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**Trade Creation and Trade Diversion Effects of
Agricultural Trade**

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Asia-Pacific Research and Training Network on Trade



Presentation Outline

- Regional Trading Agreements (RTAs)
- Agricultural Trade Liberalization in South Asia
- Objectives of the Study
- Gravity model for the present study
- Data and data sources
- Results & Discussion
- Conclusions and Recommendations



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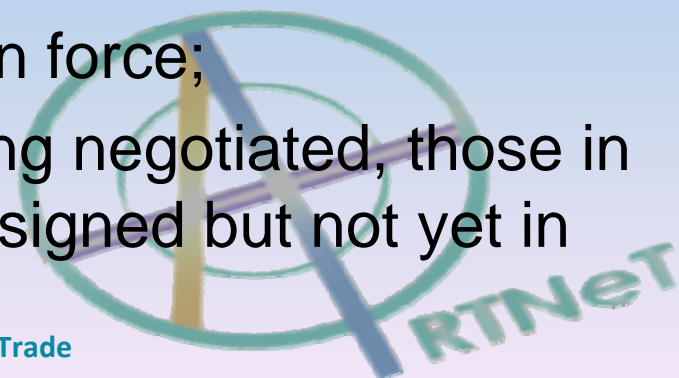




Regional Trading Agreements (RTAs)

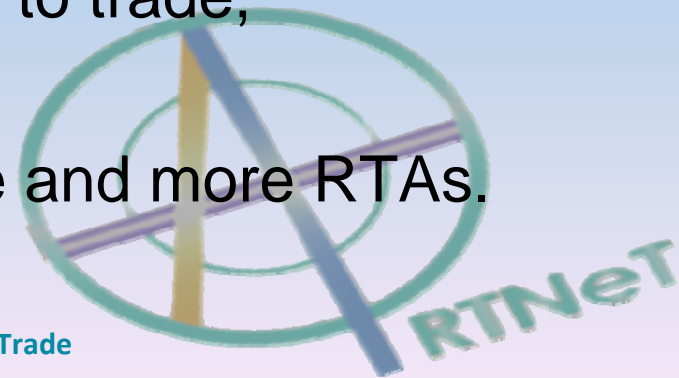
- Starting in the mid-1980s, RTAs began burgeoning along with multilateral trade liberalization.
- RTAs reshaped the world trading system which becoming the fixture of global trade arena today.
- At present,
 - 197 RTAs notified with the WTO are in force;
 - Number exceeds 300 if those are being negotiated, those in the proposal stage and ones that are signed but not yet in force are counted.

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Significance of RTAs

- **More than one-third of global trade** takes place between countries that have some form of reciprocal RTAs.
- The European Union and United States are playing a prominent role in this state (*Newfarmer, 2005*).
- RTAs ground to **create opportunities to expand trade** through joint action to overcome barriers to trade,
- Developing countries are engaging more and more RTAs.



Economic Desirability of RTAs

- The original Vinerian (1950) distinction between trade creation and diversion says
 - Countries lowering their tariffs due to liberalization will cause to shift away from reliance on high-cost domestic industry to imports from the lower-cost partner countries.
 - Trade diversion will cause to displace the low-cost production in the rest of the world by higher-cost production in the partner country.



Empirical Issues

- The initial Vinerian conclusion that whether RTAs could enhance or reduce welfare still remains.
- No conclusive proof to show whether in the case of RTAs trade diversion engulfs trade creation or vice versa.
- Economic desirability and efficiency of a RTA may vary from one case to another.

The net effect of RTAs on the welfare of the member countries and on the world economy is therefore an empirical issue.



