The Tax Policy Center’s Methods for Dynamic Analysis

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Taxation in the Trump Era: Reforms, Revenues, and Repercussions
_Estimating the Macrodynami Effects of Tax Reform_
Why Dynamic Analysis?

- To improve revenue estimates
  - Best guess of macro effects is in general not zero
  - Effects on estimates tend to be modest

- Because economic effects are important policy goals
  - Economic effects provide additional information about welfare effects
  - Effects on the economy tend to be modest
Main channels for macroeconomic effects

- **Demand**
  - After-tax incomes affect demand
  - Investment incentives affect demand

- **Incentives**
  - Marginal tax rates on labor income affect labor supply
  - Marginal tax rates on capital income affect saving

- **Deficits**
  - Increased deficits crowd out investment
Models used for TPC dynamic analysis

- TPC Keynesian Model
  - Aggregate variables, demand based
  - Output moves relative to potential
- TPC Neoclassical Model
  - Aggregate variables, supply based
  - Estimates potential output
- Penn Wharton Budget Model
  - Optimizing forward-looking households
  - Estimates potential output
Keynesian Model: Direct effects on demand

- With more after-tax income, consumers spend more
  - Lower-income households spend a larger share of their additional income than higher-income households
  - Baseline assumption:
    - Lowest quintile spends 90 cents of each additional dollar
    - Highest quintile spends just 55 cents of each additional dollar

- Investment incentives lead firms to invest more

- Higher wealth leads consumers to spend more
Direct effect generates indirect effects that can add to or offset the direct effect

- On the plus side, increased demand can lead to increased hiring, investment spending, or consumption spending.

- On the minus side, increased demand could lead to higher interest rates, reducing investment and consumer spending.
Keynesian Model: Indirect effects on demand

- In normal economic times the Fed offsets expansionary tax policy by raising rates to prevent an increase in inflation

- Indirect effects offset half of direct effects
  - Multiplier of 0.5 on changes in direct demand

- In deep recession the Fed will not change rates, leading to positive indirect effects, adding 50 percent to direct effects
  - Multiplier of 1.5 on changes in direct demand
Neoclassical Model

- Core potential output determined by
  - Labor hours
  - Capital stock
  - Total factor productivity

- Cobb-Douglas production function
  - Capital share = 0.3

- No explicit forward looking
Neoclassical Model: Labor hours

- After-tax wage
  - Elasticity of labor hours to the after-tax wage = 0.24

- After-tax income
  - Elasticity of labor hours to after-tax income = -0.05

- Effects calculated on an aggregate level
Neoclassical Model: Capital stock

- **After-tax rate of return**
  - Depends on pretax rate of return, marginal tax rate on capital income, and expensing ratio
  - Interest elasticity of saving = 0.2

- **Deficit**
  - Private saving offset = 0.43
  - Capital inflow offset = 0.24
  - Additional dollar of deficit crowds out 33 cents of output
Keynesian and Neoclassical combined estimates

- Results of the two models combined using a weighted average

- Weights on the neoclassical model of 0, 0.25, 0.5, 0.75, and 1 over the first five years after implementation of a policy
Penn Wharton Budget Model

- Overlapping generations model
- Simulates economic and budgetary outcomes from household decisions about work and saving
- Uncertain working ability and longevity
- Households forward-looking
  - Make decisions based on current and future policies and economic outcomes
- Can model unbalanced tax reforms through 2040
Penn Wharton Budget Model: Base parameters

- Frisch elasticity of labor supply = 0.5
- Elasticity of intertemporal substitution = 0.5
- Depreciation rate = 0.085
- Population growth rate = 1.2 percent
- Weight on open economy results = 0.4
Penn Wharton Budget Model

- Available online at http://www.budgetmodel.wharton.upenn.edu

- User can alter assumptions for open economy weight, labor supply elasticity, saving elasticity, and federal outlays
THANK YOU

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