



ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE
ARTNeT CONFERENCE

ARTNeT Trade Economists' Conference

Trade in the Asian century - delivering on the promise of economic prosperity
22-23rd September 2014

Parallel Session 1:
Empirical trade analysis (1)



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South-South Trade: A Quantitative Assessment

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Presented at the Asia-Pacific Trade Economists' Conference:
"Trade in the Asian century - delivering on the promise of economic prosperity"
22-23 September, 2014, Bangkok

Outline of the presentation

3

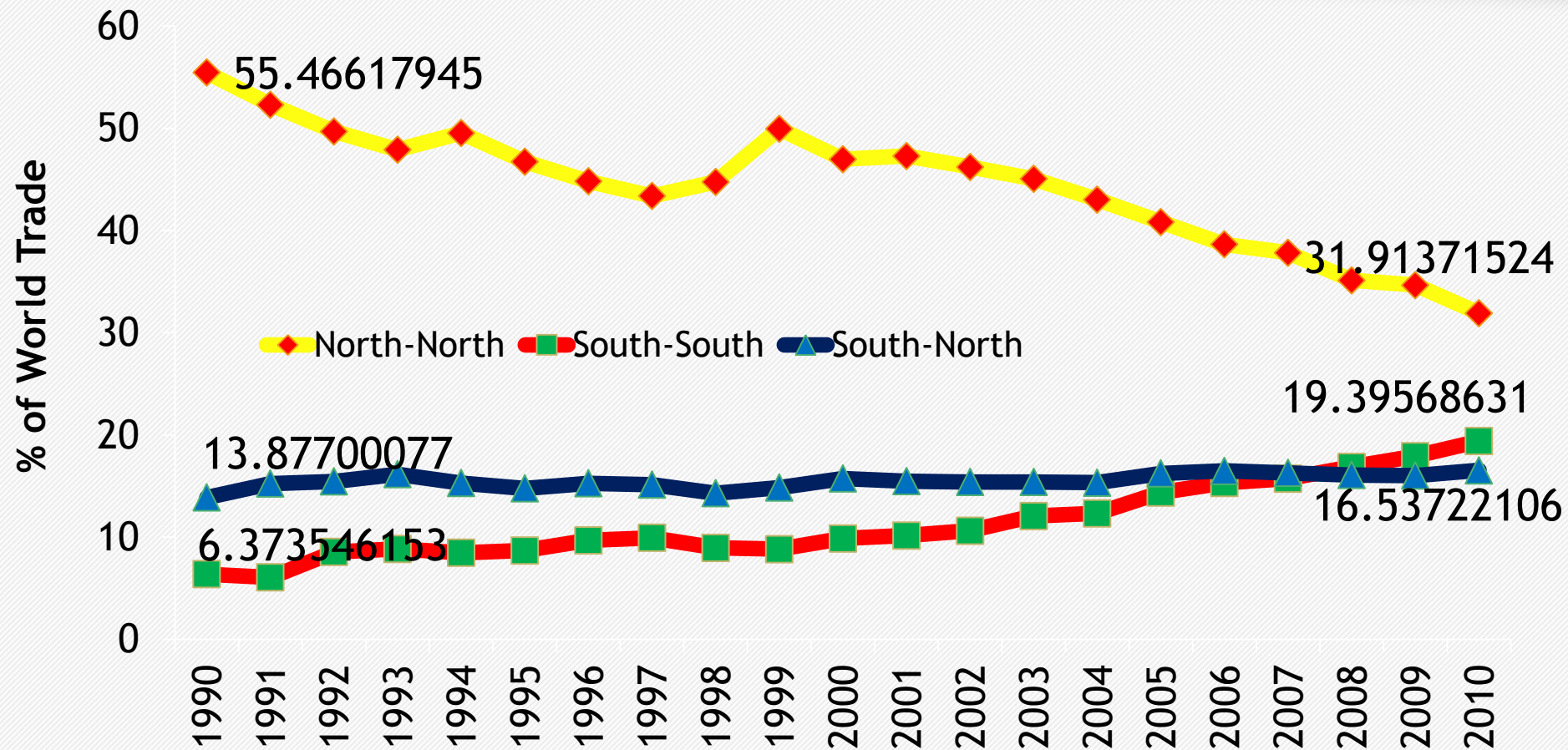
- Changing Global Landscape: The Rise of the South
- What Factors Determine South-South Trade?
 - The basic gravity model
 - The augmented gravity model for tariff and trade cost
- Welfare Effects of Preferential and Free Trade Scenarios among South
 - CGE Model
 - Simulation and results

