Agricultural Trade in South Asia:

Barriers and prospects

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Outline of the Presentation

- Introduction – the context
- Trends and patterns of agricultural trade
  - Structure of flows
  - Regional orientation
  - Comparative advantage
  - Diversity
  - Trade Complementarities
- Barriers to agricultural trade
  - Tariff and Non-tariff measures
  - Trade facilitation
  - Econometric model
  - Supply side constraints
- Agricultural trade, climate change and food security
- Concluding remarks

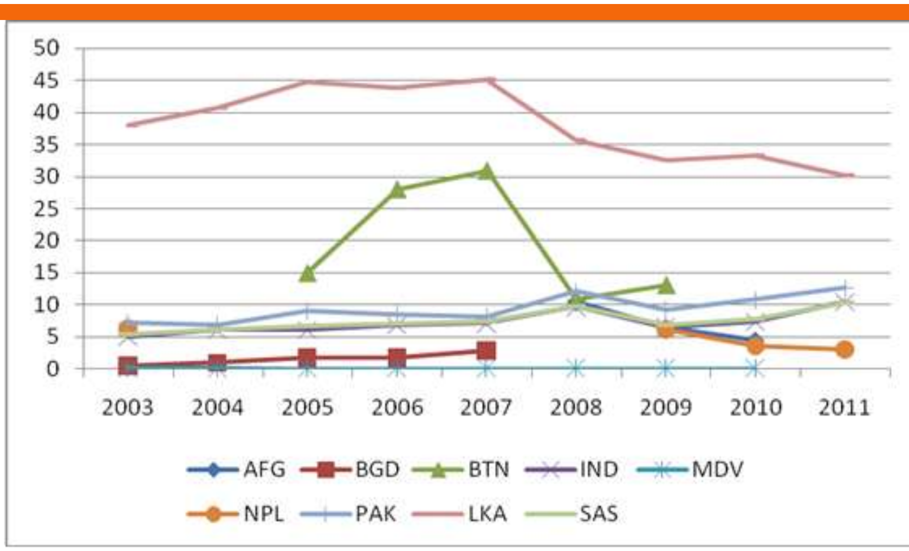
Introduction – the context

- Declining share in GDP but high share in employment
- High share of food exports and food imports
- Trade liberalization – conflicting impacts on livelihood and food security
- Rising trade (export) intensity
- Net importers (mostly)
- SAFTA and bilaterals, India's offer to LDCs
- Agricultural trade among SA countries rising in recent years

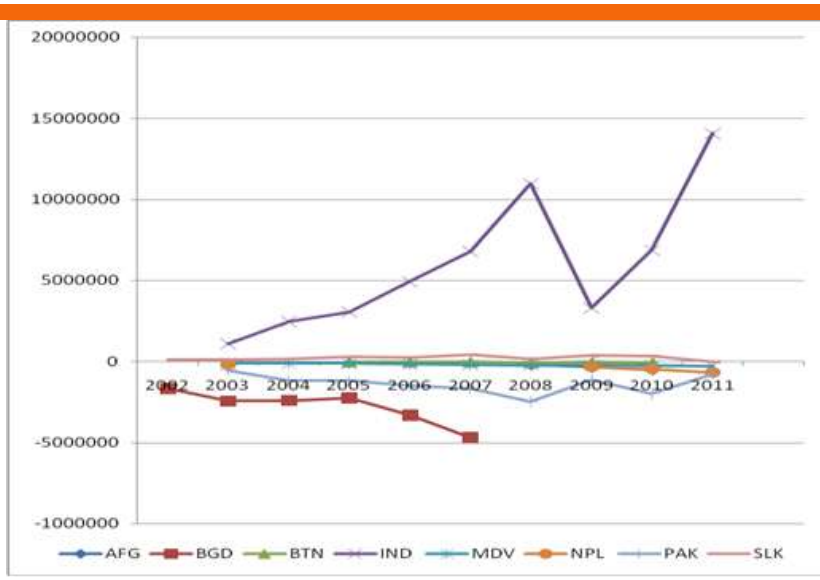
Agriculture and South Asian Economies 2010

