Modeling Trade Liberalization in the EU

Silvia Weyerbrock
Princeton University
and UC Berkeley

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Model

Static multiregion, multisector CGE models

- Neoclassical CGE model (Robinson-type)
- Focus on agriculture
- Represent many policies explicitly

Two generations

- 6-region, 13-sector CGE model with mixed base year
  - U.S.
  - EU-12
  - EFTA
  - Eastern Europe
  - Former Soviet Union
- 13-region, 20-sector CGE model with 1995 base year
  - U.S.
  - EU-15
  - EFTA
  - Eastern Europe
  - Former Soviet Union + many others

Selected Agricultural Policy Issues Studied

- Do the 1992 CAP reforms meet targets specified in the Uruguay Round Agreement? What additional reforms are needed to make CAP compatible with the GATT agreement? Does CAP reform eliminate the EU's budgetary problem?

- What are the budgetary and trade effects of EU/EE integration under various agricultural policy & productivity growth scenarios?

- How does EU membership of Eastern European countries affect U.S. agriculture?

Policy Modeling Approach

Two options:

1. Exogenous price wedges or PSEs

2. Explicit modeling
   many policies are represented as closely as possible how they work

   Advantages:

   a) can differentiate endogenous and exogenous policies
   b) can differentiate coupled and decoupled policies
   c) measures incentive impact of government intervention rather than only aggregate support

Why is explicit modeling important?

- Many farm programs include many policy instruments that cannot be captured appropriately be exogenous price wedges or lump-sum transfer.

- Kilkenny and Robinson (1988) find that models based on exogenous price wedges yield distorted results for partial policy reform.

- CAP
    (1) includes many endogenous and coupled instruments
    (2) past CAP reforms have been partial reforms
    (3) future CAP reform is likely to be partial

Early examples of explicit modeling

- Kilkenny and Robinson (1988), Kilkenny (1991), Burfisher, Robinson, and Thierfelder (1992), Harrison, Rutherford, and Wooton

Trade Policies

- EEP
- Variable export subsidies
- Ad valorem and specific tariffs
- Tariff equivalents for industrial NTBs
- Variable import levies
- Import quotas

Example: Variable Export Subsidies

- Used to dispose EU agricultural surplus of many commodities on world markets
- Determined endogenously as the difference between world market price and domestic price
- Subsidy rises as world price falls and vice versa. World price changes yield protection level changes.

  BUT exogenous price wedges would change proportionately to changes in market prices

How do I model variable export subsidies?

- as endogenous price wedge

$$P^{e}_{i,k,c1} = P^{x}_{i,k,c1}$$

$$P^{e}_{i,k,c1} = pw^{e}_{i,k,c1} \, (1 + T^{e}_{i,k,c1}) \, R_{k}$$

- inequality constraint in medium- and long-run versions of model

Domestic Policies

- Subsidies, levies, and taxes
- Transfers

    Among others:

        Hectarage transfers: increase land income
        Headage transfers: lump-sum transfer

- Intervention buying
- Set asides
- Output quotas

Parameters

- Elasticity parameters needed

    (1) CES value-added functions
    (2) AIDS import aggregation functions
        Substitution elasticities
        Expenditure elasticities
    (3) CET export transformation functions
    (4) Price elasticities for export demand/import supply of large traders

- Parameters based on literature review

  Whalley (1985), de Melo and Tarr (1992), Kilkenny and Robinson (1990), Kilkenny (1991), Harrison, Rutherford, and Wooton (1991) and others

- Problems

  Recent country-specific and sector-specific estimates are frequently unavailable.

  Assigning elasticity values is a rather “informal” procedure.

- What to do?

  First-best solution:

  > Estimate.

  Second-best solution:

  > Use estimates for comparable sectors, countries.
  > Do systematic sensitivity analysis.

How Flexible are General Equilibrium Models to Deal with Real-World Trade Liberalization Scenarios?

Depends on model type.

(1) Analytical/theoretical models

(2) Stylized numerical models

Highly aggregated, illustrate important linkages.
Indicate *direction* of change in response to policy change/external shock.
Test or yield "rules of thumb."

(3) Applied models

Disaggregated, capture institutional arrangements of particular countries.
Quantify *magnitude* of change in response to policy change/external shock.
May yield policy recommendations.

(1) –> (3) increase in realism
decrease in transparency

Results

1992 reforms

- CAP reform worsens the EU's budgetary situations and does not meet GATT import competition and export competition rules/targets.

- To reach the GATT's export competition targets needs to either impose additional quantitative controls or cut price supports for sugar and dairy.

- Model solves for necessary policy changes.

Quota reductions	16%/20%
Intervention price reductions	20%/26%

Agenda 2000

1. Commission proposal
   higher intervention price reductions
   no set asides

- Minimal positive impact on GDP
- Moderate increase in imports
- 2% reduction in agricultural output and 5% reduction in agricultural exports
- Variable export subsidies shrink tremendously
- Overall farm program expenditure increase because of generous compensation payments

2. Council version
   lower intervention price reductions
   set asides

- Very small increase in agricultural imports
- 0.5% reduction in agricultural output
- 5% reduction in agricultural exports

Advantages and Disadvantages of CGE Models

Advantages

- capture the intersectoral, factor-market, budgetary and macroeconomic effects of policy changes and external shocks
- good at examining long-run effects or policy change
- versatile empirical simulation lab

Disadvantages

- "black box" critique
- need a lot of data (not as much of a problem for EU)
- many models (including mine) use parameter estimates from literature
- not good at examining short-run effects and transitional issues

Other considerations

- neoclassical CGE models simulate the workings of a market economy in which prices or quantities adjust to clear markets.
    largely reasonable for EU
    what about Eastern European countries?
        - add micro structure
        - add macro structure

Important Areas for Additional Work

- micro/macro interactions
- dynamics
    - forward-looking versus recursive dynamics
    - static models likely to underestimate impact of trade policy changes
- uncertainty
    - optimal policy rules differ in certain and uncertain environments
- aggregation
    - regional disaggregation
- structuralist features/institutional detail
- policy modeling
    - model more policies explicitly
        - transfers/national agricultural policies in EU
- parameter estimation and data base development
- “econometric” CGE modeling