

## Should trade liberalization in agriculture wait for better marketing links between the regions? An application of the Philippine Regional General Equilibrium Model (PRGEM)

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## What to expect

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1. Overview of the issues
2. Scenarios
3. Model structure
4. Model Data
5. Results
6. Conclusion

What to expect

## Competitiveness and marketing costs

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Intal and Ranit (2004):

“It is cheaper to bring corn from Bangkok to Manila than to bring corn from Cotabato to Manila.”

γ “...an inefficient distribution system leads to additional pressure for agricultural protection so that domestic producers will be able to compete with imports in Greater Manila, the country’s largest net deficit market.”

Overview of the issues

## Trade liberalization in agriculture: progress

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- γ Multilateral agreement (WTO)
  - λ In 1994: tariffication, tariff ceilings, and schedule declines
  - λ Further liberalization with Doha: stalled
- γ Bilateral agreements (JPEPA)
- γ Domestic Tariff Reform Programs
  - λ In 1998, target set at 5% uniform rate by 2004 (not!)

Overview of the issues

## But protection remains:

- γ Rice – import monopoly, tariffs
- γ Corn – tariffs
- γ Sugarcane – effective QR, tariffs
- γ Meat products – tariffs
- γ Fish and fish products – potential import restrictions

Overview of the issues

## Nominal rate of assistance (DIB)

	2000-01	2001-02	2002-03	2003-04
<b>Exporting products</b>				
Wheat	10.0	10.0	10.0	10.0
Wheat flour	10.0	10.0	10.0	10.0
Wheat bran	100.0	10.0	10.0	10.0
Wheat germ	10.0	10.0	10.0	10.0
Wheat middlings	10.0	10.0	10.0	-0.1
Wheat shorts	10.0	10.0	10.0	10.0

Overview of the issues

## CGE has been applied

- γ CGE suitable because it allows us to do the *ceteris paribus* "experiment"
- γ Series of studies by Cororaton and associates:
  - λ Rice trade liberalization (RAE, 2006)
  - λ Doha round (HW, 2006)
  - λ Tariff reform in 1990s (JPM, 2006)

Overview of the issues

## Why a regional model?

- γ Disaggregate effects to the regional level
- γ Introduce region-specific policies
  - λ Geographic constraints
  - λ Investments in marketing linkages
    - γ Reduced transaction costs
    - γ Improved productivity in marketing service

Overview of the issues

### REGIONAL DISPARITIES

Region	Relative index (2000)	Poverty incidence	Agri share in RGDP
Philippines	1.00	30.4	19.6
NCR	2.40	7.3	0.0
CAR	1.31	31.2	12.8
Ilocos	.058	30.2	41.5
Igayan Valley	0.62	24.5	52.7
Central Luzon	0.85	17.7	24.3
Southern Tagalog (I)	0.98	18.8	18.1
Southern Tagalog (II)		47.9	42.1
Bicol	0.44	48.4	33.0
Western Visayas	0.87	39.1	28.2
Central Visayas	0.91	28.4	12.3
Eastern Visayas	0.51	43.3	33.6
Western Mindanao	0.60	49.4	50.1
Northern Mindanao	0.87	44.3	30.2
Southern Mindanao	0.90	34.4	28.2
Central Mindanao	0.62	38.4	43.7
ARMM	0.30	53.1	57.8
Caraga	-	54.2	40.2

### Development: regional dimension

- γ Confirmed: Geography raises marketing costs and inefficiency (Ordoñez and Associates, 2005).
- γ Confirmed: better infrastructure - faster growth (Llanto, 2007).
- γ Confirmed: Protection leads to manufacturing concentration; liberalization has dispersed industry to regions bordering NCR (Tecson, 2007)

Overview of the issues

### Policy concerns

- γ Trade lib in agriculture – bad for the lagging regions?
- γ Should logistics infrastructure be concentrated or dispersed?
- γ Should we invest in making regions “competitive” before liberalizing?

Overview of the issues

### Scenarios for the CGE model

1. *Reform*
  - λ Reduce agricultural tariffs to 5%
2. *Catch-up investment*: for lagging regions
  - λ Reduce unit transaction costs of “importing” (20%)
  - λ Increase productivity in Trans production (5%)
3. *Reform with investment*: combine Scenarios 1 and 2

Scenarios and results

## Sectors and regions

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- |  |                |
|--|----------------|
| 1. Cereals                               | 1. Metro Luzon |
| 2. Livestock and Poultry                 | 2. Other Luzon |
| 3. Fisheries                             | 3. Visayas     |
| 4. Other agriculture                     | 4. Mindanao    |
| 5. Agro-processing                       |                |
| 6. Other industry                        |                |
| 7. Trade, Transport and Storage Services |                |
| 8. Other services                        |                |

Model structure

## Institutions and factors of production

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- γ Households – one per region
  - λ Fixed savings
  - λ Consumption - LES
- γ Derives income from:
  - λ Fixed factor endowment
  - λ Transfers (government, foreign)
- γ Factors are labor and capital
  - λ Factor markets at equilibrium
  - λ Factors immobile across regions

Model structure

## Institutions

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- γ Government – one per region
  - λ Collects taxes (income, sales, imports)
  - λ Fixed budget and spending shares
  - λ Provides (receives) transfers
- γ Firms – one per sector and region
  - λ Intermediate input demand
  - λ Investment demand (Dervis et al '82)
- γ Total savings from HH, G, Foreign