	AFG	BGD	BHU	IND	MDV	NPL	PAK	SLK	SAS	World
Agriculture value added , % of GDP	29.92	18.59	23.18	17.74	3.14	36.53	21.18	12.79	18.28	2.81
Share of agriculture in employment (2005)		48.10	43.60	55.80			43	30.70	53.53	35.02
Crop Prodn Index (2004-6=100)	125.03	131.01	91.99	119.07	84.17	113.02	100.14	122.42		
Cereal yield (kg per hectare)	1908.1	4143.5	2177.2	2536.6	2000	2294.5	2591.9	3974.3	2690.6	3563.5
Food exports (% of merchandise exports)	40.05	6.22	7.17	8.26	96.15	19.08	16.79	26.89	11.69	8.21
Food imports (% of merchandise imports)	13.69	13.90	11.47	3.95	22.35	13.56	13.08	15.35	6.86	7.43

Trade Intensity of South Asian Agriculture



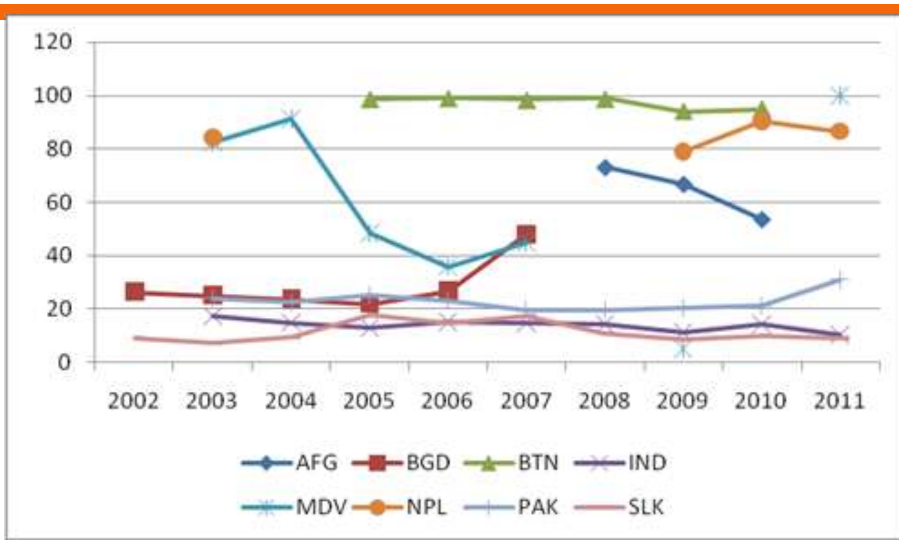
Agricultural Trade Balance in South Asian Countries



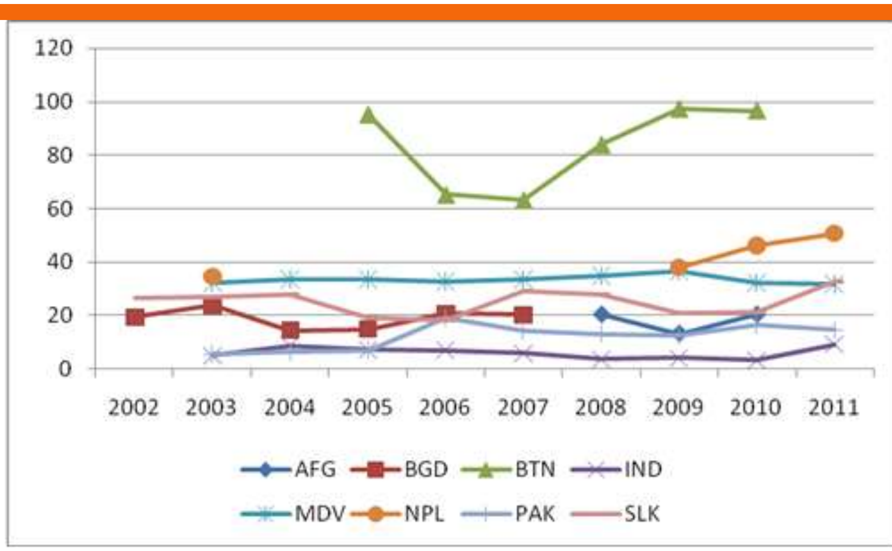
Agricultural Trade Flows in South Asia 2009

