Essex EC248-2-SP

Lecture 6

Formulating and Implementing Monetary Policy

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Plan of Talk

- **Introduction**

1. The *Market for Reserves* and the Federal Funds Rate
2. *Tools /Instruments/* of Monetary Policy
3. *Goals* of Monetary Policy
4. *Targets* of Monetary Policy
5. Alternative Monetary *Strategies*
6. The *Transmission Mechanism* of Monetary Policy

- **Wrap-up**

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Aims and Learning Outcomes

- **Aims**
  - Understand how central banks implement monetary policy
  - Discuss the transmission mechanism of their actions
- **Learning outcomes**
  - Distinguish the tools, instruments, targets and goals of monetary policy
  - Compare different views on the transmission mechanism
  - Comment on the role and limitations of monetary policy

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The Market for (Bank) Reserves and the (Equilibrium) Fed Funds Rate

Demand Curve for Reserves

1. $R = RR + ER$
2. $i \downarrow \Leftrightarrow$ opportunity cost of $ER \downarrow \Rightarrow ER \uparrow$
3. Demand curve slopes down

Supply Curve for Reserves

1. If i_{ff} is below i_d, then discount borrowing, $R^s = R_n$
2. Supply curve flat (infinitely elastic) at i_d because as i_{ff} starts to go above i_d, banks borrow more at i_d

Market Equilibrium

$R^d = R^s$ at i^*_{ff}

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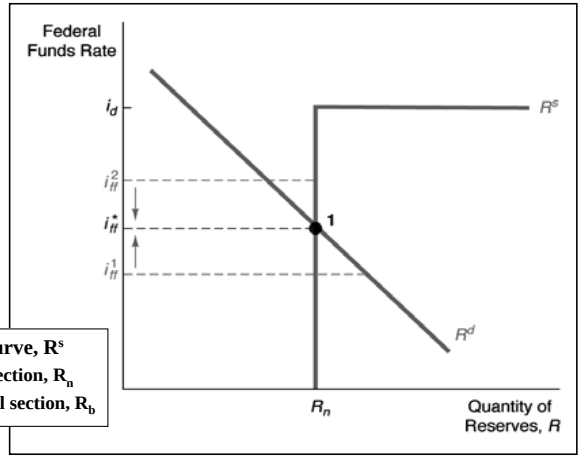
Supply and Demand for (Bank) Reserves



Supply Curve, R^s
Vertical section, R_n
Horizontal section, R_b

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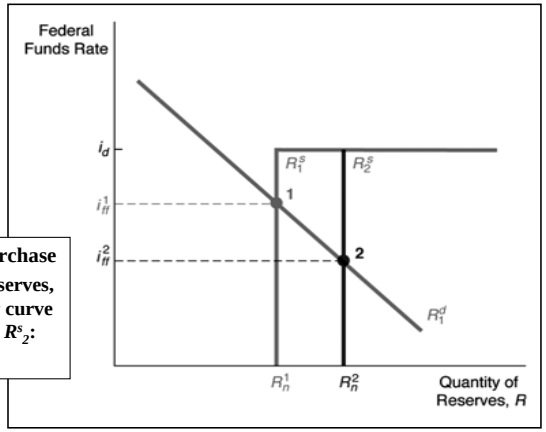
i_{ff} Response to Open Market Operations



Open Market Purchase
Nonborrowed reserves, R_n, ↑ ⇔supply curve shifts right, to R^s_2:
i^1_{ff} ↓ to i^2_{ff}

