Impact of BRICS' Standards on Developing Countries' Exports

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Questions

1) What is the impact of standards on agricultural trade?

2) How do BRICS' standards differ from other important import countries?

3) How are LDCs exports affected by standards in general and in BRICS markets?

Motivation: Relevance of NTBs

- Decline in tariffs have made NTBs more relevant.

  - Since 1995, 10,366 regular and emergency SPS measures notified to WTO. (October 2011)

  - 1,436 notifications in 2010.

  - Developing countries (including LDCs) submit more notifications than developed countries.

Motivation: Standards and Income

- **Higher income per capita and living standards in BRICS will likely result in higher import standards**

Motivation: Relevance of BRICS

BRICS' Total Agricultural Imports
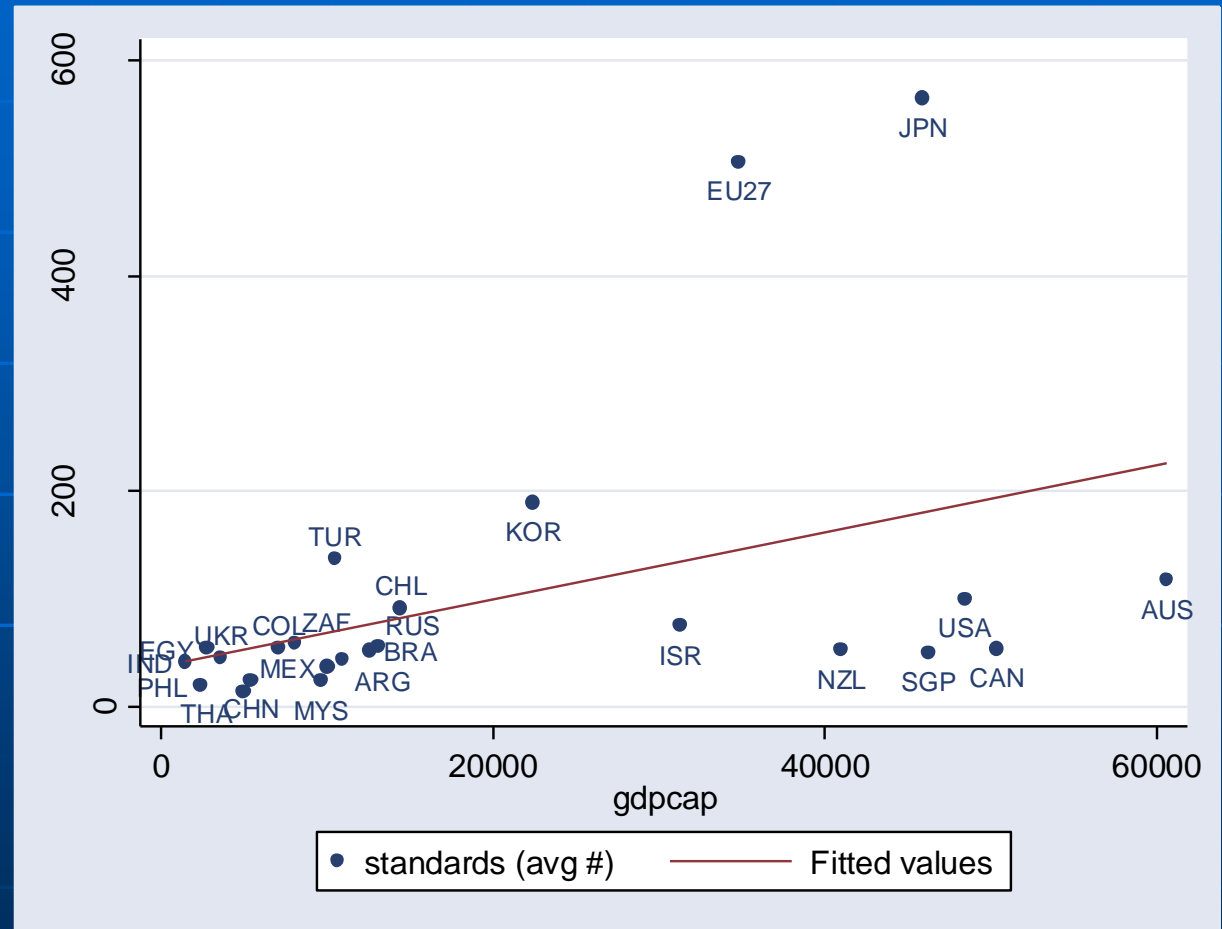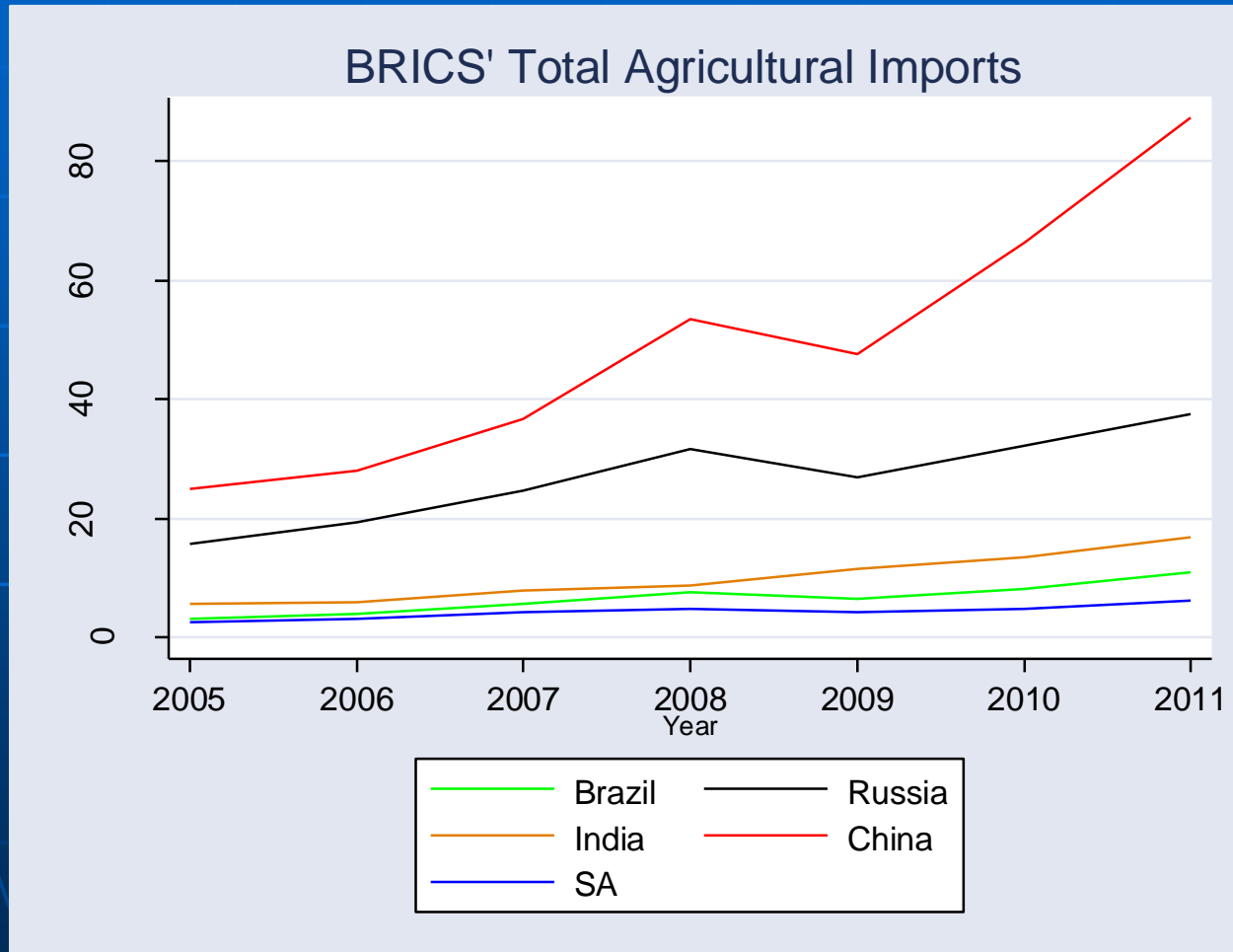
Motivation: Relevance of BRICS

- LDC's share of agricultural exports destined to BRICS is nearly 30% (other countries 10%)

- Examples:
  - 25 percent of Ethiopian total exports came from "oil seed, oleagi fruits; miscellaneous grains" (HS 12) and 60 percent of those exports were destined for China.