Model structure

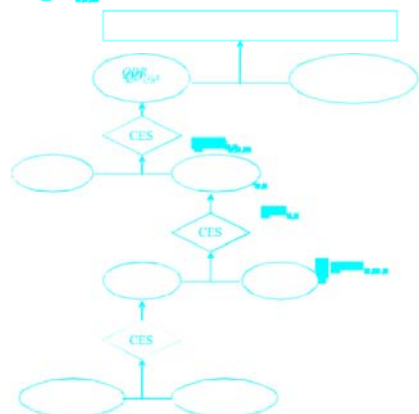
## Production

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- γ Value added
  - λ Constant elasticity of substitution (CES) combination of labor and capital
  - λ Profit-maximization leads to conditional factor demands

Model structure

### Interregional and international trade



Model structure

### Interregional and international trade



Model structure

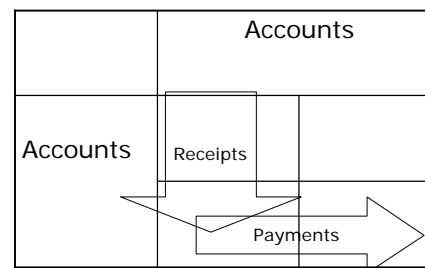
### Closure

- γ Foreign savings given (flexible exchange rate)
- γ Factor endowment = factor demand
- γ By region: internal supply = internal demand
- γ Normalized prices (fixed value of CPI by region)

Model structure

### Regional data set (Steps)

1: National Social Accounting Matrix



Model data

## 2. Form aggregated national SAM

	Household	Govt	Private	Government	Foreign	Rest of World	Total
Production							
Household	1,200,000,000						1,200,000,000
Govt	200,000,000						200,000,000
Private			500,000,000				500,000,000
Government				1,000,000,000			1,000,000,000
Foreign					1,000,000,000		1,000,000,000
Rest of World						1,000,000,000	1,000,000,000
Total	1,400,000,000		500,000,000	1,000,000,000	1,000,000,000	1,000,000,000	4,900,000,000
Household	1,200,000,000						1,200,000,000
Govt		200,000,000					200,000,000
Private			500,000,000				500,000,000
Government				1,000,000,000			1,000,000,000
Foreign					1,000,000,000		1,000,000,000
Rest of World						1,000,000,000	1,000,000,000
Total	1,200,000,000	200,000,000	500,000,000	1,000,000,000	1,000,000,000	1,000,000,000	4,900,000,000

Model data

## Regional data set

3. Compile regional accounts (RGDP, RGDE)
4. Compute regional foreign trade and trade taxes
5. Disaggregate GVA by sector and region
6. Decompose GVA into factors and indirect taxes
7. Construct interregional trade data set

Model data

## Interregional trade data

	Region 1	Region 2	Region 3	Region 4	Region 5
Production					
Household	1,200,000,000				
Govt	200,000,000				
Private			500,000,000		
Government				1,000,000,000	
Foreign					1,000,000,000
Rest of World					1,000,000,000
Total	1,400,000,000		500,000,000	1,000,000,000	1,000,000,000
Household	1,200,000,000				
Govt		200,000,000			
Private			500,000,000		
Government				1,000,000,000	
Foreign					1,000,000,000
Rest of World					1,000,000,000
Total	1,200,000,000	200,000,000	500,000,000	1,000,000,000	1,000,000,000

Model data

## Regional data

8. Form aggregate regional SAM
9. Form regional SAM
  - λ Transaction cost computed from unit ratios
  - λ Share allocation for initial sector disaggregation by region
  - λ Balancing of SAM by adjusting intermediate inputs via RAS

Model data



### Results: Output and welfare impact

	Welfare	Welfare	Welfare	Welfare	Welfare
<b>Welfare</b>					
Welfare in 2020 (€)	0.00	0.00	0.00	0.00	0.00
Welfare	-200	-200	-200	-200	-2,000
Welfare in agricultural region (€)	-1.00	-1.00	-1.00	-1.00	-1.00
<b>Welfare</b>					
Welfare in 2020 (€)	0.00	0.00	0.00	0.00	0.00
Welfare	-1,000	-1,100	-1,200	-1,300	-10,000
Welfare in agricultural region (€)	-1.00	-1.00	-1.00	-1.00	-1.00
<b>Welfare with distribution</b>					
Welfare in 2020 (€)	0.00	0.00	0.00	0.00	0.00
Welfare	-1,011	-1,110	-1,200	-1,300	-10,000
Welfare in agricultural region (€)	-1.00	-1.00	-1.00	-1.00	-1.00

Scenarios and results

### Summary of results - reform

- γ Tariff reform is beneficial, even for the lagging regions
- γ The scope for further welfare improvement from agricultural trade reform is limited
- γ Contractionary effect of reform mitigated by expansionary effect of catch-up

Conclusion

### Summary of results - complementarity

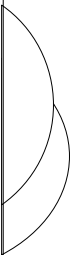
- γ no additional welfare benefits from pursuing both policies simultaneously
- γ unless distributional concerns are paramount, both policies can be pursued independently (one not conditional on the other)

Conclusion

### Future work

- γ Data limitations
  - λ regional input-output data
  - λ interregional flows of goods, household transfers.
- γ Empirical estimation would be the preferred method for quantifying key parameters

Conclusion



## Future work

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- γ Straightforward extension:
  - λ Disaggregation of households into income groups
  - λ Disaggregation of sectors and regions
  - λ Dynamic analysis
    - γ Capital accumulation
    - γ Introduce factor mobility.

Conclusion