Exports	Imports								
↓	AFG	BGD	BTN	IND	MDV	NPL	PAK	SLK	RSAS
AFG				86802			80060	125	166987
BGD	76		1528	24384	86	1507	10660	416	38657
BTN		9141		92561		201			101903
IND	46772	1090890	9698		28152	204568	752082	320338	2452500
MDV				74			0	124	198
NPL		51921	414	128823	3		365	1693	183219
PAK	745158	166852		94932	4624	7		89269	1100841
SLK	144	4825		203778	25252	232	46500		280730
RSAS	792150	1323628	11640	631353	58116	206514	889668	411965	4325036

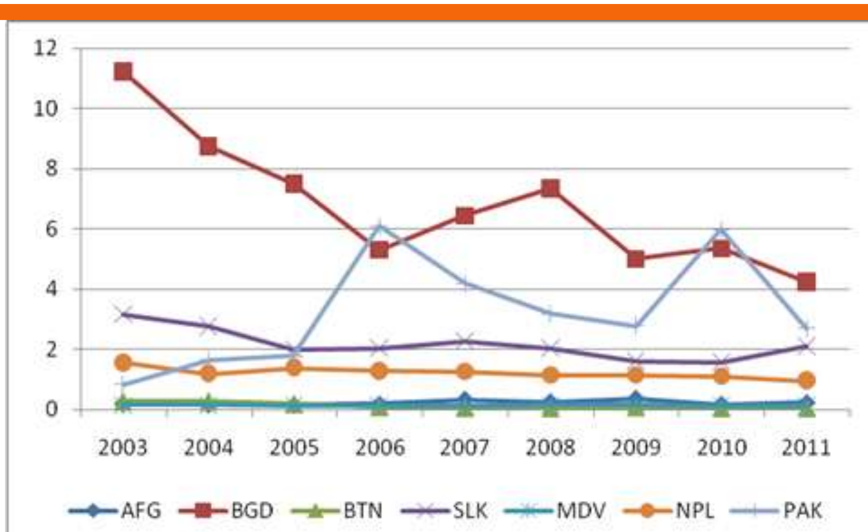
Share of Regional Trade in Agricultural Exports



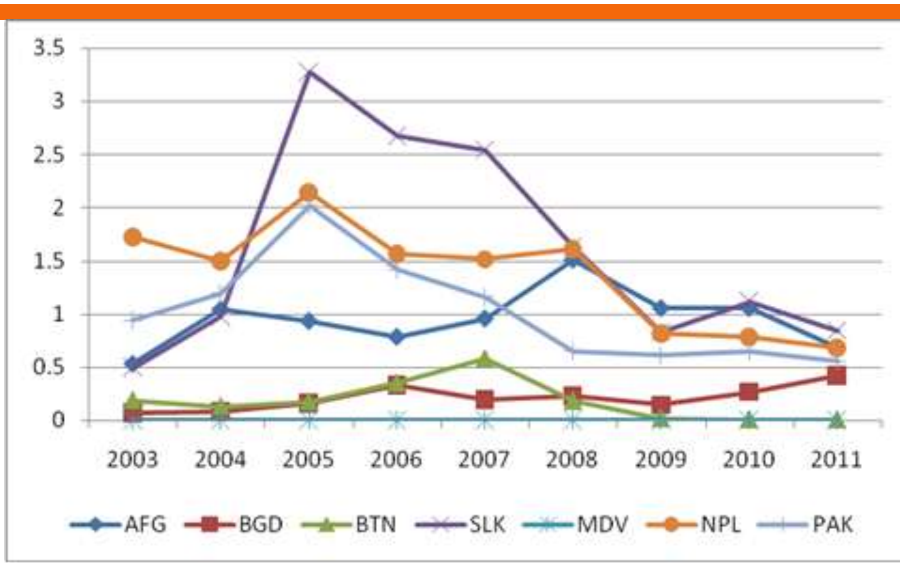
Share of Regional Trade in Agricultural Imports