  - 25 percent of Gambia's total exports where in "edible fruits and nuts" (HS 8) of those 93 percent were exported to India.

Outline

1. Standards in Agriculture
2. Data
3. Methodology
4. Results (Preliminary)
5. Conclusions

Standards in Agriculture

- Most relevant SPS standards
  - food safety
  - protect health of animals, plants and environment
  - extend to other quality and technical aspects of food products

- Restriction on maximum levels of residues from pesticides (MRLs).

- WTO rules allow countries to set own standards.

Data

- Agrobase-Logigram's Homologa Database
  - Monthly MRLs in 26 importing countries
  - Data available from 2006-2012
  - We matched this data to 250 products HS 6 digit.
  - Coverage of products and pesticides vary a lot across countries

Number of Regulated Products

|	2006	2007	2008	2009	2010	2011
BRAZIL	60	67	67	74	75	75
CHINA	88	88	88	43	43	44
CODEX	148	151	138	139	142	143
EU	-	-	129	139	140	140
INDIA	-	136	152	108	108	108
JAPAN	130	117	115	119	116	116
RUSSIAN FED	32	97	115	114	115	113
USA	172	189	185	185	186	187
All Data	220	225	239	248	250	250

Example

- Oranges 2011

	# Pesticides	Avg. MRL
EU	506	0.59
Brazil	102	1.47
Russia	16	0.17

Average Number of Standards per Product
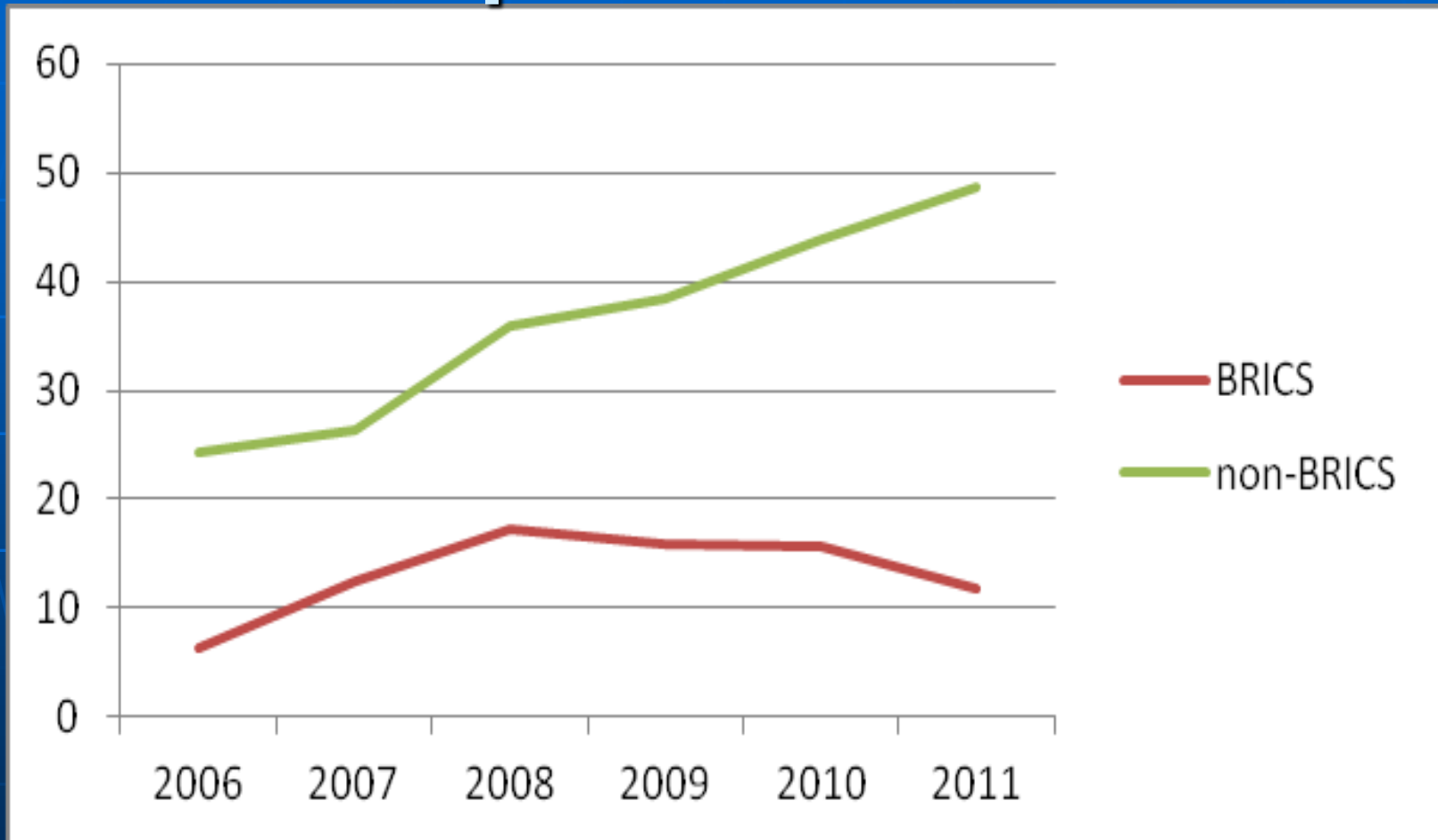
Average MRL per Product
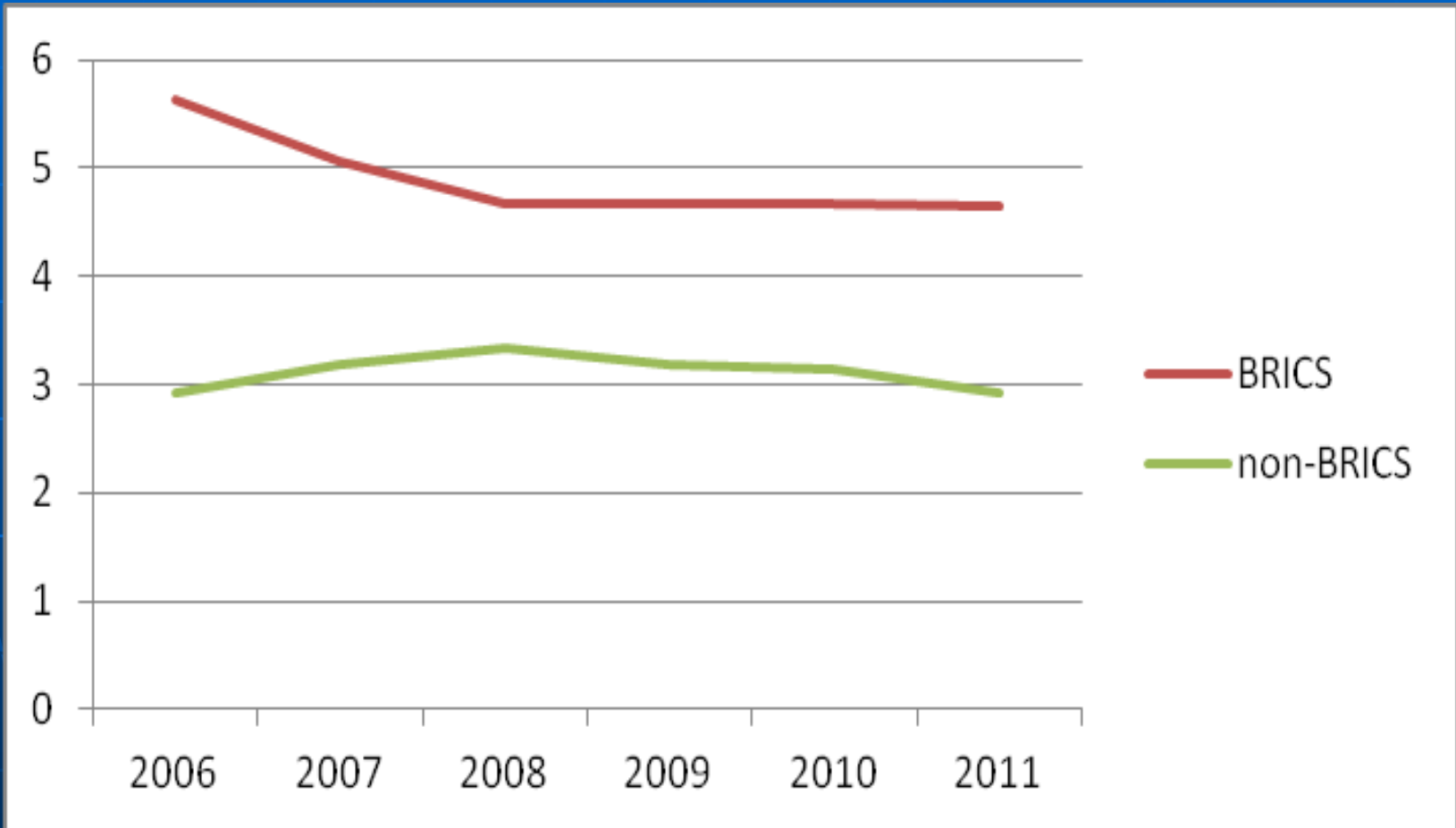
Measuring Restrictiveness