RTAs & Agricultural Trade Liberalization in South Asia

• South Asia

- 3 developing countries (India, Pakistan, Sri Lanka) and 4 LDCs (Bangladesh, Bhutan, the Maldives, Nepal)
- One-fifth of humanity
- Provides home for nearly 30 % of the world's poor living on less than 1\$ a day
- Intra regional trade is less than 5 %.
- Global trade is still remained unchanged which is around 1%



***South Asia witnesses global trade as
vital tool in addressing prevailing
poverty through economic
development.***



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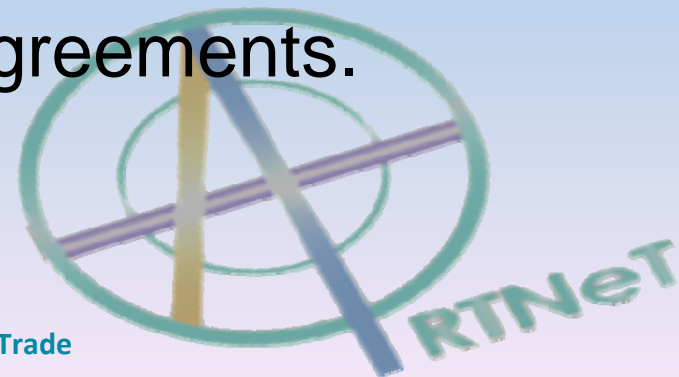
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Agricultural Trade in SA

- Non-agricultural sectors have become the driving seat of economic growth.
- Agricultural sector policies remained highly protected.
- Contributed 26 % to the regional GDP and with 2/3 of agricultural population as well as with 3/4 of total agricultural labour force. *(World Bank, 2004).*



- Bound their agricultural tariffs at prohibitively high levels (100-300 %) under the WTO AoA.
- Integration process started with SAPTA
- Many countries in the region are members of other regional / bilateral trade agreements.



Features of Asia-Pacific RTAs for Agricultural Trade

- Very low depth of tariff cuts.
- Low number of concessions and actual trade coverage.
- Inclusion of majority of agricultural products in to negative lists of the respective countries.
- South Asia – A least integrated region

Agriculture remains as a sector with lowest degree of Liberalization

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Trade Creation and Trade Diversion Measurements and Status

- A large number of PE and CGE models have been used to analyze agricultural and trade policies.
- The **gravity equation** is one of the great success stories in economics, with many studies related to agricultural trade.(Alber, 2006).



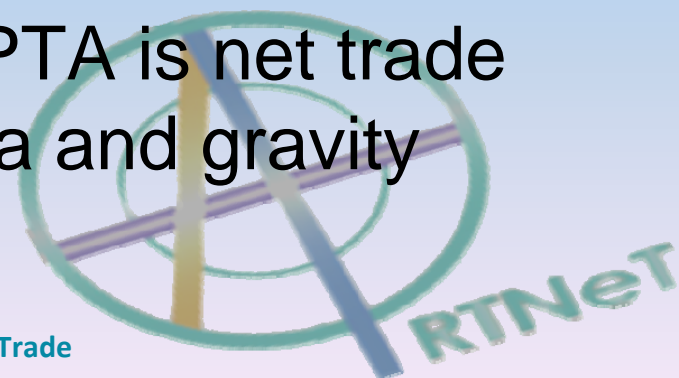
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Gravity model for previous studies

- **Nouve and Staats (2003)** - Estimated the impacts of the Africa Growth and Opportunity Act on African exports to the US.
- **Skripnitchenko et al- (2004)** - estimated the agricultural trade-creating and trade-diverting effects of several PTAs (including NAFTA, the European Union, the Andean Community, and ASEAN).
- **Jayasinghe and Sarker (2008)** - Effects of Regional Trade Agreements on Trade in Agrifood Products Found that share of intraregional trade is growing within NAFTA and that NAFTA has displaced trade with the rest of the world.



- Coulibaly (2004) found that SAPTA is net export creating.
- Tumbarello (2006) and Hirantha (2004) found that SAPTA is net trade creating.
- Hassan (2001) concluded that SAPTA is net trade diversion using cross sectional data and gravity model.