Share of South Asian Countries in India's Agricultural Exports



Share of South Asian Countries in India's Agricultural Imports



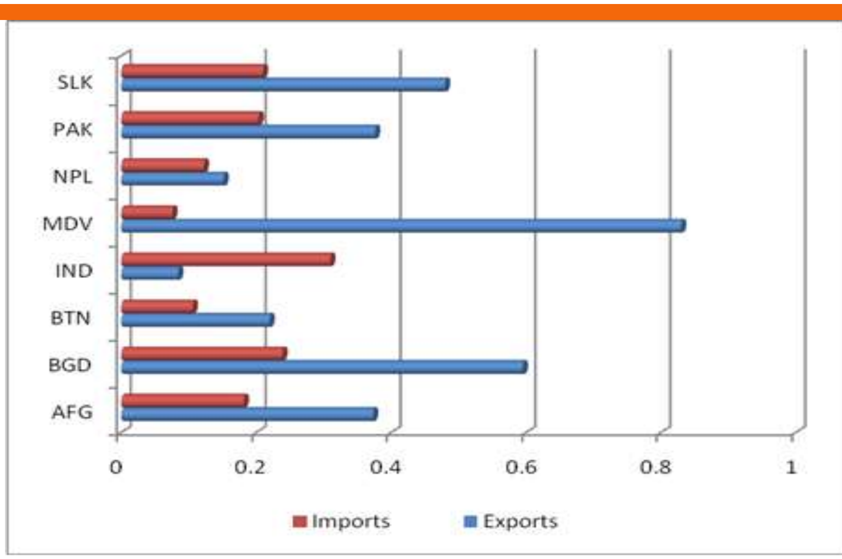
Trends and Patterns of Agricultural Trade

- Strong influence of geography
- Regional orientation is low except land-locked and small countries
- Share of regional trade declining or stagnant
- Share of SA countries in India's exports declining, BGD maintaining the highest share
- Share of SA countries in Indian imports – growing intially but declining later
- Sri Lanka has the highest share

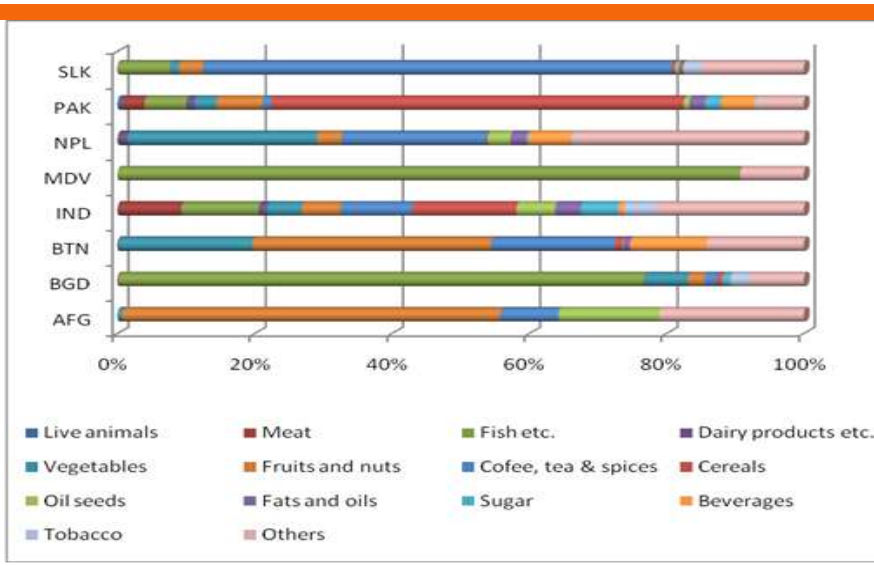
Revealed Comparative Advantages of Agricultural Products 2010