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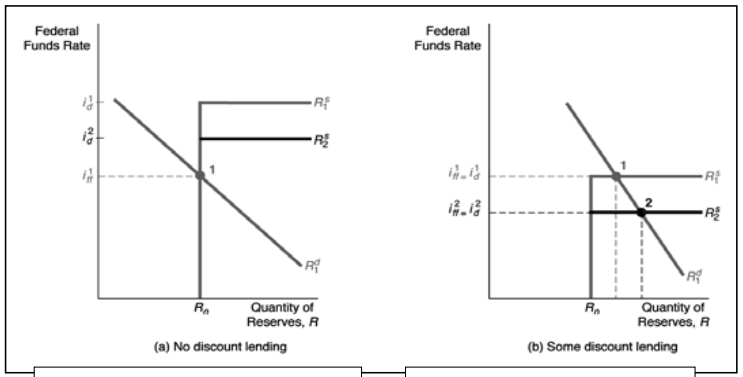
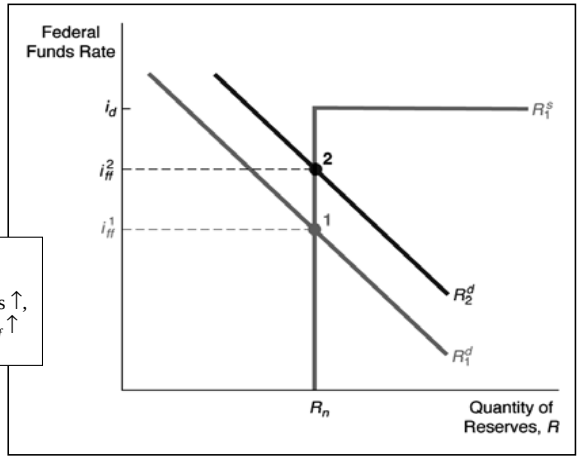
i_{ff} Response to Change in the Discount Rate



(a) *No* discount lending
***Lower* Discount Rate**
Horizontal section ↓ and vertical section just shortens, i_{ff} stays same

(b) *Some* discount lending
***Lower* Discount Rate**
Horizontal section ↓, vertical section shortens, i_{ff} ↓ to $i^2_{ff} = i^2_d$

i_{ff} Response to Change in Required Reserves



Required reserve ratio ↑
Demand for reserves ↑, R^d shifts right and i_{ff} ↑ to i^2_{ff}

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Open Market Operations (OMOs)

2 Types

1. **Dynamic**: meant to *change* MB
2. **Defensive**: meant to *offset* other factors affecting MB

   Fed typically uses repos, which combine features of an OMO and a swap and have only a temporary (1–15 days) effect on MB: **2 types**

   a) repurchase agreements ⇔ repos

   Fed *purchases*, seller agrees to repurchase

   b) matched sale-purchase transaction ⇔ *reverse* repos

   Fed *sells*, buyer agrees to sell back

Advantages

1. Fed initiates OMOs and thus has complete control over their volume
2. Flexible and precise, no matter how small a change in R (=> MB) desired
3. Easily reversed, if i_{ff} considered too low or too high
4. Implemented quickly, no administrative delay involved

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Discount Loans/Policy

3 Types

1. *Primary* Credit: all *healthy* banks can borrow at i_d (usually, 1 pp = 100 bp > i_{ff})
2. *Secondary* Credit: all banks *in financial trouble* can borrow at i_d + 0.5 pp = 50 bp: not much used (costly), intended as a backup source of liquidity
3. *Seasonal* Credit: touristic or agricultural regions (to be discontinued)

Advantage: Lender of Last Resort Function

1. To prevent *banking* panics

   FDIC fund not big enough (roughly, 1% of cover)

   Example: Continental Illinois, 1984, $5+ bln
2. To prevent *nonbank* financial panics

   Examples:

– October 19 (“Black Monday”), 1987 stock market crash: largest one-day decline in stock prices (Dow Jones Industrial Average: more than 20%), Fed announcement
– September 11 (“Terrible Tuesday”), 2001 terrorist destruction of World Trade Center: worst terrorist incident, $45 bln in discount loans and $80 bln in OMOs

Disadvantages

1. Confusion interpreting i_d changes (since February 1994, Fed targets i_{ff}; since January 2003, Fed does not use the discount facility to set i_{ff})
2. Fluctuations in discount loans cause unintended fluctuations in money supply
3. Not fully controlled by Fed (vs OMOs)

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Reserve Requirements

***Changes* in the required reserve ratio** affect the *money multiplier*, hence M^s

Advantage (?)

