


Why Trade Costs Matter?



Prabir De
Associate Fellow
RIS, New Delhi

19 April 2006
UNESCAP, Bangkok



Orientation

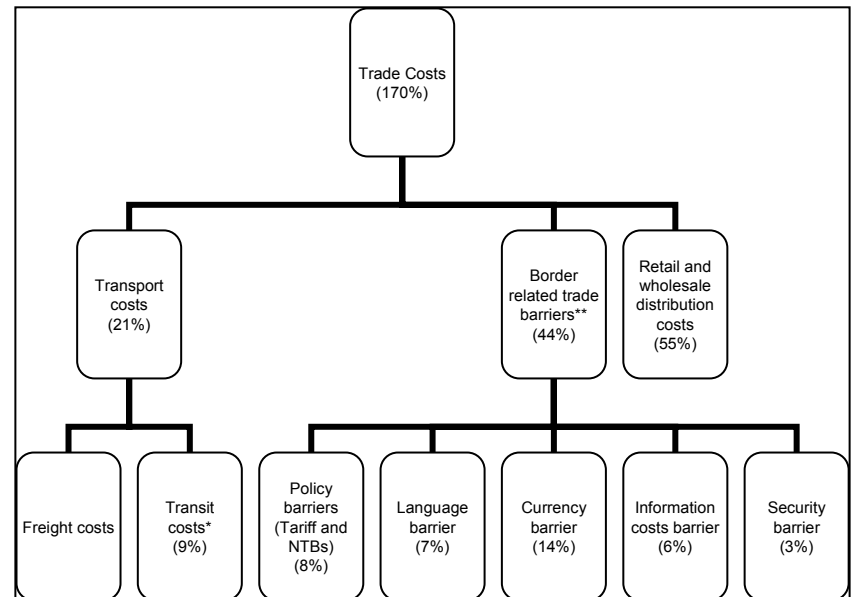
- Importance of trade costs
- Trade costs and its components
- Regional trade in Northeast Asia
- Regional trade costs in Northeast Asia
- Inter-linkages between trade, tariff and trade costs
- Barriers to trade using Gravity Model
- Policy conclusions

Importance of Trade Costs

- A growing literature has documented the negative impact of trade costs on the volume of trade
- Tariff barriers are now low in most countries -
 - Less than 5% for rich countries
 - Between 10 – 20% for developing countries
 - Between 6- 10% in Northeast Asian countries (>20% in 1991)
- Most of the studies show poor institutions and poor infrastructure penalize trade, differentially across countries.
- Many studies show that liberalisation of international transport services foster international trade very much the same way as tariff liberalization does, e.g. Baier & Bergstrand (2001); Andriamananjara (2004)
- Attention is now being focused on minimization of trade costs through facilitation of merchandise and services trade logistics, both inbound and outbound
- Strategy of trade thus goes beyond the traditional mechanisms of tariffs and quotas.

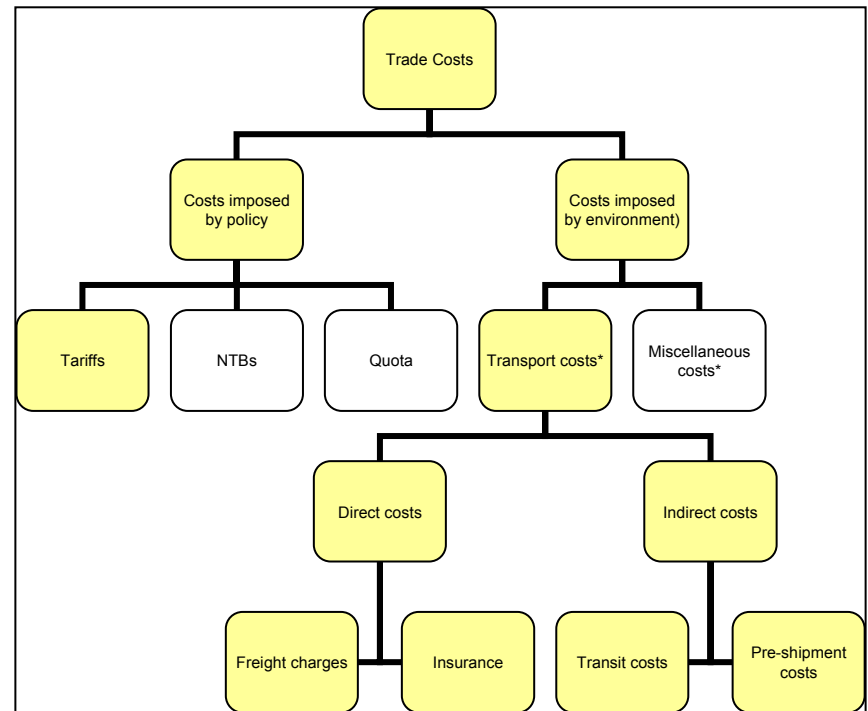
Definition of Trade Costs and Its Relevance