	AFG	BGD	BTN	IND	MDV	NPL	PAK	SLK
Meat				2.0				
Fish etc.		12.1		1.8	14.4		P	1.2
Live trees, flowers etc.		1.7						
Vegetables		1.2	3.8	P		5.4		
Fruits and nuts	14.8		9.4	1.5		P	1.8	P
Coffee, tea & spices	2.3		4.9	2.8		5.8		18.7
Cereals				3.8			14.8	
Milling products, malt, starches etc.								P
Oil seeds	3.4			1.3				
Lac, gums, resins etc.	62.3			10.5		3.8	2.5	
Veg. plaiting materials			2.2	6.2		188.5	3.4	9.4
Meat/fish preparations					3.5			
Sugar				2.0			P	
Prep. of cereal, flour, starch/milk						1.7		
Prep of vegetable, fruit, nuts			4.1			2.6		
Miscellaneous edible preparations								P
Beverages			2.0			1.1	P	
Residues from food indust & fodder				3.0		1.7		P
Tobacco		1.2		2.1				1.1

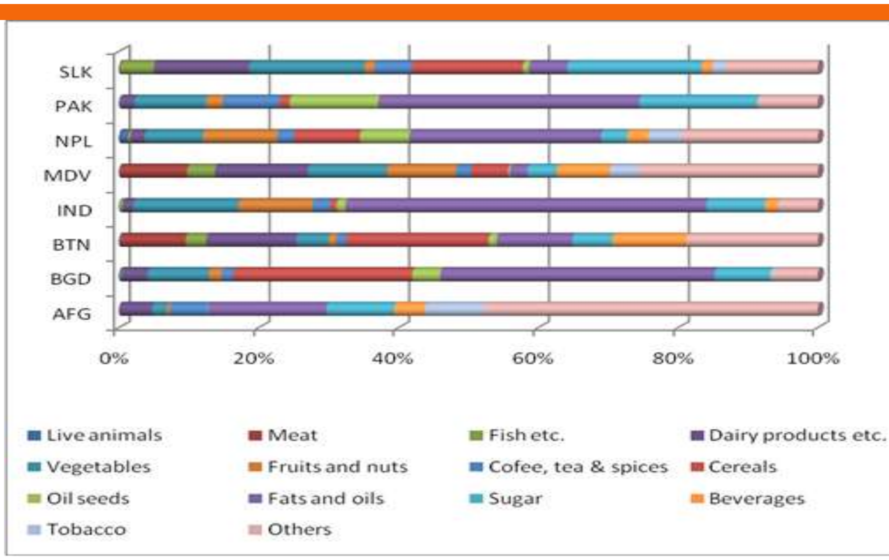
Concentration in Agricultural Trade Baskets 2010



Export Diversification of Agricultural Products 2010



Import Diversification of Agricultural Products 2010



Trade Complementarities in South Asia 2010

Export	Imports								
↓	AFG	BGD	BTN	IND	MDV	NPL	PAK	SLK	SA-IND
AFG		8		16			4	16	
BGD	9		16	15	22	19	15	16	
BTN		16		34		30			
IND	24	45	53		51	56	41	44	52
MDV				2				2	
NPL		26	32	33			36	35	
PAK	14	42		25	39	36		32	
SLK	16	12		14	25	22	21		
SA-IND				25					

Factors in Agricultural Trade

- Comparative advantage in similar products but in few products except India and to some extent Nepal and Bhutan
- Low diversity of exports (except India)
- Low concentration of imports but oils and fats major import item (not an export item)
- Low trade (export) complementarities except India. Nepal, Bhutan, Pakistan follow
- India’s import complementarity is low

