Standard Driven Rural Development: A General Equilibrium Model with Market Imperfections

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Introduction

- The concept of standards includes many aspects such as quality, safety and ‘authenticity’ (Farina and Reardon, 2000)
- Two hotly debated questions on standards
  - Whether the poor are actually excluded?
  - Whether they are really harmed after being excluded?
- Our objective
  - To study the processes through which high standards production and consumption affect development in a general equilibrium model with market imperfections

Introduction

- The case of China
  - The food distribution system remained laggard until recently (Hu et al., 2004)
  - Increasing inequality (Ravallion, 2001)
  - More and more difficulty in reducing the rural poverty (Riskin, 2004)
  - Agricultural commodity and factor markets are under transition (Huang and Rozelle, 2006)

Theoretical framework

- CGE-Households model (e.g., de Janvry and Sadoulet, 2002)
  - Five commodities: Low/high standards intermediate goods; Low/high standard food; Other commodities
  - Four types of factor inputs: Rural labor; Urban labor; Land; Capital
  - Five agents: Poor, middle-income and rich rural households; Urban households; Corporate farms

Theoretical framework

- Production and factor demand
  - Credit constraints

$$K_H^c = \kappa^c r^{\varepsilon^c}, c \in CR \bigcup CF$$

  - Labor market
    - Segmented: Rural vs. urban
    - Iceberg migration costs

$$wr_U = wr_R / \tau$$

  - Fixed costs

Theoretical framework

- Income and consumption
  - Profit in high standards intermediate sector
  - Consumption: Modified Linear Expenditure System (LES)

$$X_{HF}{}^{c} = \frac{a_{HF}^{c}(1-mps^{c})Y^{c}}{PQ_{LF}} - a_{LF}^{c}\zeta^{c}, c \in C$$

$$X_{LF}{}^{c} = \frac{a_{LF}^{c}(1-mps^{c})Y^{c}}{PQ_{LF}} + \frac{PQ_{HF}}{PQ_{LF}} a_{LF}^{c}\zeta^{c}, c \in C$$

Indicator of preference

$$X_{O}{}^{c} = \frac{(1-a_{LF}^{c}-a_{HF}^{c})}{PQ_{O}}(1-mps^{c})Y^{c}, c \in C$$

Measuring the welfare effects

- Impact on household welfare
  - Measured by real income

$$W^c = \frac{Y^c}{P^c}$$

- Impact on rural poverty and inequality
  - Poverty is measured by the real income of poor rural households
  - Inequality index can be roughly proxied by Gini coefficient using the trapezium rule

Simulations

- Three alternative ways
  - Increase in the world price for high standards food
  - Increase in preferences for high standards food
  - Increase in farmer's access to credit

	Simu 1: $\Delta pwe_{HF} = +25\%$	Simu 2: $\Delta\zeta^{U} = -25\%$	Simu 3A: $\Delta\kappa^{RP} = +50\%$	Simu 3B: $\Delta\kappa^{RR} = +50\%$	Simu 3C: $\Delta\kappa^{CF} = +50\%$
Aggregate effects					
Gini coefficient	-0.41	-0.08	-0.02	-0.07	-0.02
Output of high standards intermediate product					
Poor rural household	10.90	11.13	49.88	-0.69	-0.18
Middle-income rural household	11.01	11.13	-0.08	-0.69	-0.18
Rich rural household	9.26	9.22	-0.07	49.16	-0.15
Corporate farms	9.27	9.13	-0.07	-0.54	49.78
Poor rural household					
Profit effect	0.32	0.33	0.12	-0.02	-0.00
Profit sharing from corporate farm	0.06	0.06	-0.00	-0.00	0.02
Factor income effect	0.12	-0.23	0.01	0.06	0.02
Among it:					
Labor	0.06	-0.04	0.01	0.05	0.01
Land	0.07	-0.14	0.00	0.01	0.00
Capital	-0.02	-0.05	0.00	0.01	0.00
Consumer price effect	0.05	0.27	-0.00	-0.02	-0.01
Total income effect	0.54	0.43	0.13	0.02	0.03

Conclusion and discussion

- We analyze how the expansion of high standards food production affect the structural production changes and the rural poverty and equity by adopting an inter-regional CGE model with several kinds of market imperfections.
- Inequality and poverty would decrease
- The poor's gain from labor market can cover the loss of being excluded from high standards farming if larger farms expand their outputs in high standards sector.