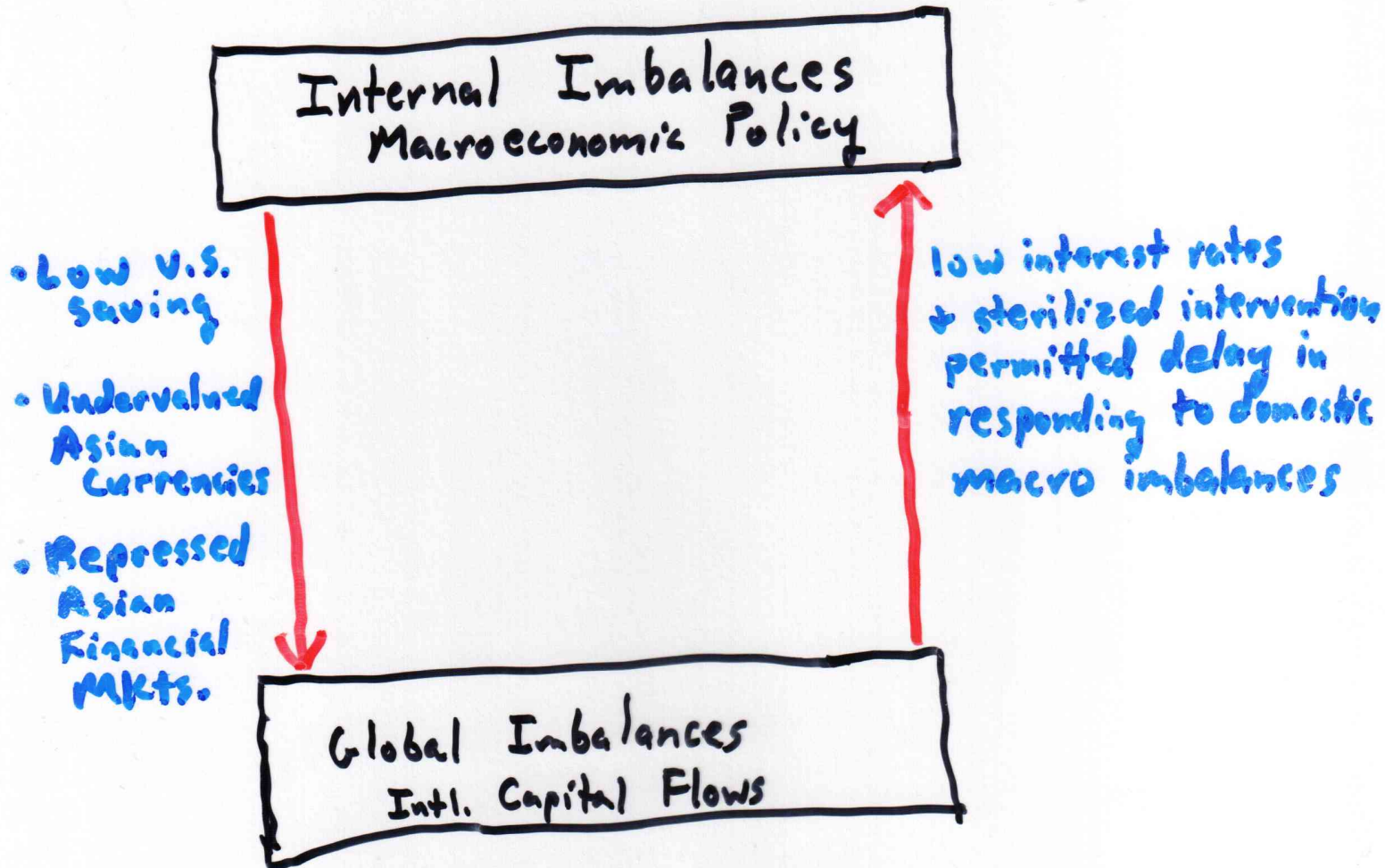


# Global Imbalances + the Financial Crisis

- Obstfeld + Rogoff (2009) argue that it was the interaction between internal imbalances + external imbalances that was really to blame for the crisis.



## Background on Subprime Crisis

- Financial Institutions are intermediaries. They channel savings from households to firms who want to invest.



- Financial Institutions are leveraged (i.e., they invest with borrowed money).