Changing Global Landscape: The Rise of the South

4

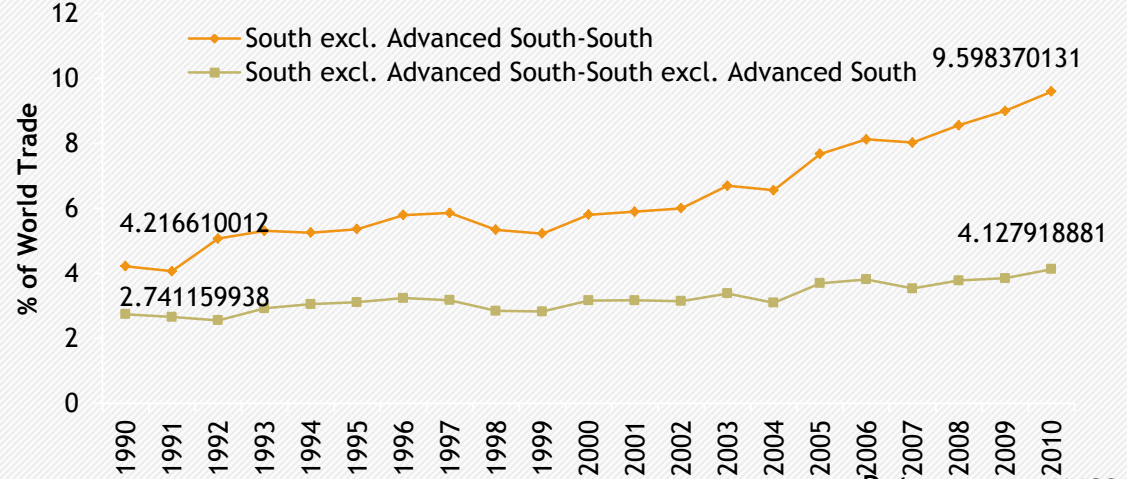
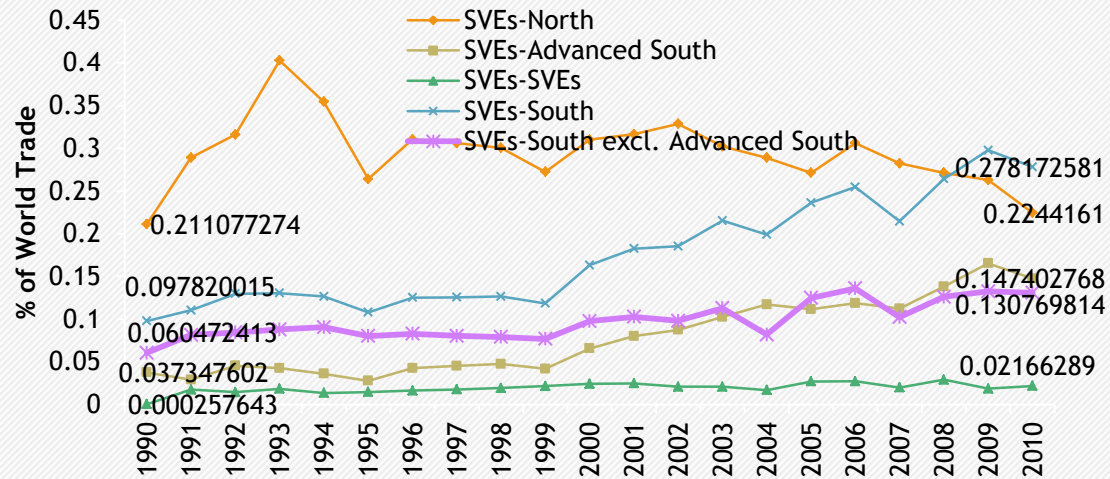
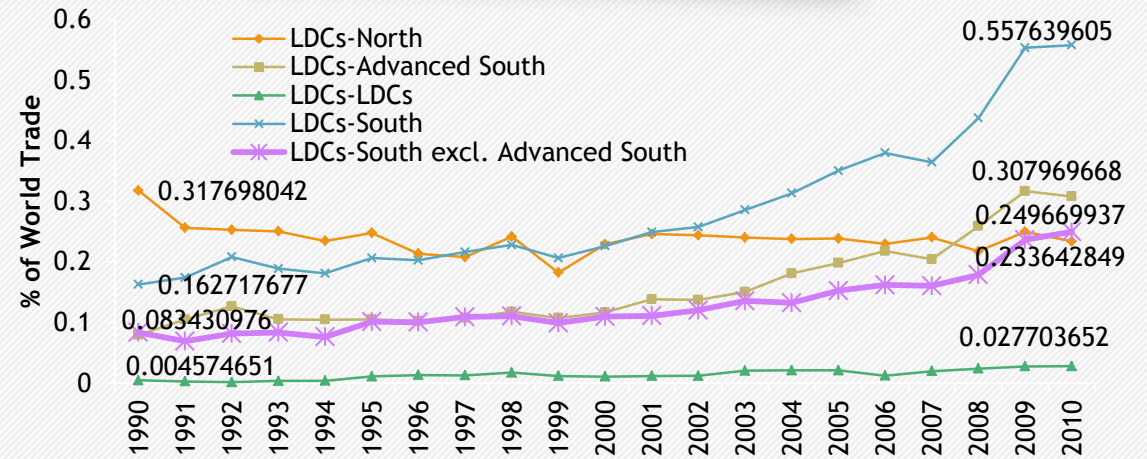
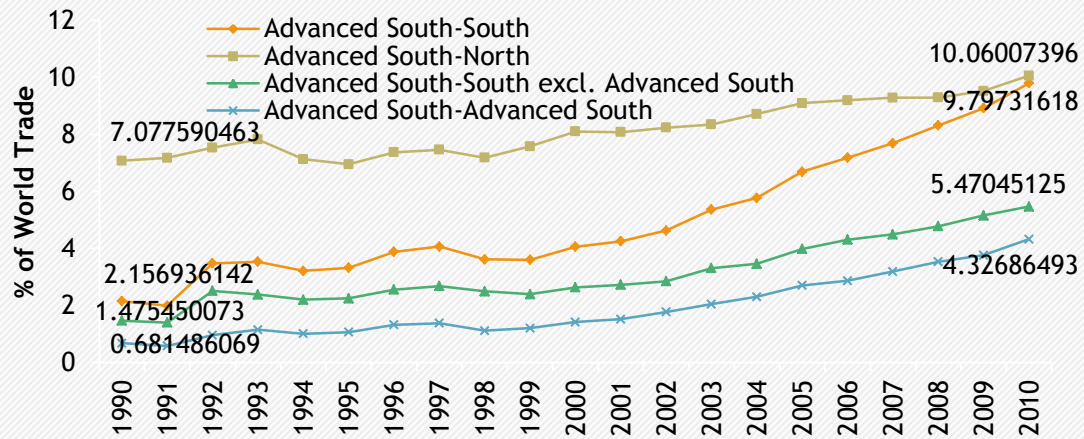
Share in world trade: 1990-2010

5



Share in world trade: 1990-2010

6



Share in South-South Export

7

Share of country groups in total South-South export

Country group	Average during 2000 and 2002 (%)	Average during 2008 and 2010 (%)
All South	100.00	100.00
LDCs	0.569	0.607
SVEs	0.584	0.458
Advanced South	76.337	75.900
South excluding advanced South	23.663	24.100