Research gaps

- Studies differ in data coverage, models used etc so that the results revealed larger differences.
- Lack of studies on agricultural trade
- Empirical findings are contradictory.

Even if there were a precise logical answer to the question of the sign of the effects, the magnitude of these effects for case to case analysis that are sector specific would still be of interest.



Objectives of the Study

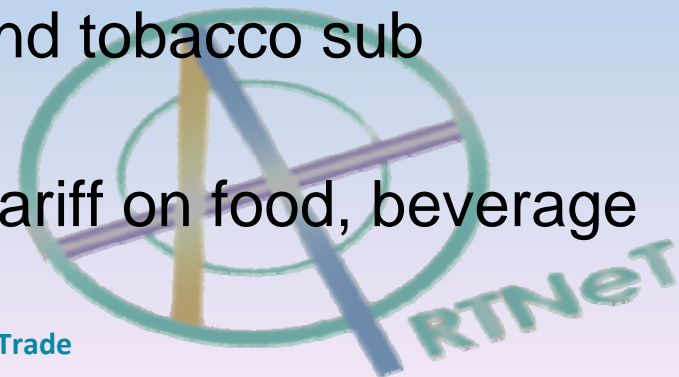
- **Overall Objective**

- To provide quantitative estimates on trade creation and trade diversion effects of agricultural trade giving emphasis to South Asian Economies.

- **Specific objectives**

- To examine the agricultural export flows in South Asia.
- To investigate the export creation and diversion effects of a number of RTAs on food, beverage and tobacco sub sectors.
- To investigate the impact of bilateral tariff on food, beverage and tobacco export flows.

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Scope of the study

Agricultural Trade in South Asia with their major export destinations
(Total of 62 countries)



Three main Agric. Sub sectors (ISIC)
Food (311), Beverage (313) and Tobacco (314)



Major Markets



Intra-Bloc Exports
creation/Diversion

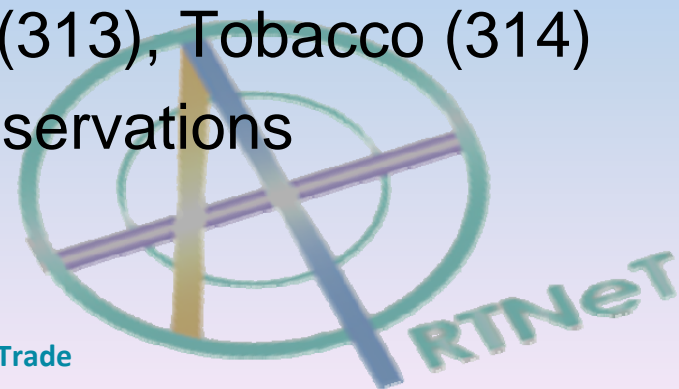


Net Exports
creation/Diversion

Methodology

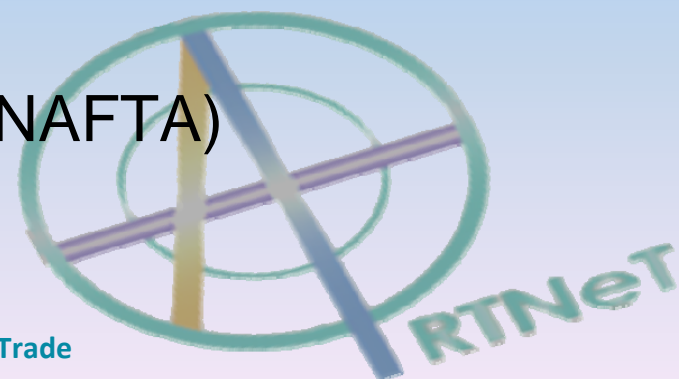
- Sample

- South Asian countries and their major exporting countries accounting for 62 countries in total for the year 2001.
- Exports of three agricultural sub sectors according to ISIC classification
 - Food products (311), Beverages (313), Tobacco (314)
 - 3844 country pairs with 11532 observations