Average Effective Tariffs in South Asia - 2009

Exporting Country/Region	Importing Country							
	AFG	BGD	BTN	IND	MDV	NPL	PAK	SLK
WLD	7.26	18.52	49.34	34.6	17.07	14.56	19.1	21.8
AFG		19.5		34.69			11.54	15
BGD	4.38		36.67	37.36	23.93	19.29	12.22	24.78
BTN		24.05		1.07		22.5	15.88	
IND	5.57	14.64	44.48		15.51	11.29	9.16	19.6
MDV				65			31.43	25.15
NPL		11.34	46	39.17	25		8.67	13.66
PAK	6.61	17.76		27.29	14.13	8.91		11.02
SLK	7.13	18.27		9.13	15.48	18.33	15.93	

Non-tariff Measures

- Import into IND requires SPS certifications – time and resource
- BGD ban on IND poultry products even after avian influenza was over
- PAK MFN and positive list issue with IND (changing)
- India more developed in standards setting, some countries cannot afford to maintain high standards
- SAFTA provides for harmonization of standards but little progress
- Export ban from time to time

Trade Facilitation Indicators in South Asia 2011

	AFG	BGD	BHU	IND	MDV	NPL	PAK	SLK	South Asia	World
Cost to export (US$ per container) – 2011	3545	965	2230	1095	1550	1960	660	715	1590	1414.24
Cost to import (US$ per container) – 2011	3830	1370	2505	1150	1526	2095	705	745	1740.75	1676.37
Export advantage	1.08	1.42	1.12	1.05	0.98	1.07	1.07	1.04	1.09	1.19
Time to export (days) -2011	74	25	38	16	21	41	21	21	32.13	22.09
Time to import (days) -2011	77	34	38	20	22	35	18	19	32.88	24.62
Export advantage	1.04	1.36	1.00	1.25	1.05	0.85	0.86	0.90	1.02	1.11
Cost to export (US$ per container) 2005	2180	902	1150	864	1200	1600	996	647	1192.38	1219.72
Improvement over 2005-2011	-62.61	-6.98	-93.91	-26.74	-29.17	-22.50	33.73	-10.51	-33.35	-15.95
Cost to import (US$ per container) -2005	2100	1287	1780	1324	1200	1725	317	639	1296.50	1440.11
Improvement over 2005-2011	-82.38	-6.45	-40.73	13.14	-27.17	-21.45	-122.40	-16.59	-34.27	-16.41
Time to export (days) – 2005	67	35	38	27	21	43	31	25	35.88	27.39
Improvement over 2005-2011	-10.45	28.57	0.00	40.74	0.00	4.65	32.26	16.00	10.45	19.35
Time to import (days) -2005	80	60	38	41	20	35	39	26	42.38	32.06
Improvement over 2005-2011	3.75	43.33	0.00	51.22	-10.00	0.00	53.85	26.92	22.42	23.20

Econometric Model (1/2)

- $T_{ij} = K(M_i M_j / D_{ij})$
  - Where T_{ij} is the trade flow between countries i and j (export from country i to j), M_i and M_j are the economic masses of country i and j respectively, D_{ij} is the distance between countries i and j and K is a constant.
- $T_{ij} = f(AVA_i, GDP_j, AED_{ij}, TCI_{ij}, D)$
  - Where T_{ij} is the trade flow between countries i and j (export from country i to j), AVA_i is value added in agriculture in country i, GDP_j is gross domestic product, AED_{ij} is the average effective import duty that the country i faces in country j, TCI_{ij} is the trade complemetarity index for the exports of country i in country j, and D is a dummy variable which takes the value 1 if the countires i and j share border with each other and 0 otherwise.