Comparison of average shares in South-South export (average of 2000-2002 and average of 2008-2010)

Country group	Number of countries experienced rise in share	Number of countries experienced fall in share	Total
All South	50	85	135
LDCs	14	17	31
SVEs	7	22	29
Advanced South	4	9	13
South excluding advanced South	46	76	122

Top 10 South countries: Share in South-South export

8

Average during 2000 and 2002			Average during 2008 and 2010		
Rank	Country	%	Rank	Country	%
1	China	15.7031	1	China	23.3587
2	China, Hong Kong SAR	13.9261	2	Rep. of Korea	9.2363
3	Rep. of Korea	10.1298	3	China, Hong Kong SAR	8.3273
4	Singapore	9.4251	4	Singapore	8.3133
5	Malaysia	5.8827	5	Russian Federation	4.6494
6	Russian Federation	5.0203	6	India	4.3346
7	Thailand	3.7187	7	Malaysia	3.8150
8	Indonesia	3.3361	8	Thailand	3.6328
9	Brazil	3.1133	9	Brazil	3.6188
10	India	2.7471	10	Indonesia	2.7968
	Total	73.00		Total	72.08

Top 10 South countries: Rise in percentage points share in South-South export

9

Rank	Comparison between average of 2000-2002 and average of 2008-2010	
1	China	7.6556
2	India	1.5875
3	Saudi Arabia	1.1661
4	Turkey	0.7718
5	United Arab Emirates	0.7087
6	Brazil	0.5056
7	Qatar	0.4383
8	Iran	0.2942
9	Oman	0.2576
10	Panama	0.2401

Top 5 LDCs in term of share in South-South export

10

Average during 2000 and 2002			Average during 2008 and 2010		
Rank	Country	%	Rank	Country	%
1	Bangladesh	0.073	1	Zambia	0.092
2	Cambodia	0.056	2	Bangladesh	0.078
3	Senegal	0.052	3	United Rep. of Tanzania	0.074
4	Zambia	0.049	4	Cambodia	0.070
5	Nepal	0.048	5	Senegal	0.050
	Total	0.278		Total	0.364

Top 5 SVEs in term of share in South-South export

11

Average during 2000 and 2002			Average during 2008 and 2010		
Rank	Country	%	Rank	Country	%
1	Brunei Darussalam	0.171	1	Brunei Darussalam	0.125
2	Bahrain	0.131	2	Bahrain	0.112
3	Gabon	0.066	3	Gabon	0.076
4	Botswana	0.044	4	Botswana	0.052
5	Papua New Guinea	0.029	5	Bhutan	0.017
	Total	0.441		Total	0.382

Structure of South's Export

12

- During early 2000s, 61 countries, out of 122 South countries, had manufacturing export share at least 50 percent. By late 2000s, such number declined to 59.
- Among the 69 countries, who had at least 50 percent of the manufacturing export share either in early 2000s or late 2000s, only 29 countries experienced rise in their share of manufacturing export in total export, while the rest 40 countries experienced fall.
- By the late 2000s, 32 South countries had extraction export at least 30 percent of their total export.
- By late 2000s, 22 countries had agricultural export at least 30 percent of their total export.

Destination of South's export

13

- The destinations of the export from South countries are primarily the developed countries.
- As far as the Advanced South countries are concerned, their exports are also destined with some significant shares to other developing countries.
- In the case of other developing countries, some Latin American countries, some Middle Eastern oil rich countries, some African countries and some Asian countries have large shares of their exports (25 percent or more) destined to the Advanced South countries.
- Among the LDCs and SVEs, only four countries (or region), such as Mozambique, Nepal, Rest of South Asia and South Central Africa, have such large shares of their exports destined to the Advanced South countries.

What Factors Determine South-South Trade?