– **Four major Asian RTAs and two major world RTAs.**

- Asia Pacific Trade Agreement (APTA)
- Association of South East Asian Nations (ASEAN)
- Bangladesh, India, Myanmar, Sri Lanka and Thailand Economic Cooperation (BIMSTEC)
- SAARC Preferential Trading Arrangement (SAPTA)
- European Union (EU)
- North American Free Trade Area (NAFTA)



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Estimation

- Functional form: Log-log
- Ordinary Least Squares and Robust Estimations
- Statistical software : STATA ver 8.2

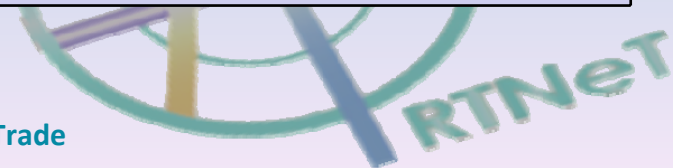


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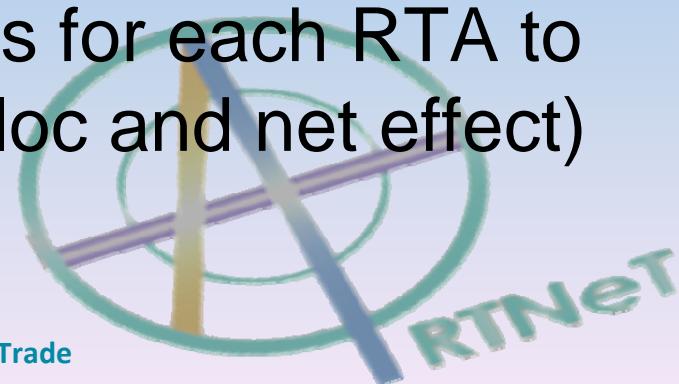
Data

Required Data	Source
Bilateral export flows	World Bank and UN COMTRADE Databases
GDPs of countries	World Development Indicators (WDI)
Distance	CEPII Database
Other gravity variables	Trade Production & Protection Database – Developed by Alessandro Nicita and Marcelo Olarreaga and improved by Tiery Mayer, Rodrigo Piallacar and Soledad Zignago
Bilateral tariff	- Do -



Gravity Model for the present study

- Gravity model of International Trade with including much of the features of AvW model introduced by Jim Anderson and Eric Van Wincoop.
- Extensions
 - Use of sectorally disaggregate data
 - Inclusion of two dummy variables for each RTA to capture RTA effect (Both intra-bloc and net effect)
 - Inclusion of bilateral tariff



For whole sample

$$\ln EX_{ij} = \beta_0 + \beta_1 \ln PGDP_{ij} + \beta_2 \ln DIST_{ij} + \beta_3 \ln TAR_{ij} + \beta_4 LANG + \beta_5 COL + \beta_6 PROD_k + \beta_7 RTA_{1i} + \beta_8 RTA_{2i} + \beta_9 EXCON_x + \varepsilon_{ij}$$

- EX_{ij} - Export flow from country i to country j ,
- $PGDP_{ij}$ - Product of GDPs
- $DIST_{ij}$ - Distance between country i and j ,
- TAR - Bilateral tariff
- $LANG$ - Dummy variables taking value one if two countries have common language.
- COL - Dummy variable that taking value one if two countries have common colonial ties.
- $PROD_k$ - Dummy variable used to emphasis the product category
- RTA_{1i}, RTA_{2i} - Dummy variables used to estimate intra bloc effect and net effect of a particular RTA.
- $EXCON_x$ - Exporter Country dummy
- ε_{ij} - Error term.