1. Powerful effect, equal across banks

Disadvantages

1. Small changes have very large effect on M^s
2. Raising causes liquidity problems for banks
3. Frequent changes cause uncertainty for banks
4. Act as tax on banks
   – eliminated in Canada (1992-1994), Switzerland, New Zealand, Australia
   – not much used elsewhere
   – in US, eliminated on *time* deposits in 1990, reduced from 12% to 10% on *checkable* deposits

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(Ultimate) Goals of Monetary Policy

1. ***Price* Stability**: *primary* (if not *unique*) goal for most central banks today, e.g. ECB, SNB
   1. Interest *Rate / (Money) Market* Stability
   2. Foreign Exchange *Rate / Market* Stability
2. *Financial* Market Stability
3. Economic Growth (in US: Fed)
4. High Employment (in US: Fed)

Often in conflict (if many)!!!

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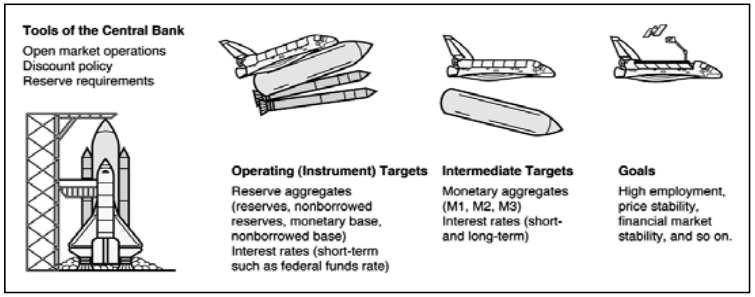
Central Bank *Strategy*



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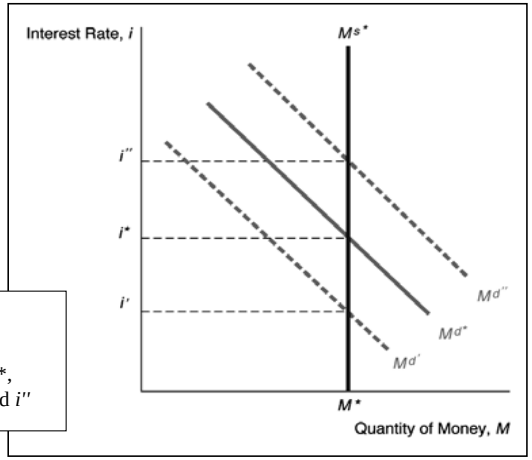
Money Supply Target



1. M^d fluctuates b/n $M^{d'}$ and $M^{d''}$
2. With M-target at M^*, i fluctuates b/n i' and i''

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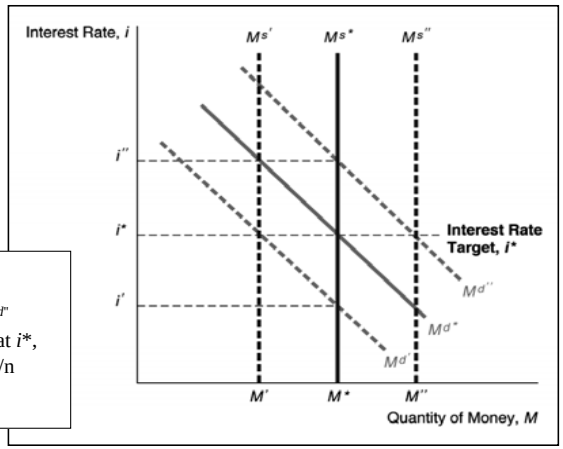
Interest Rate Target



1. M^d fluctuates b/n $M^{d'}$ and $M^{d''}$
2. To set i-target at i^*, M^s fluctuates b/n M' and M''

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Criteria for *Choosing* Targets

Criteria for *Intermediate* Targets

1. Measurability
2. Controllability
3. Ability to predictably affect goals => *transmission mechanism* of monetary policy (considered later)

Interest rates are *not clearly better* than M^s on criteria 1 and 2 because it is hard to measure and control real interest rates

Criteria for *Operating* Targets

Same criteria as above

Reserve aggregates and interest rates are *about equal* on criteria 1 and 2. For 3, if intermediate target is M^s, then reserve aggregate is better

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Role of a Nominal Anchor

Ties Down π Expectations

Helps Avoid Time-Consistency Problem

1. Arises from pursuit of short-term goals which lead to bad long-term outcomes
2. Time-consistency resides more in political process
3. Nominal anchor limits political pressure for time-consistency

