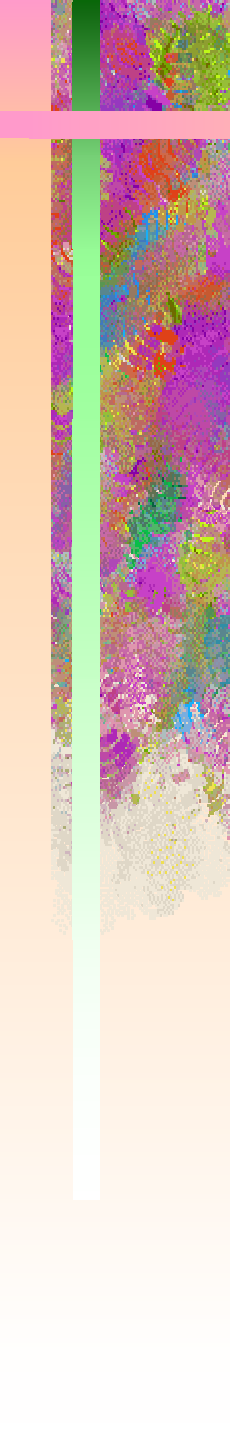


Regional and National Perspectives of China's Integration into the WTO: A Computable General Equilibrium Inquiry

**Xinshen Diao and Sherman Robinson, IFPRI
Agapi Somwaru and Francis Tuan,
ERS/USDA**

June 5-7, 2002 Taiwan

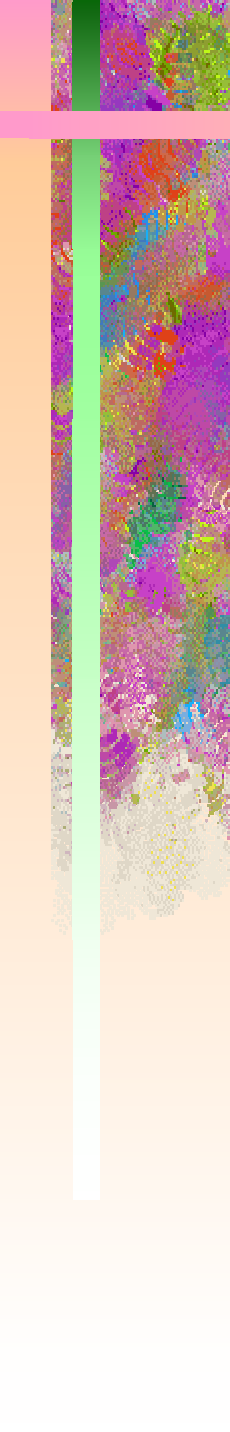


Background

- **China joined the WTO in December 2001**
- **China experienced considerable progress in economic liberalization and reforms in the last decade**
- **China's GDP grew an average of 9 to 10 % per year from the early 1980s**
- **Grain production grew at a faster rate than China's population growth**
- **Gains from past reforms are not equally distributed among China's regions**

Objectives

- **Quantify the effect of WTO accession on China's economy both at national and regional levels**
- **Incorporating TRQs of major agricultural commodities**



Outline

- **Background**
- **Why need regions?**
- **Why need TRQs?**
- **Data and model**
- **Macroeconomic effect of China's WTO accession**
- **Effect at the regional level**
- **Cautious interpretation of the results**