$$index_{ipat} = \frac{MAX_{pat} - MRL_{ipat}}{MAX_{pat} - MIN_{pat}}$$

Example

- Oranges 2011

	# Pesticides	Avg. MRL	Avg. Index
EU	506	0.59	0.42
Brazil	102	1.47	0.07
Russia	16	0.17	0.02

Methodology

- Dataset
  - 27 importers including ROW
  - 119 exporters
  - 36 products
  - 6 years
- Methodology
  - Gravity Model

$$\ln M_{ijpt} = \alpha_{ij} + \alpha_{it} + \alpha_{jt} + \alpha_{pt} + \beta_1 STD_{ipt} + \beta_2 \ln TRF_{ijpt} + \varepsilon_{ijpt}$$

Gravity Model – OLS (Bilateral)

	1	2	3	4
Number Stds	-0.001 [0.000]***			
Avg. MRL		0.001 [0.000]		
Avg. index			-0.422 [0.049]***	
Difference index				-0.397 [0.047]***
Ln(tariff)	-0.065 [0.002]***	-0.064 [0.002]***	-0.065 [0.002]***	-0.065 [0.002]***
Observations	558,495	546,976	558,495	558,495
R-squared	0.447	0.449	0.447	0.447

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1. All regression include exp-imp, exp-t, imp-t, prod-t effects.

Gravity – Income Groups

	NB	PPML	Heckman	OLS
Avg. index	-7.068	0.236	-6.781	-5.302
	[1.343]***	[1.123]	[1.171]***	[0.759]***
Ln (tariff)	-0.119	0.096	-0.216	-0.132
	[0.032]***	[0.045]**	[0.037]***	[0.020]***
Low income	-5.878	-4.831	-5.316	-2.775
	[0.082]***	[0.129]***	[0.153]***	[0.040]***
Lower middle	-3.230	-1.873	-2.520	-1.729
	[0.071]***	[0.109]***	[0.099]***	[0.042]***
Upper middle	-0.997	-1.145	-0.441	-0.456
	[0.065]***	[0.080]***	[0.075]***	[0.045]***
Observations	20,300	20,300	20,300	20,300
R-squared		0.616		0.520

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1. All regressions include importer-time product-time and exporter effects

BRICS vs. Non BRICS

	All	BRIC	Non-BRIC
Avg. index	-2.652	-2.815	-3.090
	[0.834]***	[2.649]*	[0.907]***
low income X index	-5.217	-8.006	-4.156
	[0.436]***	[2.977]***	[0.443]***
lower middle X index	-2.756	-4.267	-1.975
	[0.473]***	[2.970]	[0.481]***
upper middle X index	-2.628	-4.131	-2.283
	[0.476]***	[3.088]	[0.489]***
Ln (tariff)	-0.132	-0.092	-0.133
	[0.020]***	[0.050]*	[0.022]***
Observations	20,300	4,060	16,240
R-squared	0.525	0.485	0.546

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1. All regressions include importer-time, product time, and exporter effects.

Conclusions

- We find that more restrictive standards depress trade.

- Seems that restrictive standards impact LDCs more.

- BRIC standards have greater impact on LDCs than non-BRICS

- Future work
  - Address estimating issues (PPML)
  - Extend income regression to bilateral