For different agricultural sub sectors

$$\ln EX_{ijk} = \beta_0 + \beta_1 \ln PGDP_{ij} + \beta_2 \ln DIST_{ij} + \beta_3 \ln TAR_{ij} + \beta_4 LANG + \beta_5 COL + \beta_6 RTA_{1i} + \beta_7 RTA_{2i} + \beta_8 EXCON_x + \varepsilon_{ij}$$

EX_{ijk} - Export flow from country i to country j for product category k .



For Proper Estimation

- If the value of bilateral exports are zero or missing → It was replaced by $(EX_{ij} + 0.001)$
- If the value of bilateral tariff are zero or missing, → It was replaced by $(TAR_{ij} + 0.001)$
- Use of Robust estimator
- Use of dummy variable for each exporter to take proper account of multilateral resistance, and to produce unbiased estimates.



Results & Discussion

Food exports of South Asia

Table 1; The shares of major countries importing Food products from SAEs in 2001

Exporter	Importer	Export Share (%)	Exporter	Importer	Export share (%)
India	Indonesia	12.04	Sri Lanka	Japan	15.52
	Malaysia	8.53		USA	9.78
	Bangladesh	7.54		Rep. of Korea	9.24
	USA	7.15		UK	8.43
	UAE	6.49		Ireland	7.12
Pakistan	UAE	31.69	Maldives	UK	66.33
	UK	10.55		Sri Lanka	12.34
	Netherlands	9.67		Canada	10.86
	Oman	7.03		Greece	5.59
	Iran	4.20		Netherlands	3.89
Bangladesh	Japan	27.22	Notes: Nepal and Bhutan have excluded due to data constraint		
	UAE	13.45			
	USA	12.44			
	India	9.73			
	Singapore	9.63			

Beverage exports of South Asia

Table 2: The shares of major countries importing Beverages from SAEs in 2001

Exporter	Importer	Export Share (%)	Exporter	Importer	Export Share (%)
India	UAE	47.84	Bangladesh	Singapore	44.98
	Nepal	8.94		Bhutan	31.35
	Netherlands	8.18		UAE	7.88
	USA	6.13		China	4.09
	Bhutan	5.27		Hong Kong	2.88
Pakistan	UAE	83.23	Sri Lanka	Maldives	42.28
	Bangladesh	16.77		Singapore	15.06
				France	12.04
				USA	7.85
				UK	6.20

Note: Nepal, Maldives and Bhutan have excluded due to data constraint

Tobacco exports of South Asia

Table 3: The shares of major countries importing Tobacco from SAEs in 2001

Exporter	Importer	Export Share (%)	Exporter	Importer	Export Share (%)
India	UAE	34.33	Bangladesh	UAE	95.09
	Belgium	4.70		Singapore	3.56
	Japan	3.20			
	UK	2.63			
	Germany	2.49			
Pakistan	UAE	47.44	Sri Lanka	UAE	79.64
	USA	30.83		Maldives	8.05
	Malaysia	6.03		Singapore	5.01
	Bangladesh	5.27		Oman	3.95
	Singapore	5.13		Germany	2.74

Note : Maldives, Bhutan and Nepal were excluded due to data constraint

Major markets of South Asia

- Food products - UK, USA, UAE and Japan.
- Beverages - UAE, Singapore, Maldives and Bhutan.
- Tobacco products - UAE and USA.

UAE has become a major market of South Asia for its agricultural trade.



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Intra-bloc export shares

Table 4: **Shares of Intra-bloc Agricultural exports in 2001**

Exporter	Food (%)	Beverages (%)	Tobacco (%)
India	17.07	17.23	1.03
Pakistan	5.69	16.76	5.27
Bangladesh		31.88	0.29
Sri Lanka	10.88	42.33	8.05
Maldives	13.25		

Model Estimates

Overall significance of the model

- All estimations are highly significant implying that the null hypotheses of all coefficients simultaneously equal to zero are rejected in all cases tested.