- Trade costs account all the direct and indirect costs that an exporter / importer incurs.
 - Transport costs
 - Border related costs
 - Distribution costs
- Trade costs are richly linked to economic policy.
 1. Policy instruments = Tariffs, NTBs, Quotas, Exchange rates
 2. Environmental barriers = infrastructure, language)
- Trade costs have large welfare implications



Trade Costs and Its Components

- We deal with direct trade costs, imposed by—
 1. Policy (tariff)
 2. Environment (transport and others)
- Transaction cost is the major component of trade cost
- Limao and Venables (2001) is the only study which dealt with policy as well as environmental barriers to trade



Measuring Transaction Costs

- Followed the model suggested by Limao and Venables (2001) and adopted in De (2004) –

$$T_{ij} = f(x_{ij}, X_i, X_j, \mu_{ij})$$

$$t_{ij} = cif_{ij} / fob_{ij} = (p_{ij} + T_{ij}) / p_{ij} = t(x_{ij}, X_i, X_j, \mu_{ij})$$

$$\ln t_{ij} = \alpha + \beta x_{ij} + \gamma \ln X_i + \delta \ln X_j + \omega_j$$

$$t_{ij} = (cif/fob) - 1 = IM_{t_{ij}} / EX_{t_{ij}} - 1$$

Data source – COMTRADE / IMF

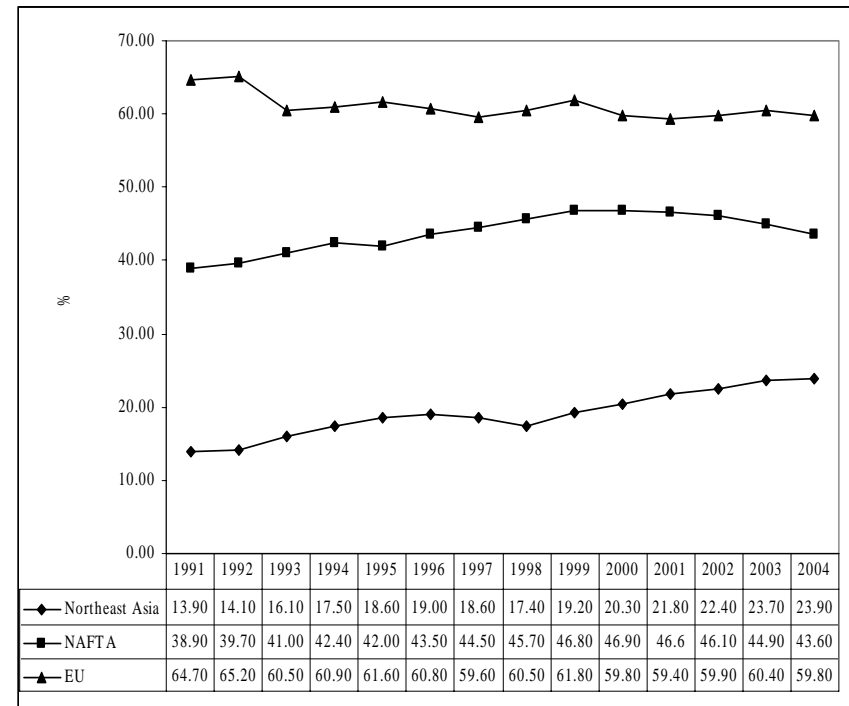
Trends in Regional Trade in Northeast Asia (1/2)