14

Country groups

15

- Six groups of countries have been identified:
 - South (group of developing countries),
 - North (group of developed countries),
 - LDCs (group of least developed countries),
 - SVEs (group of small and vulnerable countries),
 - Advanced South (group of advanced developing countries), and
 - South Excluding Advanced South (group of developing countries excluding the advanced developing countries)

Basic Gravity Models

16

$$\begin{aligned} \ln m_{hpt} = & \beta_1 + \beta_2 \ln \text{gdp_pc}_{ht} + \beta_3 \ln \text{gdp_pc}_{pt} + \beta_4 \ln \text{discap}_{hp} + \beta_5 \text{comlang}_{hp} \\ & + \beta_6 \text{landlock}_h + \beta_7 \text{landlock}_p + \beta_8 \text{island}_h + \beta_9 \text{island}_p \\ & + \beta_{10} \text{comborder}_{hp} \end{aligned}$$

$\ln m_{hpt}$ = Log of import of home country from partner country in year t (US\$)

$\ln \text{gdp_pc}_{ht}$ = Log of per capita GDP of home country at constant price of 2000 in year t (US \$)

$\ln \text{gdp_pc}_{pt}$ = Log of per capita GDP of partner country at constant price of 2000 in year t (US \$)

$\ln \text{discap}_{hp}$ = log of distance between the capitals of home and partner countries

comlang_{hp} = Common language dummy if home and partner countries have common language

landlock_h = Land lock dummy for home country

landlock_p = Land lock dummy for partner country

island_h = Island dummy for home country

island_p = Island dummy for partner country

comborder_{hp} = Common border dummy if home and partner countries have common border

Data source for basic gravity model

17

- An unbalanced panel dataset constructed for the period between 1988 and 2011. 185 South countries, 23 North countries, 13 Advanced South, 50 LDCs and 47 SVEs
- Bilateral import data are taken from UNCOMTRADE data base.
- The data of per capita GDP are taken from the World Bank's World Development Indicators data base.
- The data on the distance between the capitals of home and partner countries, common language dummy and land lock dummy are taken from the "GeoDist" data base of CEPII.
- The data on island dummy and common border dummy are taken from Wikipedia.
- To estimate the gravity regressions fixed effect models are run by introducing country dummy and year dummy.
- Heteroskedasticity is also controlled for which could be apparent in a panel data with long time dimension.
- There are 36 different gravity regressions

Regression Results of basic gravity model

18

- South countries as home: Dependent variable Log of Import of home country from partner country: [Table 9](#)
- North countries as home: Dependent variable Log of Import of home country from partner country: [Table 10](#)
- LDCs as home: Dependent variable Log of Import of home country from partner country: [Table 11](#)
- SVEs as home: Dependent variable Log of Import of home country from partner country: [Table 12](#)
- Emerging South as home: Dependent variable Log of Import of home country from partner country: [Table 13](#)
- South Excluding Emerging South as home: Dependent variable Log of Import of home country from partner country: [Table 14](#)

Summary of the results of basic gravity model

19

- As far as intra-South trade is concerned, among the continuous variables, the largest positive effect stems from the per capita GDP of the home country, and largest negative effect comes from the distance.
- Among the dummy variables, the common border dummy has the largest positive effect, whereas the island dummy of the partner country has the largest negative effect.
- However, these variables have differential effects when it comes to trade between different groups of South countries.

Summary of the results of basic gravity model (cont.)

20

- When considering South countries as the home, there are marked differences among different groups of countries as far as the impact of per capita GDP of home country (in this case the South countries) on exports from these groups of countries to the South countries are concerned.
- Per capita GDP of the South countries has the largest positive effect on the export from the North countries; and among different South countries such positive effect is the largest for the export from the Advanced south countries. For SVEs the effect is positive but is the smallest among all country groups.
- Now, while considering South as the source of export, the per capita GDP of the advanced south countries has the largest positive effect among all country groups on the export from South. Interestingly, the per capita GDP of the North countries doesn't have any significant effect. Also, though the per capita GDP of LDCs has a positive effect on the export from South, that of the SVEs doesn't have any statistically significant effect.