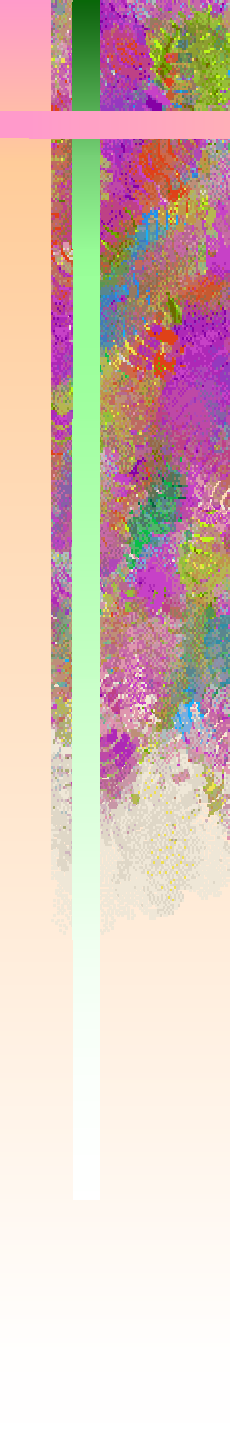
Seven regions in the study



Regional Disparities, 2000

Source: Fan et al. 2001

Region	Population	Per capita GDP	Ag GDP/GDP	Rural per capita income
	10,000	Yuan	%	Yuan
Northeast	10,454	9,328	13	2,175
North	35,560	7,747	15	2,592
Northwest	5,409	5,317	20	1,518
Central	16,358	6,092	19	2,200
East	18,942	11,716	11	3,845
Southwest	19,027	4,496	23	1,662
South	15,545	10,280	15	2,733



Regional Disparities -- Reasons

- **Rural non-farm activities**
 - 40% in East
 - **>20% in NW & SW**
 - 30% national average
- **Ag. labor productivity**
- **Degree of openness**
 - Trade
 - FDI

Measures of Openness

Region	Trade-GDP ratio 3-year (97-99) average [%]	Per capita FDI 1999 (US\$)
North	22.3	430
Northwest	8.7	92
Northeast	20.5	559
East	40.1	1,452
Central	6.7	163
South	96.6	1,860
Southwest	7.1	121
Nation	33.8	615

Why need TRQs?

- Quantitative barriers are main restrictions for grain, vegetable oil, cotton imports
- Reducing TRQs is one of the most important commitments China made

Data and Model

- **The 1997 national SAM. Crop sector disaggregated into 9 sectors**
- **Rural vs. urban households**
- **Disaggregated crop sector at the regional level, noncrop sectors only at the national level**
- **Calculating agricultural tariff rates by price gaps**
- **Tariff cut and TRQ schedules from China's commitments**

Tariff rates reduction schedule (%)

	Base year	2002	2003	2004
Wheat				
In quota	50.0	1.0	1.0	1.0
Over quota	74.0	71.0	68.0	65.0
Rice				
In quota	1.0	1.0	1.0	1.0
Over quota	74.0	71.0	68.0	65.0
Corn				
In quota	60.0	1.0	1.0	1.0
Over quota	70.0	60.0	50.0	40.0
Vegetables	19.4	18.0	16.5	15.1
Fruits	26.1	24.2	22.2	20.3
Soybeans	39.0	19.0	17.0	15.0
Other oilseeds	21.9	19.0	17.0	15.0
Cotton				
In quota	13.0	1.0	1.0	1.0
Over quota	62.0	54.4	47.2	40.0
Other crops	17.8	15.3	12.7	10.6
Livestock	19.4	18.1	16.8	15.6
Other agriculture	22.1	18.7	16.1	15.6
Meat, eggs and dairy products	26.8	21.6	18.5	15.3
Vegetable oils				
In quota	22.0	9.0	9.0	9.0
Over quota	61.0	48.0	35.0	22.0
Grain mill products	18.0	20.4	17.6	14.4
Other processed food	48.4	42.2	35.6	28.0
Cotton textile	13.0	11.0	8.0	4.1
Other textile	20.7	18.1	15.1	11.4
Apparel	21.7	19.4	13.0	10.9
Leather products	18.5	16.3	11.5	8.4
Fertilizers	12.2	11.0	8.0	4.1
Agricultural machinery	10.2	8.4	5.7	2.4
Other industry	20.4	18.3	9.5	6.4

Level of TRQ quota (1000 ton)

	Base year imports	2002	2003	2004
Wheat	1,916	8,468	9,052	9,636
Rice	261	3,990	4,655	5,320
Corn	287	5,850	6,525	7,200
Cotton	787	819	856	894
Vegetable oils	1,650	2,518	2,818	3,118

How to model regions?

- Regional I-O not available
- Only disaggregate agricultural (crop) production to regions
- Maximum entropy approach to estimate regional production function by crops (Zhang and Fan)
- Land and capital move across crops within regions
- Allow labor migration from regional crop sector to national non-crop sectors (restricted labor migration in the less developed regions)
- Regions distinguished import/export substitutable by crop

How to model TRQs?

What is a TRQ?