# A Bank's Balance Sheet

Assets	Liabilities
Business Loans	Deposits
Mortgages	Cash Reserves
	Equity

} Capital

- Banks take in deposits (they borrow from depositors), and lend out money to firms (and households, especially mortgages).
- They make money by paying a lower interest rate on deposits than they charge for their loans
- Why is this useful to society? (Maturity Mismatch)
  - Investment projects are long-lived and illiquid
  - Mortgages/Houses are also illiquid
  - Depositors want ready access to their funds due to random expenditure needs

- So banks are in the business of "maturity transformation".
- What makes this work is the fact that not everyone needs their money at the same time.
- Suppose a bank has \$100 of deposits, and that each person has a 10% chance of needing their money each period.
- With a large depositor base, it is very unlikely that more than \$10 will be withdrawn each period.
- Therefore, the bank can (normally!) assume that it only needs to keep \$10 on hand as reserves against withdrawals. It can lend out the remaining \$90.
- Because of the interest spread between loans and deposits, it has an incentive to maximize its leverage

- Leverage exposes the bank to 2 kinds of risk

1.) **Bank Runs** - Since it has lent out \$90 of the \$100 (and these loans will be hard to liquidate at face value), the bank cannot pay off all its depositors at once, and depositors know this! A first-come, first-served payout policy creates an incentive to not be the last in line!

Fortunately, govt. deposit insurance has largely prevented modern bank runs.

2.) **Loan Losses** - Since the bank's capital is only 10% of its loans, a modest 10% decline in asset values can wipe the bank out (i.e., leave it with no equity value. It becomes "insolvent").

This is what happened in the subprime crisis of course, (2) is related to (1), since fear of collapse can ignite a run among 'large' creditors.

## Mortgage-Backed Securities

- The previous bank balance sheet was misleading in one important respect.
- During the past decade financial "innovators" came up with the idea of securitizing the mortgages that banks were holding.
- This meant packaging them together in 'pools', and creating securities that would entitle the holder to the stream of future mortgage/rental payments.
- The logic behind this was based on a diversification argument. By pooling the default risk, the securities were supposed to be safer than individual mortgages.
- As a result, banks no longer held (risky) mortgages, they held (safe) securities. This led them to believe they could take on more leverage. (Oops!).

It turned out that mortgage-backed securities suffered from several problems that were not recognized at the time.

- 1.) Their risk was mispriced. Default risk has a major common component (e.g., interest rates, macroeconomic conditions) You can't diversify systematic risk!
- 2.) They make mortgages harder to renegotiate.  
(There's no one to talk to!)
- 3.) Counterparty Risk. Since these securities provided the basis for a pyramid of collateralized lending, it has become hard to evaluate risk within the financial system.

# Causes of the Crisis

- 1.) Speculation
- 2.) Securitization
- 3.) Mortgage Fraud/Deception ("teaser" rates)
- 4.) Inaccurate Credit Ratings (conflict of interests?)
- 5.) Relaxed Lending Standards / High Risk Loans
- 6.) Low Interest Rates in 2001 - 2004
- 7.) Moral Hazard (Previous Bailouts)
- 8.) Govt. Policy (the "ownership society")



# The Taylor Rule

- The benefits of basing monetary policy on an explicit objective are now widely appreciated by most countries
- There is also widespread agreement that, operationally, Central Banks should base policy on a systematic (but flexible) rule.
- Unfortunately, there is less agreement about what exactly this rule should be.
- In practice, it appears that many Central Banks follow a simple rule whereby the interest rate responds to just two variables
  - 1.) The current deviation of inflation from the inflation target
  - 2.) The current "output gap" (deviation between current output + the full employment output).
- These kinds of rules are called "Taylor Rules".

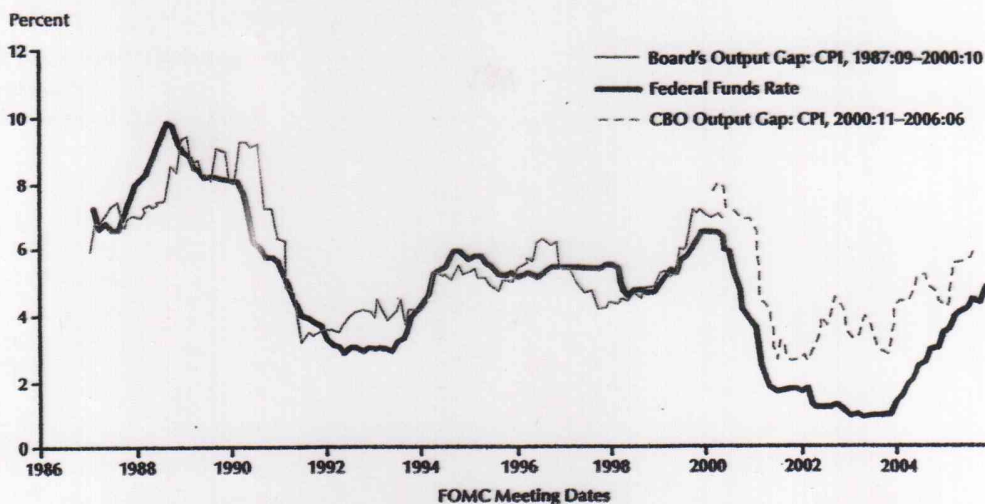
# The Taylor Rule

$$i_t = \pi_t + r^* + 0.5(\pi_t - \pi^*) + 0.5(y_t - \bar{y}_t)$$

the "natural" rate of interest      target inflation      actual output      full employment output