Summary of the results of basic gravity model (cont.)

21

- Considering South as the home, the distance factor has the largest negative effects on exports from the Advanced south countries and SVEs to South countries.
- Distance factor has the largest negative impact on South's export to Advanced south among all country groups as destinations for South's export.
- In the case of common language dummy, while considering exports to South from all country groups, this dummy has the largest positive effect on export from North countries, and while considering export from South, common language has the largest positive effect on the export to South Excluding Advanced south countries.

Summary of the results of basic gravity model (cont.)

22

- In the case of land lock dummy for home country, considering South as the home, this dummy has mixed effects on exports from different country groups; for example, it has negative impacts on exports from LDCs and North, while it has a positive impact on export from South Excluding Advanced south. Also, this dummy has only negative effect on the export from South to North among all country groups as destinations for South's export.
- In the case of land lock dummy for partner country, when South is the home, among all country groups, this dummy has the largest negative effect on the export from the South; however, when South is the export source, this dummy has the largest negative effect on South's export to Advanced south countries.

Summary of the results of basic gravity model (cont.)

23

- In the case of island dummy for home country, considering South as the home, the export from the island countries will be reduced, if those countries are either North or SVEs. Also, South's export to Advanced south countries will be reduced most of the South countries are the island countries.
- In the case of island dummy for partner country, considering South as the home, the export from LDCs is mostly affected among exports from all country groups if LDCs are island countries. Also, if South countries are island countries, then their export is mostly affected in the Advanced south countries.
- When South is the export destination, common border dummy has the largest positive effect on the export from South countries in general, and among different groups of South countries, this dummy has the largest positive effect on the export from LDCs. However, this dummy has a negative effect on the export from North to South.

Augmented Gravity Models

24

$$\ln m_{hpt} = \beta_1 + \beta_2 \ln \text{gdp_pc}_{ht} + \beta_3 \ln \text{gdp_pc}_{pt} + \beta_4 \ln \text{discap}_{hp} + \beta_5 \text{comlang}_{hp} \\ + \beta_6 \text{landlock}_h + \beta_7 \text{landlock}_p + \beta_8 \text{island}_h + \beta_9 \text{island}_p + \beta_{10} \text{comborder}_{hp} \\ + \beta_{11} \ln t_{hp}$$

$\ln m_{hpt}$ = Log of import of home country from partner country in year t (US\$)

$\ln \text{gdp_pc}_{ht}$ = Log of per capita GDP of home country at constant price of 2000 in year t (US \$)

$\ln \text{gdp_pc}_{pt}$ = Log of per capita GDP of partner country at constant price of 2000 in year t (US \$)

$\ln \text{discap}_{hp}$ = log of distance between the capitals of home and partner countries

comlang_{hp} = Common language dummy if home and partner countries have common language

landlock_h = Land lock dummy for home country

landlock_p = Land lock dummy for partner country

island_h = Island dummy for home country

island_p = Island dummy for partner country

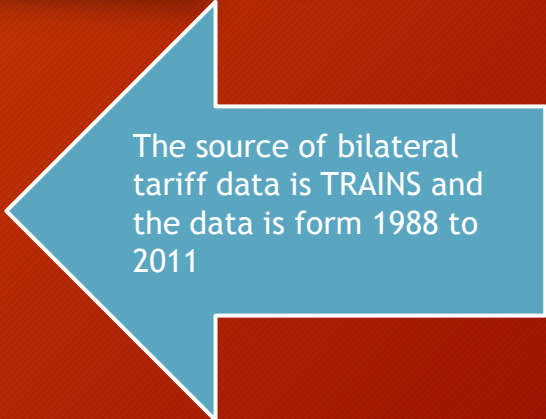
comborder_{hp} = Common border dummy if home and partner countries have common border

$\ln t_{hp}$ = Log of tariff or trade cost in home country while importing from partner country