	Total Agricultural Exports	Food products	Beverage products	Tobacco products
R-squared	0.5565	0.6085	0.6086	0.5102
Prob>F	0.0000	0.0000	0.0000	0.0000

Impact of Common Gravity Variables

Dependent Variable EX_{ij} Coefficients				
Variable	Total Agricultural Trade (EX_{ij})	Food products (EX_{ij1})	Beverage s (EX_{ij2})	Tobacco (EX_{ij3})
Constant	-19.411*	-22.781*	-16.878*	-11.384*
$\ln PGDP_{ij}$	0.649*	0.834*	0.634*	0.482*
$\ln DIST_{ij}$	-1.728*	-1.693*	-1.631*	-1.896*
<i>Dummy variables</i>				
LANG	1.245*	1.594*	1.646*	0.572
COL	1.114*	1.803*	0.910*	0.748*

Notes 1. * denotes level of significance at 1%.
2. \ln is the natural logarithm operator.

Impact of different product categories towards agricultural trade

- Coefficient of food is three times higher than that of beverages and all are statistically significant.
- Export of food products will be more advantageous to countries in raising their agricultural trade.



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Impact of Bilateral Tariff

	Dependent Variable EX_{ij} Coefficients			
Variable	Total Agricultural Trade (EX_{ij})	Food products (EX_{ij1})	Beverages (EX_{ij2})	Tobacco (EX_{ij3})
$\ln TAR_{ij}$	-1.012*	0.003	-0.076*	-0.050*

Notes 1. * denotes level of significance at 1%.
2. \ln is the natural logarithm operator.

Impact of RTAs on Agricultural Trade

Variable	Dependent Variable EX_{ij} Coefficients			
	Total Agricultural Trade (EX_{ij})	Food products (EX_{ij1})	Beverages (EX_{ij2})	Tobacco (EX_{ij3})
<i>Coefficients of RTAs</i>				
$SAPTA_1$	0.030	0.022	0.556	-0.783
$SAPTA_2$	-3.954*	-0.584	-7.721*	-2.323*
$APTA_1$	-0.380	0.512	-0.648	-1.110
$APTA_2$	-3.101*	-2.896*	-2.573*	-0.605
$ASEAN_1$	1.644*	0.934	1.728*	2.407*
$ASEAN_2$	-0.247***	2.725*	-3.320*	-1.634*
$BIMSTEC_1$	-1.410**	-1.344***	-0.758	-2.261*
$BIMSTEC_2$	1.197*	1.463**	3.920*	0.594
EU_1	-0.681**	-1.411**	-1.243**	2.096*
EU_2	2.343*	1.455	3.381*	4.451*
$NAFTA_1$	2.492***	1.920	1.545	4.106*
$NAFTA_2$	-1.736*	-3.598*	0.617	0.113

*, **, *** denotes level of significance at 1, 5 and 10% respectively

Impact of SAPTA

- **Intra-bloc export creation** for total agricultural products, food products and beverages but export diversion for tobacco.
- If two partner countries are the members of SAPTA, total agricultural export flow between them is 0.03 times more than others and this is 0.02 for food exports and 0.556 for beverages.
- SAPTA is favorable for beverage exports than food exports and not favorable for tobacco.
- Associated with **net export diversion** in agricultural trade.

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- Coefficients indicated that it is 3.954 for total agricultural trade, 0.584, 7.721 and 2.323 for food, beverages and tobacco exports respectively.

SAPTA is the least export creating and the greatest net export diverting RTA for agricultural trade compared to major RTAs in the region and world.