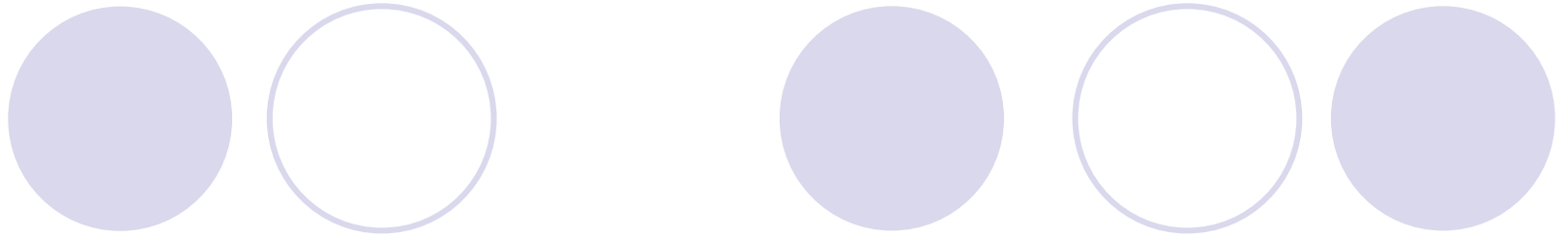
- The three Northeast Asian countries together contain more than
 - Population > 1.46 billion (23 percent of world population),
 - GDP > US\$ 6.32 trillion (17 percent of world GDP)
- Regional trade volume
 - US\$ 325 billion in 2004
 - US\$ 56 billion in 1991
- High trade interdependence
- Commodities overlap
- Trade mostly in intermediate goods
- Japan plays very vital role in regional trade structure
 - Supplier
 - Buyer

Particulars	1991	2001	2004
	US\$ billion		
China's Export to Japan	10.25	45.08	73.51
China's Import from Japan	10.03	42.81	94.37
China's Total Trade with Japan	20.28	87.89	167.89
Japan's Export to China	8.60	30.95	73.92
Japan's Import from China	14.25	57.78	94.34
Japan's Total Trade with China	22.85	88.73	168.25
China's Export to Korea	2.18	12.54	27.82
China's Import from Korea	1.07	23.40	62.25
China's Total Trade with Korea	3.24	35.94	90.07
Korea's Export to China	1.00	18.19	49.76
Korea's Import from China	12.80	13.30	29.58
Korea's Total Trade with China	13.80	31.49	79.35
Japan's Export to Korea	20.09	25.29	44.25
Japan's Import from Korea	12.38	17.22	22.06
Japan's Total Trade with Korea	32.47	42.51	66.31
Korea's Export to Japan	12.36	16.51	21.70
Korea's Import from Japan	21.12	26.63	46.14
Korea's Total Trade with Japan	33.48	43.14	67.85

Trends in Regional Trade in Northeast Asia (2/2)

- Regional trade (2004) > 23%
- Average tariff (2004) ≈ average 6 – 10%
- NTBs?
- FTA in Northeast Asia
 - 1 (CJK)?
 - 3 (C+J+K)?
- Pace of regional integration in Northeast Asia virtually at standstill





