

Applied General Equilibrium Models

Trade and Tax Models

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Presentation Outline

- General equilibrium models: Some Remarks
- How to Choose the model?
- How to choose the functional forms and parameters?
- Tax models
 - Common features
 - Recent works
 - Differences among models
 - Key parameters and results
 - Policy implications and weaknesses
- Trade models
 - Main features
 - Key parameters and results
- General equilibrium model: Further issues
- Discussion

GE model – some remarks

- Previous Works => Arrow-Debreu, Leontief, Johansen, Harberger, and Scarf
- Models with some degree of heterogeneity and complexity
- Theoretical problem => uniqueness of equilibrium
- Art : Determination of model, functions, and parameters
- Other features like government, investment, prices, and trade

How to choose the model?

- How many inputs?
- Static or Dynamic?
- Trade : Armington formulation
- Factor mobility
- Investment related with mobility and dynamic
- Government : Transfers and expenditures

How to choose functions and parameters?

- Consistent and analytically tractable functions
=> CD,LES,CES,IO
- Traditionally : Value-added (CES) and Intermediate input (IO)
- Specify elasticities : curvature in indifference and isoquants
- Adjustments over data and unity's problem
- Solution methods are not really a problem
- Evaluations : Welfare and distributional and terms of trade effects

Tax models : common features

- Harberger (1962) pioneer work
- Corporate and capital taxes
- Lump sum distribution
- Ad valorem taxes
- Government equilibrium

Tax models : recent works

- Types of Taxes : Income, corporate, property, sales, excise, and social security
- Pigott and Whalley (77) : 33 sectors and 100 households
- Pigott (80) : Australia, CES between different outputs
- Serra Puche (84) : Mexico's reform & unemployment
- Keller (80) : Holland unskilled & skilled workers

Tax models : differences among models

- BFSW Model (Ballard, Fullerton, Shoven, Whalley)
 - Dynamic model: savings decision
 - Assume growth path equilibrium and steady state
 - Compare equilibrium sequences

- Slemrod (83)
 - Financial assets
 - Endogenous financial behavior
 - Corporate tax: is a tax on equity returns
 - Stochastic production function parameters
 - Risk aversion preferences

Tax models : key parameters and results

- Elasticity values and ad valorem taxes
- Labor supply, savings, commodities demands
- Adequate treatment of taxes
- Corporate tax : Lump sum or proportional?
- Property tax : tax on factor incomes or excise tax?
- Social security tax : Tax on labor or financial system?
- Value : Average or marginal tax?

Tax models : policy implications & weakness

- How big is the deadweight loss?
- How distortion are taxes?
- How much is redistributed? => **debate**
- **Problems :**
 - Choose the right elasticities
 - Availability of micro data
 - Unsatisfactory distributional modeling
 - Average-marginal debate

Trade models: main features

- More varied heritage and focus
- Heckscher-Ohlin : Comparative advantage
- Arlington assumptions : elasticities among products
- Single country : Effects of international events
- Multicountry models : Global trade
- Closure rules : Capital Flows or Exchange rates
 - Monetary models
 - Are countries rental rates takers?
- Ad valorem tariffs and non tariffs barriers
- New Models : Economies of scale and IO features

Trade models: key parameters and results

- International Trade elasticities
- Information about tariffs and non-tariffs barriers
- Welfare effects of changes in tariffs is small

=> debate

- Effect of tariffs on terms of trade
- Other shocks included in literature

General equilibrium model: further issues

- How robust are their results?
- Difficulties of model pre-selection
- How consistent with theory they should be?
- How specific they should be?
- **Problems in practice :**
 - Researcher should have many skills
 - Organization data

Discussion

- Main features of developing countries compared with developed countries
- What is the usefulness of these models in developing countries?
- How elastic are markets?
- Effects of taxes and trade
- Main features for a general equilibrium model
- Differences across countries

Reference

Shoven, J. B. and J. Whalley. “Applied General-Equilibrium Models of Taxation and International Trade: An Introduction and Survey.” *J. Economic Literature*, 22:1007-1051, 1984.