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STAGE

STAGE_t: Sensitivity Analyses

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Outline

- Exogenous data
 - Elasticities
 - ‘Shares matter’
 - SAM
- Sensitivity Analyses
 - Objectives
 - Methods
 - Simple
 - Systematic
 - Implementation
- Dimensions
 - Elasticities
 - Closure and Market Clearing

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Exogenous Data

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Elasticities

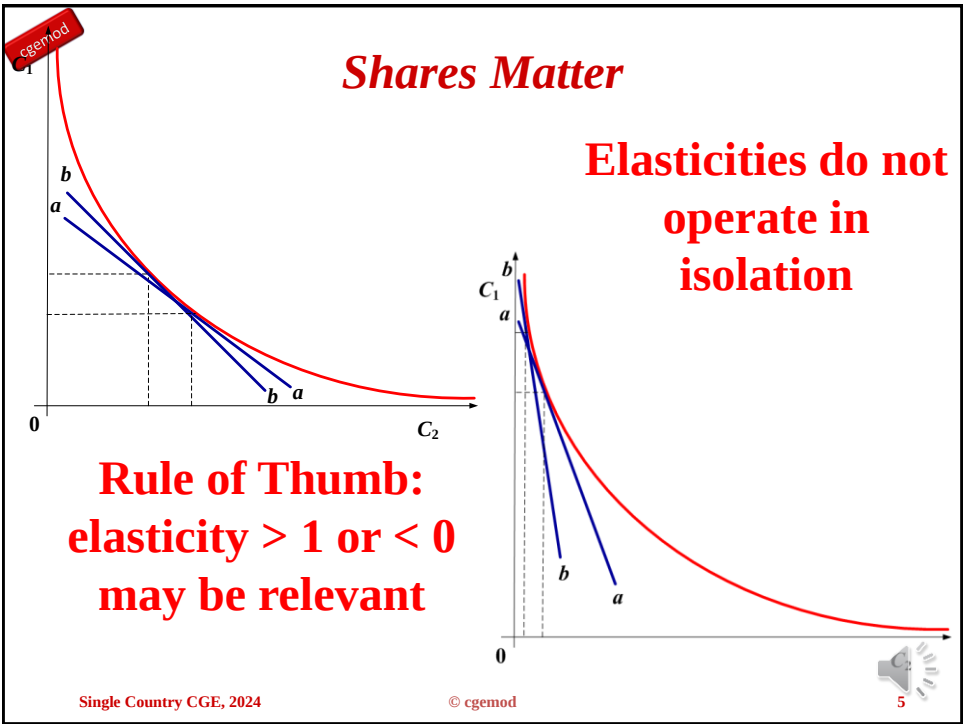
- CES/CET/LES functions require elasticity estimates
 - Econometric estimates
 - Paucity of data
 - Consistency of classifications
 - Prior studies
 - Where did these studies get their estimates?
 - Appealing to authority, e.g., GTAP
 - ‘Informed’ estimates
 - Use logical criteria – elastic/inelastic, very elastic/inelastic, etc.
 - ‘Honest’?

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Parameters

- Other model parameters derived from the SAM and/or satellite accounts
 - SAM transactions are best estimates
- Therefore model parameters are subject to errors

Sensitivity of results due to parameters derived from SAM and satellite accounts very rarely assessed

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Sensitivity Analyses

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Objectives

- To evaluate sensitivity of results to
 - A. Permutations in the size of shocks
 - B. Elasticity estimates
 - C. Macroeconomic closure assumptions
 - D. Market clearing assumptions
 - E. Errors in model parameters from transactions data (not covered here)
- To enhance robustness of the results and analyses

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Methods: Simple

- A. Implement a range of shocks NOT only the proposed policy/central estimate
- B. Run shocks with a range of elasticities
 - Say $\approx 50\% \pm$ (NB: CES undefined if $\sigma/\Omega=1$)
- C. Run shocks with different macroeconomic closure assumptions
 - Especially test any ‘non-orthodox’ settings
 - Savings-investment
- D. Run shocks with different market clearing assumptions
 - Especially test any ‘non-orthodox’ settings
 - Unemployment

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Methods: Systematic

- A. Implement a range of shocks NOT only the proposed policy/central estimate
- B. Run shocks with a range of elasticities
 - Monte Carlo
 - Gaussian quadrature
 - Assess statistically the robustness of the results to variations in elasticities
- C. Run shocks with different macroeconomic closure assumptions
 - Especially test any ‘non-orthodox’ settings
 - Savings-investment
- D. Run shocks with different market clearing assumptions
 - Especially test any ‘non-orthodox’ settings
 - Unemployment

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Implementation

- Add another LOOP (index: `elst`) in the experiment file
- Up date CES/CET/LES parameters for each loop
- Add extra index to results files

```
* ## Parameters for Armington/CES functions

rhoc(c)$ (cx(c) AND cm(c))      = (1/ELASTC(c,"sigma")) - 1 ;

delta(c)$ (cd(c) AND cm(c))
= (PM0(c)*QM0(c)**(rhoc(c)+1))
  / (PM0(c)*QM0(c)**(rhoc(c)+1)
    + PD0(c)*QD0(c)**(rhoc(c)+1)) ;

ac(c)$ (cd(c) AND cm(c))
= QQ0(c) / (delta(c)*QM0(c)**(-rhoc(c))
  + (1-delta(c))*QD0(c)**(-rhoc(c)))**(-1/rhoc(c)) ;
```

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Dimensions

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Elasticities

- Rules of Thumb
 1. Signs on the results are rarely sensitive to elasticity estimates
 - May be sensitive between elastic and inelastic values
 - May be sensitive if there are small shares in certain functions
 2. Report results using conservative values of elasticities
 - Avoid providing easy criticism of your results

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Macroeconomic Closures

- Rules of Thumb
 - If the results are **not** sensitive to choice select the least ‘controversial’
 - **Only** select macro closure settings that may induce resistance from the ‘clients’ if they are important
- 1. Only argue for macroeconomic closure settings IF they are important.
- 2. Avoid arguments over macroeconomic closure settings: they may distract attention from your key results.

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Market Clearing Conditions

• Rule of Thumb

– If the results are **not** sensitive to choice select the least ‘controversial’

– **Only** select an unemployment assumption if it is an important determinant of the results

1. Only argue for unemployment IF it is important.

2. Avoid arguments over unemployment settings: they may distract attention from your key results.

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The End

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