Regional trade interdependence very high in
Northeast Asia

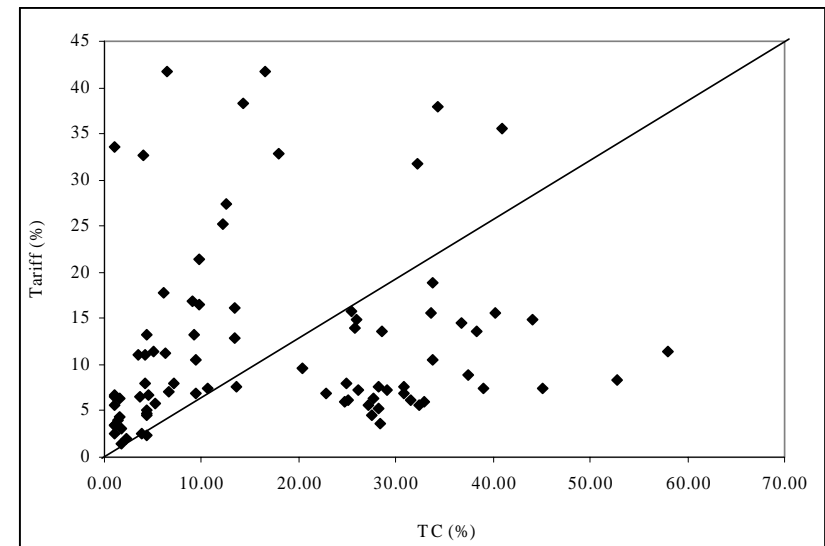
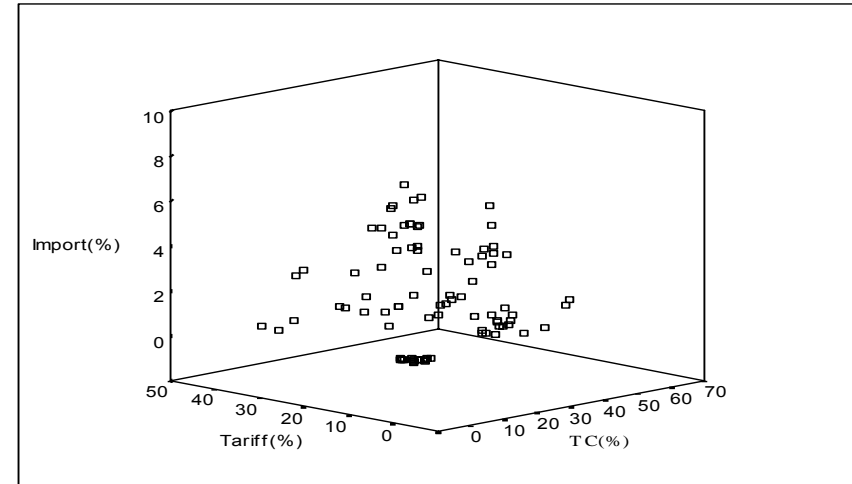
.....low policy barriers (tariffs, for
example) in the region.....

.....has that also been associated with
low trade costs?

Trade, Tariff, Transaction Costs

Year	Importer	Exporter	Import*	TC_n	TC_w	Tariff
			(%)			
1991	China	Korea	0.24	6.40	0.007	41.80
2004	China	Korea	4.19	25.09	0.026	6.21
1991	China	Japan	2.23	16.58	0.008	41.80
2004	China	Japan	6.35	27.67	0.013	6.41
1991	Korea	China	1.11	57.91	0.061	11.40
2004	Korea	China	4.81	6.35	0.007	11.28
1991	Korea	Japan	6.80	5.14	0.004	11.40
2004	Korea	Japan	7.50	4.29	0.004	4.45
1991	Japan	China	0.34	38.98	0.019	7.51
2004	Japan	China	1.90	28.32	0.014	3.65
1991	Japan	Korea	0.29	0.20	0.001	6.58
2004	Japan	Korea	0.44	1.66	0.001	1.53