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Impact of APTA

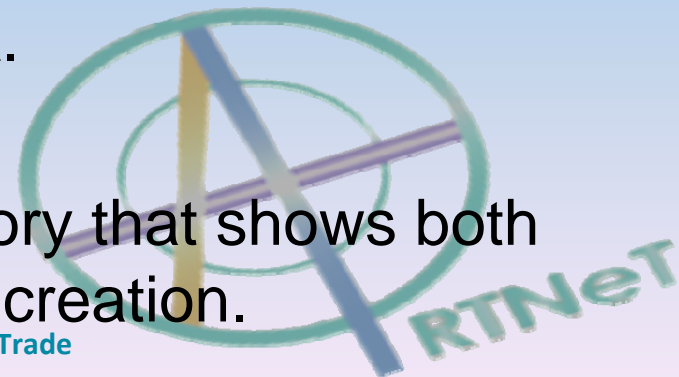
- **Intra-bloc export diversion** for total agricultural products, beverages and tobacco but export creation for food products.
- The impact of intra-bloc export creation in food exports is greater (0.512) than SAPTA.
- Associated with **net export diversion** for agricultural trade and the impact is less significant than SAPTA.



Impact of ASEAN

- **Intra-bloc export creating** for total agricultural products, food, beverages and tobacco.
- If two countries are members of ASEAN, export flow of aforesaid products will increase by 1.644, 0.934, 1.728 and 2.407 times respectively than two otherwise similar countries.
- It is **net export diverting** except food products and the extent it diverts export is smaller than the SAPTA.
- Food exports are the only product category that shows both intra-bloc export creation and net export creation.

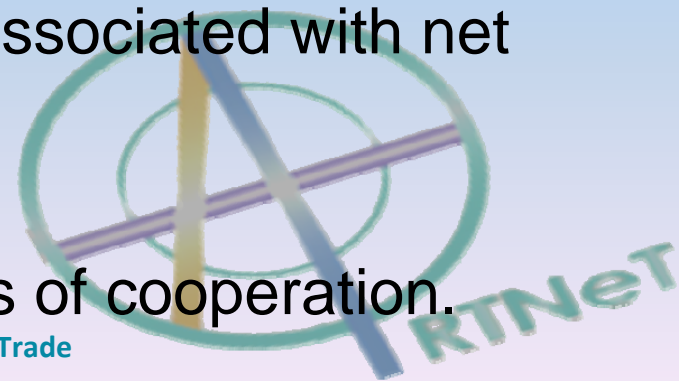
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Impact of BIMSTEC

- **Intra-bloc export diverting** in agricultural trade but associated with **net export creation**.
- Total agricultural export flow between two BIMSTEC member countries is 1.4 times lower than two otherwise similar countries and this is 1.3, 0.76, 2.26 times for food exports, beverages and tobacco exports respectively.
- **Only RTA in Asia** in the present study associated with net export creation in agricultural trade.
- Member countries must boost their areas of cooperation.

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Impact of EU

- **Intra-bloc export diverting** in agricultural trade but **net export creating**.
- Total agricultural export flow between two EU member countries is 0.68 times smaller than two otherwise similar countries. This is 1.41 for food exports, 1.24 for beverages and 2.1 for tobacco exports.
- Reports the **greatest impact of export creating** in agricultural trade.
- It is necessary to enhance the areas of cooperation.

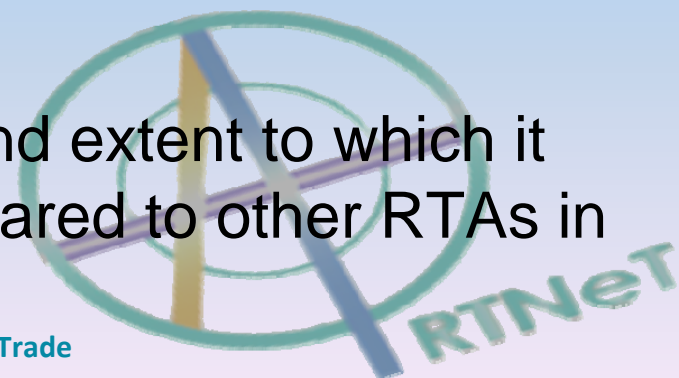
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Impact of NAFTA

