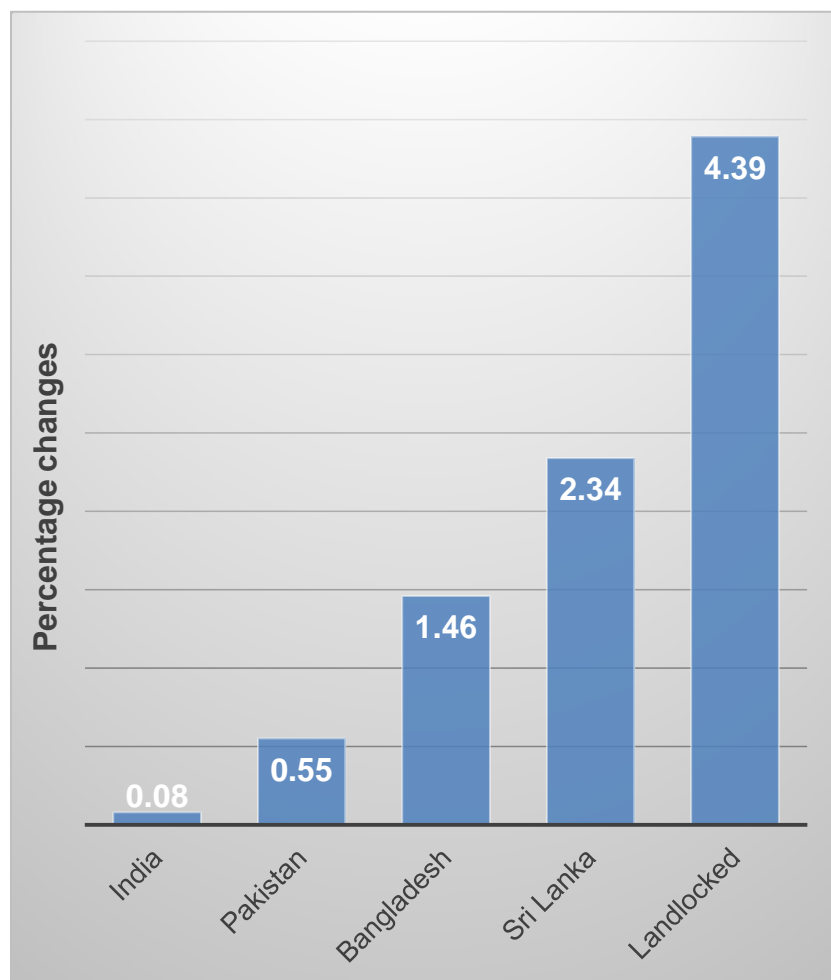
Export Sales from South Asia and the Rest of the World to the Landlocked Countries (US\$ million)



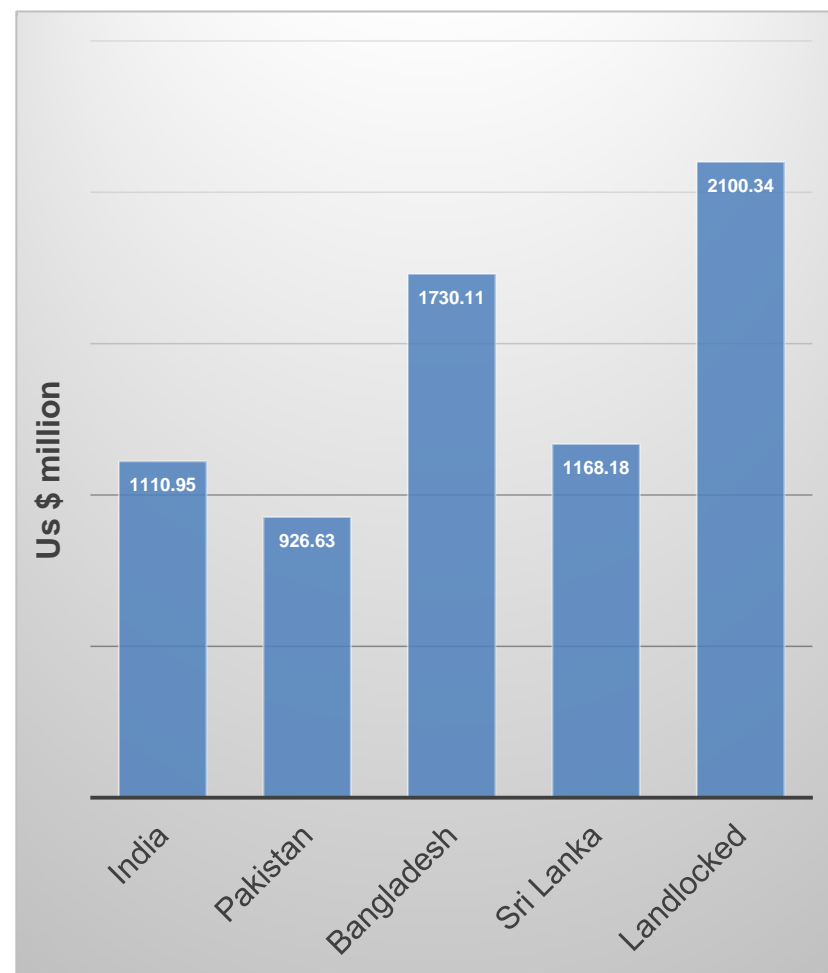
Source: Authors' calculations

Macro Economic Changes

Changes in real GDP



Welfare Improvement



Source: Authors' calculations

Way Forward

Extension of ad valorem trade time database

- ✓ Extension to the GTAP version 9
- ✓ Incorporating investment costs of reduction of trade delays to the GTAP model
- ✓ Estimating long run effects of trade delays

Thank you

Changes in Intra-Regional Trade in South Asia by Country and Sector (US\$ million)

Sector	India		Pakistan		Bangladesh		Sri Lanka		Landlocked		South Asia	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Grain crops	644	705	71	90	133	155	54	96	60	172	961	1,218
Meat&livestock	90	105	30	66	0.43	245	8	88	5	112	134	616
Extractions	177	283	6	90	18	441	16	110	71	195	288	1118
Processed foods	1,040	1,050	293	321	12	193	214	250	137	193	1,696	2,004
Vegetable&fruits	248	232	74	114	3	384	15	95	89	301	430	1,125
Textile&wear-apparel	772	809	388	389	69	257	31	80	103	235	1,363	1,770
Light manufacturing	137	289	37	79	6	163	54	137	23	168	257	837
Heavy manufacturing	5,049	5,269	545	676	139	440	290	365	384	629	6,406	7,379
Utilities & constructions	3	4	1	1	0.31	0.26	0.37	0.3	116	22	120	27
Transport& communications	40	45	23	23	4	4	17	15	10	4	95	91
Other services	171	180	29	29	21	18	16	12	17	5	254	243
All commodities	8,372	8,970	1,496	1,877	406	2,297	716	1,249	1,015	2,034	12,005	16,428

Source: Authors' calculations

Note: Intra-regional trade is calculated as total export sales from South Asia to South Asia