* In terms of GDP



Transaction costs at 4-digit disaggregation

- Bilateral TC very aggregative in nature, decomposed at 4-digit HS (just to understand and for future study)
- China imports electronic integrated circuits and micro-assemblies (HS 8542) and liquid crystal devices (HS 9013) in large quantity from both Korea and Japan =
 - HS 8542 shares 13.45% of China's total import from Korea (2004)
 - HS 8542 shares 29.69% of China's total import from Japan (2004)
 - HS 9013 shares 13.33% of China's total imports from Korea (2004)
 - HS 9013 shares 3% of China's total import from Japan (2004)
- Transaction costs of import of HS 8542 (2004)
 - From Korea \approx 200%
 - From Japan \approx 90%
- The cost of import of liquid crystal devices (HS 9013) from Korea to China is found to be three times higher than import of the same from Japan.
 - From Korea \approx 304.14%
 - From Japan \approx 100.53%
- Top 10 Chinese imports from Korea are associated with 0 to 10 percent tariff and 7 to 304 percent transaction costs,
- Top 10 Chinese imports from Japan are associated with 0 to 35 percent tariffs and 2 to 123 percent transaction costs, respectively.



.....when the policy barrier (tariff) has been reduced in one hand

.....environmental barriers are very much in existence

..... prices of the finished products are becoming higher

..... .. market is fast becoming less competitive.

Augmented Gravity Model

- LHS = IM_{ij}^t
- RHS = $GDP_{ij}^t, GDP_{ij}^t, GDPPC_{ij}^t, GDPPC_{ij}^t, TMI_{ij}^t, TMI_{ij}^t, ONSt_{ij}, ONSt_{ij}, TC_{ij}^t, T_{ij}^t, ER_{ij}^t, ER_{ij}^t, D_{ij}, et_{ij}$
- TMI = Trade mobility index (constructed based on UNDP method) = [(Actual – Minimum) / Maximum – Minimum].
 - (i) railway length density (km per sq. km of surface area), (ii) road length density (km per sq. km of surface area), (iii) air transport freight (million tons per km), (iv) air transport, passengers carried (percentage of total population), (v) aircraft departures (per airport), (vi) container traffic (per port), (vii) fixed line and mobile phone subscribers (per 1,000 people), (viii) internet users (per 1,000 people), and (ix) electric power consumption (kwh per capita).
- Fixed effect OLS
- Panel data: 1991 to 2004
- 84 pairs of unidirectional trading pairs X 13 variables = 1092 pooled observations

	IM_{ij}^t	TMI_i^t	TMI_j^t	TC_{ij}^t	T_{ij}^t
IM_{ij}^t	1				
TMI_i^t	0.169* p=.1328	1			
TMI_j^t	-0.373 p=.0012	-0.433* p=.0002	1		
TC_{ij}^t	-0.220* p=.0480	0.389* p=.0009	0.239* p=.0319	1	
T_{ij}^t	-0.213 p=.0562	0.608* p=.0008	0.105 p=.3524	0.396* p=.0006	1

Gravity Results (1)

Variable	1	2	3	4
Importing countries GDP	1.659***		-13.984**	-10.349*
	(7.928)		(-5.229)	(-2.232)
Exporting countries GDP	1.620***		2.529***	1.438**
	(10.389)		(13.484)	(4.836)
Importing countries GDP per capita		2.416**	17.260**	13.706*
		(7.543)	(5.841)	(2.675)
Exporting countries GDP per capita		0.826**	-0.700**	0.008
		(4.275)	(-4.695)	(0.033)
Importing countries trade mobility infrastructure	0.221	-0.224	-0.209	-0.577
	(0.506)	(-0.358)	(-0.637)	(-1.004)
Exporting countries trade mobility infrastructure	-0.446***	-0.229*	-0.525***	
	(-7.895)	(-2.992)	(-12.512)	
Importing countries openness	0.240	0.543	0.227	0.474
	(0.778)	(1.232)	(0.970)	(1.164)
Exporting countries openness	0.009	0.583*	0.034	-0.084
	(0.050)	(2.181)	(0.208)	(-0.301)
Transaction costs	0.036	-0.086*		-0.105**
	(1.376)	(-2.281)		(-3.209)
Tariff	0.126	-0.336**	-0.132*	-0.291*
	(1.583)	(-3.051)	(-2.313)	(-2.832)
Importing countries exchange rate	-0.978***	-0.829**	-0.461*	-0.618*
	(-5.331)	(-3.153)	(-2.801)	(-2.150)
Exporting countries exchange rate	-0.735***	-0.751**	-0.342*	-0.274*
	(-7.355)	(-3.368)	(-2.754)	(-1.289)
Distance	-5.682***	-1.378	-6.062***	-3.766**
	(-6.760)	(-1.364)	(-9.197)	(-3.516)
Adjusted R ²	0.941	0.876	0.964	0.895
DW	0.995	1.005	1.007	1.002