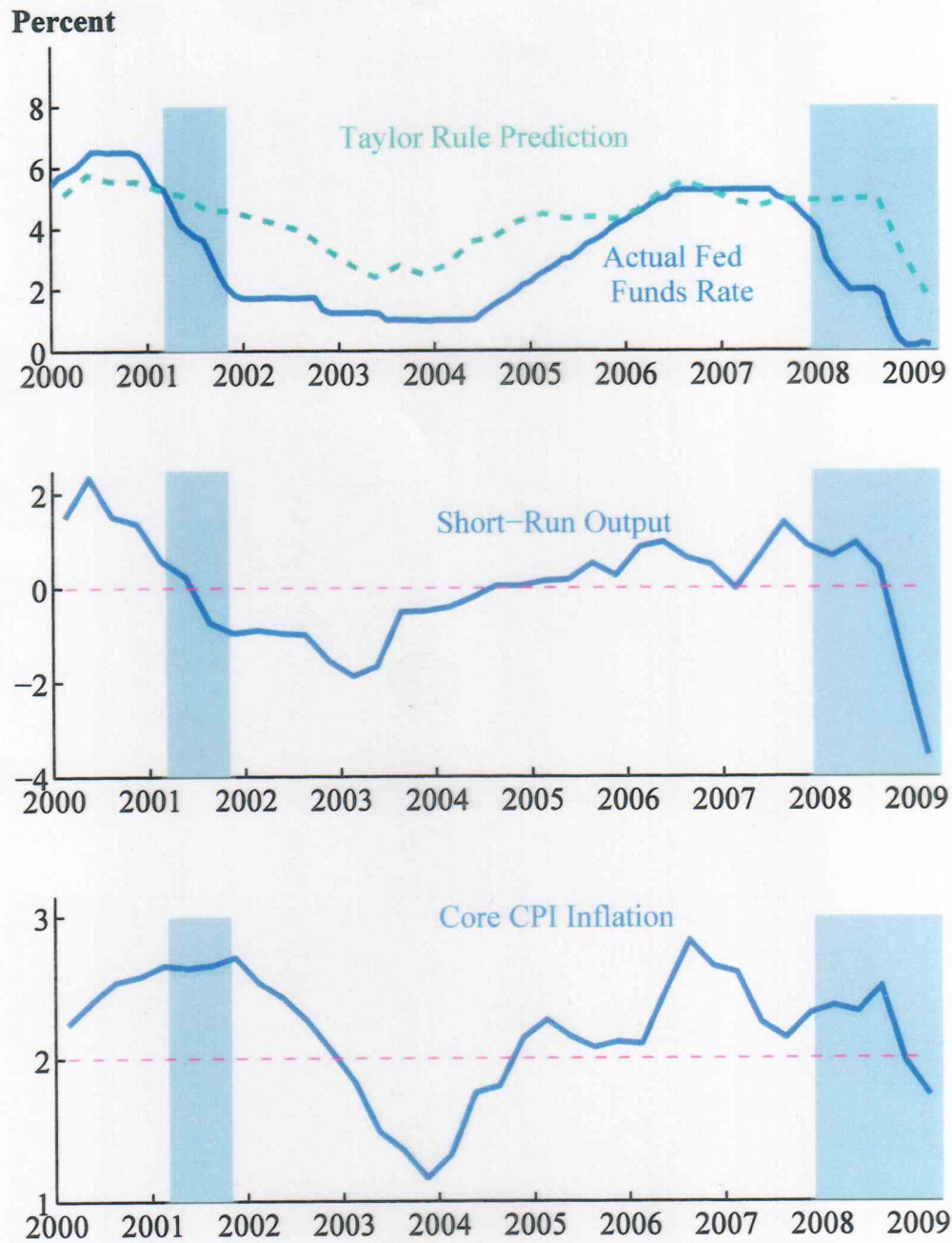
Figure 1

Greenspan Years: Federal Funds Rate and Taylor Rule  
(CPI  $\pi^* = 2.0$ ,  $r^* = 2.0$ )  $a = 1.5$ ,  $b = 0.5$



- In practice, estimating  $\bar{y}_t$  can be challenging. If  $\bar{y}_t$  is mismeasured, it can produce policy errors.

Figure 4: The Fed Funds Rate and the Taylor Rule



Note: The first panel shows the actual fed funds rate and the target suggested by a mainstream Taylor Rule that includes both inflation and short-run output. In particular, the Taylor Rule puts equal weights of 1/2 on inflation and short-run output in determining the real interest rate and is based on a target rate for inflation of 2%; in nominal terms, the rule can be expressed as  $i_t = 1\% + 1.5\pi_t + 0.5Y_t$ . Inflation is measured for the last 12 months using the CPI excluding food and energy, converted to a quarterly frequency. Source: The FRED database.