Econometric Model (2/2)

- $LnT_{ij} = LnAVA_i + LnGDP_j + D$
  - Where LnT_{ij} is the natural logarithm of T_{ij}, $LnAVA_i$ is the natural logarithm of AVA_i, and $LnGDP_j$ is the natural logarithm of GDP_j.
- However, as indicated earlier, the basic model was extended to include TCI and AED and the following two versions were estimated:
- $LnT_{ij} = LnAVA_i + LnGDP_j + LnTCI_{ij} + AED_{ij} + D$
- $LnT_{ij} = LnAVA_i + LnGDP_j + LnTCI_{ij} + LnAED_{ij} + D$
- Some other forms were also used where variable like population in exporting country, population in importing country, cost to export in exporting country as well as the sum of the cost to export in exporting country and the cost to import in importing country were also considered. More to check robustness

Regression Results of Gravity Models

	Eq 6	Eq 7a	Eq 7b	Eq 8a	Eq 8b	Eq 9a	Eq 9b
Intercept	-22.22*	-19.80*	-20.21*	-37.40*	-31.33*	-20.70*	-20.48*
LnAVAi	0.71*	0.49*	0.51*	2.56**	2.26***	0.54*	0.50*
LnGDPj	0.56*	0.57*	0.57*	1.07**	0.60*	0.55*	0.58*
LnTCIij		0.84***	0.86***	0.34	0.46	0.80***	0.85***
AEDij		-0.02		-0.01	-0.01	-0.02	-0.02
LnAEDij			-0.16				
LnPOPi				-1.88***	-1.62***		
$LnPOP_j$				-0.42			
CTEi						0.00	
CTTij							0.00
Dummy	2.53*	2.64*	2.61*	2.15	2.32*	2.65*	2.65*
Multiple R	0.75	0.77	0.77	0.79	0.79	0.78	0.77
R Square	0.57	0.59	0.59	0.63	0.62	0.60	0.60
Adj R Square	0.53	0.53	0.53	0.54	0.55	0.53	0.52
Std Error	2.19	2.18	2.18	2.16	2.15	2.19	2.20
Observations	39	39	39	39	39	39	39

Interpreting the Results

- In the basic model, all the variables included are highly significant
- All the variables also show expected signs, i.e., agricultural value added in exporting country, GDP of importing country as well as the neighbourhood dummy, all influence trade positively
- Trade complementarity low significance but AED insignificant
- Population of importing country insignificant but exporting country shows low significance with negative sign
- Basic variables are stable - robustness

Indicators of Supply Side Constraints

	AFG	BGD	BTN	IND	MDV	NPL	PAK	SLK	SAS	WLD
Agriculture value added per worker (constant 2000 US$)		480.14	465.32	479.01	2671.38	242.05	962.62	906.88	510.35	1064.38
Arable land (hectares per person)	0.23	0.05	0.11	0.13	0.01	0.08	0.12	0.06	0.12	0.20
Average precipitation in depth (mm per year)	327.00	2666.00	2200.00	1083.00	1972.00	1500.00	494.00	1712.00		
Cereal yield (kg per hectare)	2045.20	4140.80	2159.10	2571.90	2041.70	2373.90	2789.70	3663.60	2728.87	3567.94
Droughts, floods, extreme temperatures (% of population, average 1990-2009)	1.06	4.58	0.01	4.36	0.03	0.70	1.06	2.16		

Agricultural Trade, Climate Change and Food Security

- Climate change => agriculture through weather and water and natural calamities => trade
- Wheat and rice yields will drop=> less exports and more imports
- Food security (Availability, Accessibility, Affordability, Acceptability)
- Trade => Availability ↑; Not accessibility and affordability; Food from regional sources more acceptable
- Accessibility is a national issue but SAARC Food Bank will complement national efforts

Concluding Observations

- Agricultural trade is linked with livelihood and food security and needs to be approached with caution
- Lack of comparative advantage, diversity and complementarity are important barriers
- Supply side constraints are also important
- Tariff and non-tariff barriers could be less important
  - Most countries are net importers
  - Intra-regional trade is higher for agricultural goods compared to overall trade
- India-Sri Lanka FTA was helpful but could not be generalized as SL was the only other country with surplus
- In climate change scenario trade and agricultural goods/food can play limited role in food security

Thank You