Data source for Augmented Gravity Model

25

- Data on bilateral import and other variables: Same as the basic gravity model.
- Six tariff variables are considered:
 - Log of simple average MFN tariff of home country,
 - Log of weighted average tariff of home country,
 - Log of simple tariff line average of home country,
 - Log of simple average effectively applied tariff in home country,
 - Log of weighted average effectively applied tariff in home country,
 - Log of simple Tariff line average effectively applied tariff in home country.
- Five trade cost variables are considered:
 - Log of tariff equivalent trade costs in percent: $\sigma=8$,
 - Log of t_{ij} with interpolated,
 - Log of geometric average of tariff_{ij} and tariff_{ji} ,
 - Log of tariff equivalent trade costs excl. tariff in percent: $\sigma=8$, and
 - Log of nontariff t_{ij} with interpolated.
- Now, there are in total 396 gravity regressions since 11 tariff and trade cost variables are added separately in 36 basic gravity models.



The source of bilateral tariff data is TRAINS and the data is from 1988 to 2011



Trade cost data are taken from the data base constructed by ARTNeT and the data is from 2005 to 2010.

Regression Results of Augmented Gravity Models

26

- Home: South. Partner: South. Dependent variable: Log of Import of home country from partner country (US\$): [Table A4.1](#)

Regression Results of Augmented Gravity Models (cont.)

27

- Augmented gravity modeling results suggest that, in general, South's tariff rate has the largest negative effect on the export from SVEs.
- North's tariff is most restrictive on the export from South in general and South Excluding Advanced south in particular.
- LDCs' tariff rate affects mostly the export from SVEs and LDCs.
- SVEs' tariff rate affects mostly the export from South Excluding Advanced south counters.
- Tariff rates of Advanced south and South Excluding Advanced south have the largest negative effect on export from SVEs.

Regression Results of Augmented Gravity Model (cont.)

28

- As far as South is considered as the export destination, trade cost in South affect mostly the export from South.
- Trade cost in North has the largest negative effect on export from LDCs, and it seems that such negative effect is higher than the negative effect on export from North to LDCs due to trade cost in LDCs.
- While the trade costs between LDCs and Advanced south countries are compared, trade costs in Advanced south countries seem to be more restrictive on export from LDCs, as compared to the negative effect of trade cost in LDCs on the export from Advanced south.
- Similar observations are hold for SVEs, while comparing the restrictive effect of their trade cost with those of North and Advanced south.

Welfare Effects of Preferential and Free Trade Scenarios among South

29

Application of GTAP Model

30

- This study explores different preferential and free trade scenarios among South countries.
- The global general equilibrium model, namely the GTAP model is applied.
- This study explores two different scenarios:
 - Scenario 1: LDCs and SVEs receive duty-free market access in advanced south countries
 - Scenario 2: FTA among advanced south, LDCs and SVEs, other developing countries

Results of Scenario 1

31

- A scenario of LDCs and SVEs receiving duty-free market access in advanced south countries would lead to some significant rise in welfare for all LDCs and SVEs
- All LDCs and SVEs would also experience rise in exports. However, different LDCs and SVEs would experience rise in export by different magnitudes.
- All LDCs and SVEs would experience some re-direction of their exports towards the Advanced south countries.
- Such a scenario would not lead to large rise in export from LDCs and SVEs, which indicates to the fact that tariff preferences in the Advanced south countries alone would not be enough to help LDCs and SVEs to increase their export to the Advanced south countries.

Results of Scenario 2

32

- The scenario of FTA among Advanced south, LDCs and SVEs and other developing countries would lead to some large welfare gains, both in terms of volume and percent share of GDP, for most of the Advanced south countries.
- There would be mixed effects among the other developing countries.
- LDCs and SVEs would also see mixed effects.
- Such a scenario would lead to some significant rise in exports from most of the Advanced south, other developing countries and LDCs and SVEs.
- Such a scenario would enhance South-South trade significantly. Most of the South countries would experience rise in export to other South countries.
- The incremental rises in exports of these countries would be destined to other South countries.

Thank you

33