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Summary: Advantages and Disadvantages of Different Monetary Policy Strategies

SUMMARY **Table 1 Advantages and Disadvantages of Different Monetary Policy Strategies**

Exchange-Rate Targeting	Monetary Targeting	Inflation Targeting	Implicit Nominal Anchor
Advantages			
Directly ties down inflation of internationally traded goods			
Automatic rule for conduct of monetary policy			
Simplicity and clarity of target		Simplicity and clarity of target	
	Independent monetary policy can focus on domestic considerations	Independent monetary policy can focus on domestic considerations	Independent monetary policy can focus on domestic considerations
	Immediate signal on achievement of target		
		Does not rely on stable money–inflation relationship	Does not rely on stable money–inflation relationship
		Increased accountability of central bank	
		Reduced effects of inflationary shocks	
			Demonstrated success in U.S.

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Summary: Advantages and Disadvantages of Different Monetary Policy Strategies

Exchange-Rate Targeting	Monetary Targeting	Inflation Targeting	Implicit Nominal Anchor
Disadvantages			
Loss of independent monetary policy			
Open to speculative attacks (less for currency board and not a problem for dollarization)			
Loss of exchange-rate signal			
	Relies on stable money–inflation relationship		
		Delayed signal about achievement of target	
		Could impose rigid rule (though not in practice)	
		Larger output fluctuations if sole focus on inflation (though not in practice)	
			Lack of transparency
			Success depends on individuals
			Low accountability

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Monetary Targeting

Canada

1. Targets *M*1 till 1982, then abandons it
2. 1988: declining π targets, *M*2 as guide

United Kingdom

1. Targets *M*3 and later *M*0
2. Problems of *M* as monetary indicator

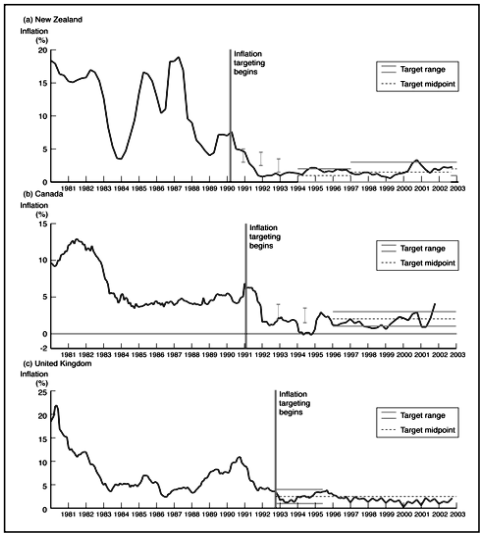
Japan

1. Forecasts *M*2 + *CD*s
2. Innovation and deregulation makes less useful as monetary indicator
3. High money growth 1987-1989: "bubble economy," then tight money policy

Germany and Switzerland

1. Not monetarist rigid rule
2. Targets using *M*0 and *M*3: changes over time
3. Allows growth outside target for 2-3 years, but then reverses overshoots
4. Key elements: flexibility, transparency, and accountability

Inflation Targeting in New Zealand, Canada, and the UK



Monetary Policy with an Implicit Nominal Anchor

Forward-Looking and Preemptive to Deal With Long Lags

Advantages

1. Focus on domestic considerations
2. Has worked very well in the U.S.
3. If It Ain't Broke Why Fix It?

Disadvantages

1. Lack of transparency and accountability
2. Dependence on personalities
3. Inconsistent with democratic principles

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Taylor Rule, NAIRU and the Phillips Curve

Taylor (1993) Rule

(nominal) Fed funds rate *target* = inflation rate +
"equilibrium" *real* fed funds rate +
1/2 (inflation *gap*) +
1/2 (output *gap*)

Phillips Curve Theory

One rationale for having the output gap in the Taylor rule is that it is perceived as an indicator for future inflation: change in inflation is influenced by output relative to potential, and other factors

When unemployment rate < **NAIRU**, with output > potential, inflation rises

NAIRU thought to be 6%, may have recently fallen to below 5%…

… Phillips curve theory highly controversial today => should not be used as a guide for the conduct of monetary policy

