Class 8
Econ 402
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Class 8 Outline

- More on Money Demand, Money Supply, and the Quantity Theory of Money
- Hyperinflation and the Cagan Model
- The Classical Dichotomy
Money Demand

- Under the QTM, velocity is constant
- Equivalent to Demand for “Real Balances” \((M/P)\) depending on Real Income \((Y)\) according to \((M/P)d = k*Y\), where \(k=1/V\)
- Money \(\Rightarrow\) Nominal GDP/Real GDP \(\Rightarrow\) \(P\)
- Money Growth \(\Rightarrow\) Nominal GDP Growth - Real GDP Growth \(\Rightarrow\) Inflation
Money Demand (II)

The Classical Model extends the QTM by assuming Demand for M/P depends on the nominal interest rate (i) and Real Income (Y).

Money $\Rightarrow$ Real Money Supply $\Rightarrow$ P adjusts to bring about equilibrium between Real Money Supply and Real Money Demand.

Key Point #1: Same result as QTM, but specific mechanism (supply/demand in money market)
Money Demand (III)

Also, Expected Inflation $\Rightarrow i \Rightarrow$ Real Money Demand $\Rightarrow P$ adjusts to bring about equilibrium

What direction?

Key Point #2: Money and Inflation Expectations both can cause Inflation

More difficult to model
What Influences Money Supply?

- The Classical Model assumes that $M$ is exogenous.
- What might explain changes in $M$?
  - Under gold standard, discoveries of gold
  - Under fiat money, “seigniorage”
Seigniorage

- When a government cannot raise taxes or sell bonds, it often resorts to printing money to finance spending.
- What, then, does it mean to say money causes inflation?
"The Cash Nexus"

- All deeper "causes" must operate through money to generate inflation
- Operational notion of causality
Hyperinflation

- Note that seigniorage currently accounts for less than 3% of US government revenues.
- However, easiest to see that money causes inflation in the extreme case of “hyperinflation” when seigniorage is significant.
A few examples of hyperinflation

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German Hyperinflation

Clearly, QTM holds

Also, it appears that real money demand depends on inflation expectations

What determines inflation expectations?
Money demand implies current price level depends on current money and future price level.

Solving model $\Rightarrow$ price depends on current and future money.

Thus, inflation expectations depend on expectations of future money growth.
Central Banking in Theory and Practice

- QTM might make Fed’s job look easy
- However, they don’t only have to control money supply
- They also have to manage public expectations of inflation by managing their expectations of future money growth (see German hyperinflation)
- Under rational expectations, Fed can use a money growth rule to “pin down” expectations of future money in terms of current/past money (credibility)
The Classical Dichotomy

- Real variables: measured in physical units -- quantities and relative prices (e.g., real GDP, real wage, real interest rate)
- Nominal variables: measured in money units (e.g., nominal wage, nominal interest rate, price level)
The Classical Dichotomy (II)

- Classical Dichotomy: Nominal variables irrelevant for determination of real variables
- Neutrality of Money: Money only affects nominal variables and not real variables
- Macro modeling assumption: classical dichotomy holds in the long run, but not the short run
Next time: The Open Economy (Chapter 5 of Mankiw)

Midterm 1 on Thursday, February 21st. Practice Questions posted on class website