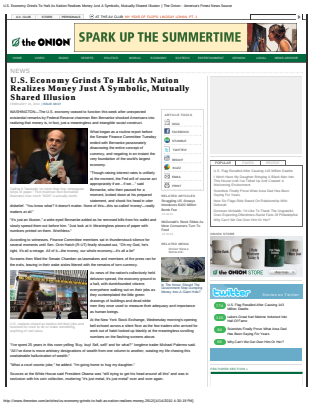
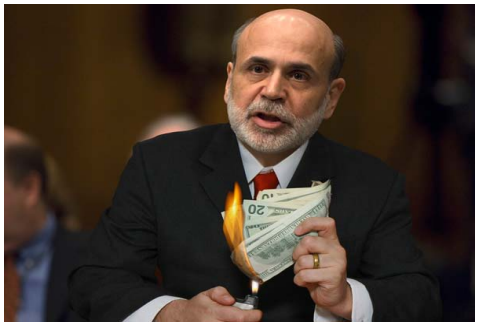
Intro to Money and Inflation

A Laugh...



Intro to Money and Inflation—Economics of Global Business, Revised: April 22, 2019

A Laugh...



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What is Money?

- Medium of exchange.
  - we use it to buy stuff
- Store of value.
  - transfers purchasing power from the present to the future
- Unit of account
  - the common unit by which everyone measures prices and values

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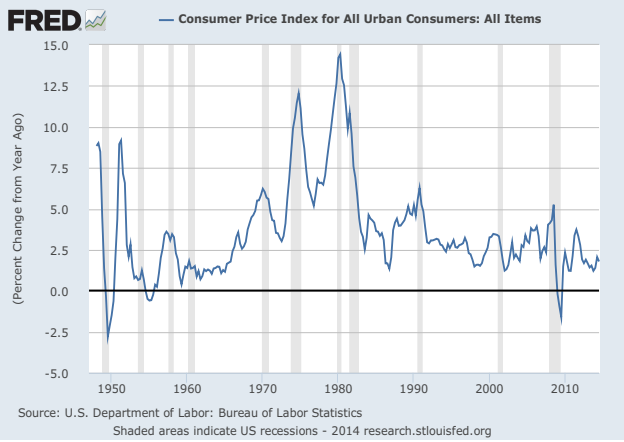
Types of Money

- Commodity Money
  - Has intrinsic value
  - Examples: Gold, cigarettes in P.O.W. camps
- Fiat money
  - Has no intrinsic value
  - Examples: paper currency, bit-coin

Monetary Policy Terminology

- The money supply is the quantity of money in the economy.
  - Various definitions of money supply (example M1 is currency + demand deposits).
  - Monetary base is an important measure, it is currency + banking reserves.
- Monetary policy is the control over the money supply.
  - Monetary policy is conducted by a country's central bank.
  - The U.S. central bank is called the Federal Reserve ("the Fed").
  - To control the money supply, the Fed uses open market operations, the purchase and sale of government bonds.
  - "Tight" monetary policy is to facilitate a slow down in the economy. "Loose" monetary policy is to facilitate a speed up.

Inflation in the US



Velocity

- Basic concept: the rate at which money circulates
- Definition: the number of times the average dollar bill changes hands in a given time period
- Example:
  - In 2012, $500 billion in transactions
  - money supply = $100 billion
  - The average dollar is used in five transactions in 2012
  - So, velocity = 5

Velocity

- Use nominal GDP as a proxy for total transactions.
- Then

$$V = \frac{P \times Y}{M} \tag{1}$$

  - P = Price of output (GDP Deflator)
  - Y = Quantity of output (Real GDP)
  - $P \times Y$ = value of output (nominal GDP)

Quantity Theory

- One equation

$$M \times V = P \times Y$$

- Several ways to look at this...
  - An identity, that is hold by definition (specifically V).
  - A theory of the demand for money (later in course).