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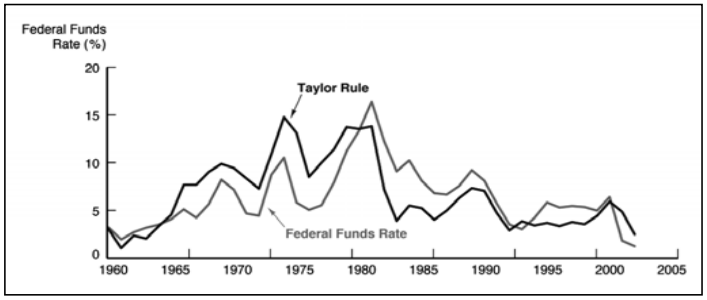
Taylor Rule and Fed Funds Rate



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Transmission Mechanism of Monetary Policy: 2 Types of *Empirical* Evidence

***Structural Model* Evidence: M => i => I => Y (Keynesians)**

Advantages:

1. Understand *causation* because more information on link between *M* and *Y*
2. Knowing how *M* affects *Y* helps *prediction*
3. Can predict *effects of institutional changes* that change link from *M* to *Y*

Disadvantages:

1. Structural model may be *wrong*, negating all advantages

***Reduced Form* Evidence: M => ? => Y (Monetarists)**

Advantages:

1. *No restrictions* on how *M* affects *Y*: better able to find link from *M* to *Y*

Disadvantages:

1. *Reverse causation* possible
2. *Third factor* may produce *correlation* of *M* and *Y*

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Transmission Mechanism(s): *Money* View

Traditional (Keynesian) Interest-Rate Channels

$M \uparrow, i \downarrow, i_r \downarrow, I \uparrow, Y \uparrow$

$M \uparrow, P^e \uparrow, \pi^e \uparrow, i_r \downarrow, I \uparrow, Y \uparrow$ (even if *i* hits a floor of *zero* during a deflationary episode – e.g., Japan in late 1990s)

Other Asset Price Channels (different from interest rates)

International Trade

$M \uparrow, i \downarrow, E \downarrow, NX \uparrow, Y \uparrow$

Tobin's q

$M \uparrow, P_e \uparrow, q \uparrow, I \uparrow, Y \uparrow$

Wealth Effects

$M \uparrow, P_e \uparrow, W \uparrow, C \uparrow, Y \uparrow$

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Transmission Mechanism(s): *Credit* View

Operate through *asymmetric information* effects on *credit* markets:

Bank Lending

$M \uparrow$, deposits $\uparrow$, bank loans $\uparrow$, $I \uparrow$, $Y \uparrow$

Balance-Sheet

$M \uparrow, P_e \uparrow$, adverse selection $\downarrow$, moral hazard $\downarrow$, lending $\uparrow$, $I \uparrow$, $Y \uparrow$

Cash Flow

$M \uparrow, i \downarrow$, cash flow $\uparrow$, adverse selection $\downarrow$, moral hazard $\downarrow$, lending $\uparrow$, $I \uparrow$, $Y \uparrow$

Unanticipated Price Level

$M \uparrow$, unanticipated $P \uparrow$, adverse selection $\downarrow$, moral hazard $\downarrow$, lending $\uparrow$, $I \uparrow$, $Y \uparrow$

Liquidity Effects

$M \uparrow, P_e \uparrow$, value of financial assets $\uparrow$, likelihood of financial distress $\downarrow$, consumer durable and housing expenditure $\uparrow$, $Y \uparrow$

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Lessons for Monetary Policy

1. Dangerous to associate easing or tightening with fall or rise in (ST) nominal (vs real) interest rates
2. Other asset prices besides ST debt have information about the stance of monetary policy
3. Monetary policy effective in reviving economy even if ST interest rates near zero (Japan, 1990s)
4. Avoiding unanticipated fluctuations in price level is important: rationale for price stability objective

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Concluding Wrap-Up

- **What have we learnt?**
  - How the central bank acts in, or reacts to, the economy
  - What is the transmission mechanism of its (re)actions
  - To what extent *monetary* policy has power to affect *real* economic activity
- **Where we go next:** to the other major participants in the money market, *commercial banks*, and to the specificities of their business and management

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