- Low (*in-quota*) tariffs for certain volume of imports (*quota*) and high (*above-quota*) tariffs for imports above the quota

Difficulties in China's case

- TRQs not employed before WTO accession
- Applied tariffs were low, while domestic prices were higher than the border prices

What we did

- Treat prices gap as tariff equivalents first
- Using Kuhn-Tucker conditions to get a shadow price for a TRQ
- If shadow price $<$ above-quota tariffs, quota is not binding
- If shadow price $\geq$ above-quota tariffs, imports beyond the quota



Scenarios

Base run:

2002-04, without WTO, Targeting 6-7% of annual GDP growth rate by increasing TFP level

WTO run:

- **Reducing tariffs and TRQs according to China's commitments for 2002-04**
- **Keep TFP level as in the base run**

Modest Macroeconomic Effects

	<i>Base-run</i>			<i>WTO-run</i>					
	2002	2003	2004	2002	2003	2004	2002	2003	2004
	----- Annual growth rate -----						% change from the base-run		
Real GDP	6.89	6.80	6.71	7.11	7.44	7.50	0.20	0.60	0.73
Rural consumption	6.96	6.82	6.69	7.10	7.54	7.58	0.14	0.68	0.83
Urban consumption	6.99	6.86	6.77	8.06	7.68	7.73	1.00	0.77	0.90
CPI	1.79	1.80	1.80	1.29	1.87	1.94	-0.49	0.06	0.13
Real exchange rate	-0.81	-0.82	-0.82	0.03	2.72	3.93	0.85	3.57	4.79

Effects on Agricultural Imports

	2002	2003	2004
Percent change from the base-run			
Wheat	54.37	55.16	53.94
Rice	-2.72	-2.23	-2.81
Corn	406.96	389.33	359.26
Vegetables	2.06	2.41	3.60
Fruits	-6.69	-2.66	-0.58
Soybeans	30.38	33.17	33.22
Cotton	43.81	44.38	41.60
Other crops	1.19	3.61	6.69
Livestock	-2.61	-2.35	-0.72
Meats and eggs	10.51	17.42	26.98
Grain mills	18.41	17.77	16.92
Vegetable oils	30.14	25.51	21.02
Other agriculture	2.43	0.83	3.22
Other food	12.46	25.90	52.91

Except for corn, quotas are not filled for the other grains, vegetable oils, and cotton

Changes in Regional Crop Production

	North	Northwest	Northeast	Central	East	South	Southwest	Nation
2004				Percent change from the base-run				
Wheat	0.72	3.47	12.23	-2.35	-2.98	-4.95	-3.18	0.67
Rice	5.48	17.07	11.57	0.17	-0.7	-0.22	3.63	2.23
Corn	-16.1	-27.61	-7.18	-21.38	-18	-21.1	-31.77	-14.56
Vegetables	-0.44	11.79	0.22	-4.56	1.94	-1.57	10.78	0.24
Fruits	2.55	3.48	2.65	-0.93	-0.11	-1.37	-2.2	1.31
Soybeans	-18.5	-27.92	-15.2	-20.73	-21.5	-22.6	-32.83	-18.03
Other oilseeds	1.08	3.71	1.88	-3.22	-1.67	-2.89	-2.04	-1.12
Cotton	6.14	11.19	11.65	2.71	2.97	8.21	8.57	6.12
Other crops	2.39	4.39	3.14	0.32	1.01	0.75	1.54	0.91

Regional Effect: Less developed regions gain less

	2002	2003	2004
Percent change from the base-run			
North	-0.48	1.05	1.42
Northwest	-2.65	-0.48	-0.24
Northeast	-1.41	0.15	0.38
Central	-0.42	1.30	1.70
East	0.51	1.54	2.02
South	0.49	1.58	2.06
Southwest	-1.94	0.31	0.59
Nation	0.28	1.83	2.41

Conclusions

- Important to include regions in China WTO study
- With regional disaggregation, modest macro effect
- Important to incorporate TRQs
- With TRQs, modest grain imports
- Positive effect at the national level, but rural-urban income gap widen
- Differential regional level effect cross crops
- Less developed regions gain less
- Unclear for the implementation process of China's commitments, cautious interpretation of the results