Gravity Results (2)

Optimizing scale effects

Variable	1	2	3
Importing countries GDP	2.040**	-10.272*	2.196***
	(7.267)	(-2.215)	(9.316)
Exporting countries GDP	1.202**	1.389**	1.154**
	(5.942)	(4.735)	(5.863)
Importing countries GDP per capita		13.783*	
		(2.690)	
Exporting countries GDP per capita	(0.061)	0.015	
Importing countries trade mobility infrastructure	-0.611		
	(-1.023)		
Importing countries openness	0.488	0.168	0.164
	(1.154)	(0.622)	(0.585)
Exporting countries openness	-0.321	-0.135	-0.379
	(-1.248)	(-0.492)	(-1.514)
Transaction costs	-0.117**	-0.098**	-0.109**
	(-3.545)	(-3.064)	(-3.400)
Tariff	-0.281*	-0.286*	-0.275**
	(-2.630)	(-2.782)	(-2.577)
Importing countries exchange rate	-1.026**	-0.490	-0.893**
	(-4.059)	(-1.902)	(-4.120)
Exporting countries exchange rate	-0.229*	-0.281	-0.230*
	(-2.163)	(-1.320)	(-2.173)
Distance	-3.335**	-3.717**	-3.274**
	(-3.075)	(-3.474)	(-3.023)
Adjusted R ²	0.887	0.895	0.886
DW	1.001	1.000	1.001



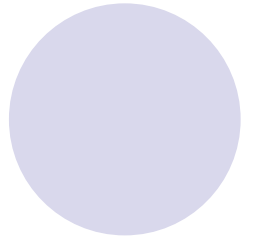
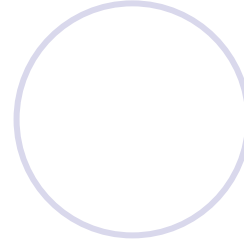
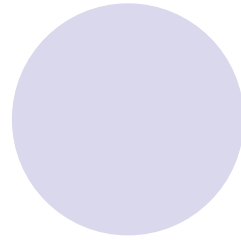
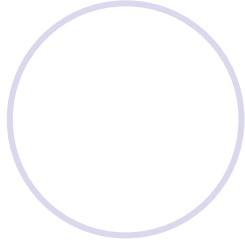
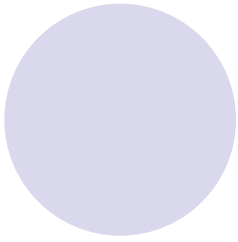
Conclusions

- Transactions cost is much significant trade barrier than tariff
- Trade mobility infrastructure facilities should get highest priority in policy planning
- Policy should be focused on trade facilitation initiatives
- Korea has advantage as location and for its maritime outlets (regional)
- Port in the region still takes 3-4 days to clear a vessel (to high compared to Singapore or Hong Kong)
- Customs are highly bureaucratic, complex procedure, high documentations
- WTO Trade Facilitation Initiatives (APEC/UNESCAP/WB GFT)
- One policy should be adopted be it multilateral or regional



Future Study Options

- Check endogeneity problem. What would be then instrumental variable?
- Decompose the trade mobility infrastructure and find the causal linkages of the variables with the trade flow.
- Consider disaggregated trade and trade costs in a dynamic framework.
- Incorporate omitted infrastructure costs and the presence of regional public goods. Variability in infrastructure endowments and costs thus need to be captured more accurately in the model. Data availability?
- Replace the methodology adopted here by other methods to measure transaction costs [Due to time constraint, this author was unable to extend the analysis with disaggregated (at least 4 digit HS) trade data]



Thank you