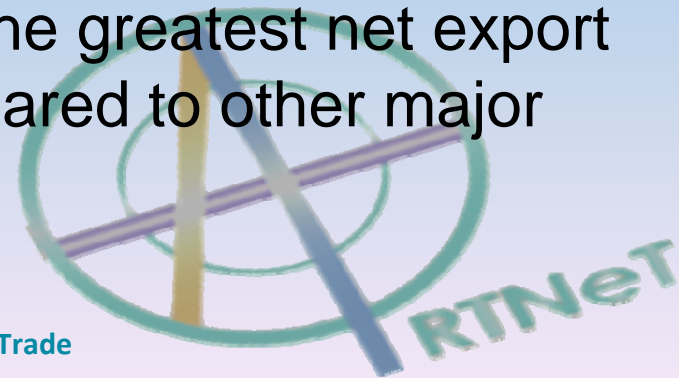
- **Intra-bloc export creation** and the extent to which it creates agricultural exports is greater than any other agreement reviewed in this analysis.
- If two countries are the members of NAFTA, agricultural export flow between them is 2.5 times higher than two otherwise similar countries. This value is 1.9 for food exports, 1.5 times for beverages and almost four times for tobacco exports.
- Associated with **net export diversion** and extent to which it diverts agricultural trade is smaller compared to other RTAs in terms of beverages and tobacco.

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Conclusions

- Agricultural export flows between trading partners are significantly explained by the common gravity variables used in present study.
- The bilateral tariff adopted by the importing countries is a significant factor that affects agricultural trade flows.
- SAPTA is the least export creating and the greatest net export diverting RTA for agricultural trade compared to other major RTAs in the world.



- APTA, ASEAN and NAFTA are intra-bloc export creating and net export diverting in agricultural trade.
- BIMSTEC is intra-bloc export diverting but it is the only agreement in Asia that associated with net export creating.
- EU, the regional giant, was found to be intra-bloc export diverting but net export creating in agricultural trade and reported the greatest net export creation impact in the world.



- Findings of SAPTA supports the hypothesis that intra-regional agricultural trade is too low and SAEs as a whole trade less with the outside world than would be expected.

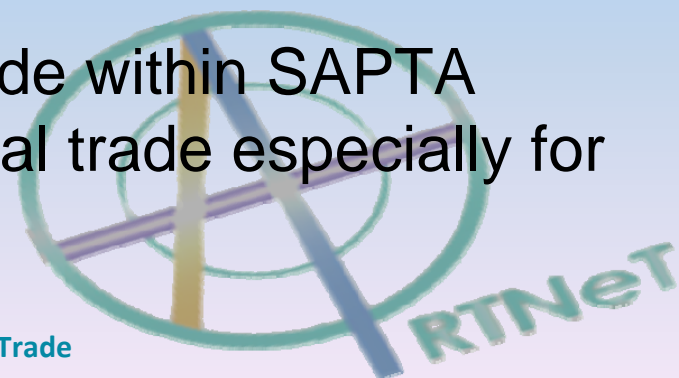


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Implications for South Asia

- SAEs could raise their agricultural exports by maintaining strong economic growth and being partners with close proximate larger economies.
- Having more food and beverage exports will be advantageous to these economies since it possesses approximately double impact than tobacco exports.
- Complete liberalization of agricultural trade within SAPTA region may raise intra-regional agricultural trade especially for beverage and tobacco products.



- Intra-bloc export creation for food and beverage products in this region implies that it has a potential to grow these trade volumes in future.
- This is further strengthened by the values obtained for individual member impacts



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Recommendations

Removal of structural rigidities, bringing the negotiations on sensitive list products that have a potential under the SAPTA agreement, reduction of agricultural tariff and NTB or full liberalization agricultural trade and introduction of favorable RoO can open up some profitable intraregional trade channels that in turn boost intra-regional trade.



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Thank You !

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