Quantity Theory

- In growth rates

$$\gamma_m + \gamma_v = \pi + \gamma_y$$

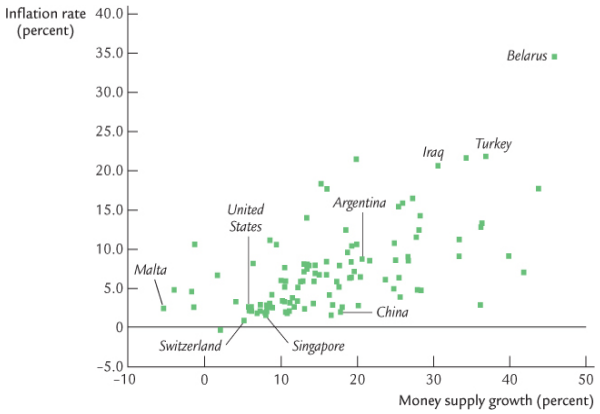
  - γ_m = growth of money supply
  - γ_v = growth of velocity
  - π = growth of price level (inflation)
  - γ_y = growth of real GDP

Classical Dichotomy

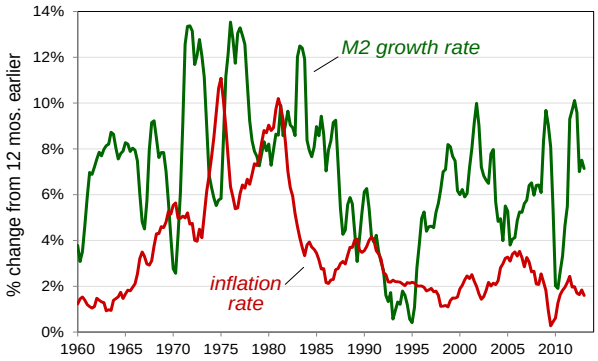
- Two assumptions
  - V is constant
  - Y not affected by changes in M (Chapter 3 of Mankiw)
    - This is the classical dichotomy, money has no affect on real variables.
    - We will loosen this idea later in course for the short run.
- One conclusion:
  - money growth (net of real output growth) causes inflation

$$\pi = \gamma_m - \gamma_y$$

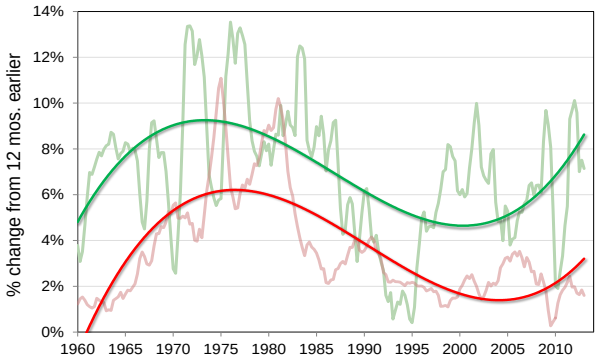
Quantity Theory, Across Countries



Quantity Theory, US Short-Run



Quantity Theory, US Long-Run



Zimbabwe

- Dec 06: inflation over 1000 percent
- Feb 07: inflation ruled "illegal"
- Oct 08: inflation over 200 million percent (!)
- Jan 09: transactions allowed in foreign currencies
  - Soldiers and teachers to be paid in USD
- Feb 09: 12 zeros knocked off currency

Buying Lunch in Zimbabwe

Inflation and Interest Rates I

- Nominal interest rate i
  - Not adjusted for inflation
- Real interest rate r
  - Adjusted for inflation $r = i - \pi$
- This implies the Fisher equation $i = r + \pi$
  - Real forces determine r, i.e. savings = investment in Chapter 3. (again the classical dichotomy here)
  - Hence, inflation increases the nominal interest rate, one for one.

Inflation and Interest Rates II

- In reality, interest rates agreed to between borrowers and lenders are based on future inflation.
- Some notation
  - π = actual inflation rate (not known until after realized)
  - $E\pi$ = expected inflation rate. What savings and borrowing decisions are based on.
- Two real interest rates:
  - $i - E\pi =$ **ex ante** real interest rate. What people expect to earn in real terms.
  - $i - \pi =$ **ex post** real interest rate. What people actually earn after inflation is realized
- Question: Who wins/loses from unexpected inflation?