**Instrument of M Policy**

\[ M \rightarrow i \]

\( M \) can control \( P, T \) via \( B \) if

- \( m^{D} \) (or \( V \)) predictable and
- \( K = \frac{M}{B} \) predictable

But neither entirely predictable

- \( V_{M2} = Y/M2 \) more predictable than \( V_{M1} \), even \( V_{M1-5} \)

- but \( K_{M2} = M2/B \) less predictable than \( K_{M1-5} \)

This has led Fed to rely on \( i \), instrument since 1983.

Targets short-term Fed Funds rate using Loans to Dealers.
1. No π - feedback
   \( i \) held constant \((m+819)\)

2. 100% π - feedback
   \( r \) held constant \((m+819)\)

3. Strong π - feedback
   > 100% feedback \((m+821)\)

4. Taylor Rule \((m+821)\)
   Incorporates strong π - feedback
   + tries to stabilize \( y \)
1. No \( \Pi \)-feedback

\[
i = i^* = \text{constant}
\]

\( \Pi_0^e = \text{initial } \Pi^e \)

* If \( i^* < \rho_0 + \Pi_0^e \)

\[
v = i^* - \Pi_0^e < \rho_0
\]

\[\Rightarrow m^x(v) > 0\]

\[\Rightarrow \Pi > \Pi_0^e, \Pi^e \uparrow\]

\[\Rightarrow v \downarrow, m^x(v) \uparrow, \Pi \uparrow\]

* If \( i^* > \rho_0 + \Pi_0^e \)

\[V_{ie - vousa}, \Pi \downarrow\]

\[\Rightarrow \Pi \text{ destabilized.}\]

\[
\cdot \rho_0 \text{ changes continually with } S_{\text{sum}}(v), D_{\text{sum}}(v),
\]

\( \Pi_0^e \) uncertain.

So \( i^* = \rho_0 + \Pi_0^e \) won't last.
2. 100% feedback (r target)

\[ i = r^* + \pi \]
\[ r^* = r \text{ target} \]
\[ \pi = \text{last 12 mo} \quad \pi \leq \pi^e \]

- If \( r^* < r_0 \),
  \[ m^x(r^*) > 0 \text{ permanently}, \]
  \[ \Rightarrow \pi > \pi^e \text{ permanently}, \]
  \[ \Rightarrow \pi^e, \pi \text{ creep up perpetually} \]

- If \( r^* > r_0 \),
  \[ \pi^e, \pi \text{ creep down perpetually} \]

Not as bad as 1, but still destabilizes \( \pi \), even if \( r^* \) is Fed's best guess of \( r_0 \).
3. Strong $\pi$-feedback

$$i = r^* + \pi^1 + a(\pi - \pi^*)$$  \hspace{1cm} (2)

$$a > 0$$

$\pi^*$ is $\pi$-target.

$r^*$ is Fed's guess of $r_0$

Impies

$$i = (r^* - a \pi^*) + (1 + a) \pi$$  \hspace{1cm} (3)

$$1 + a > 100\% \text{ since } a > 0.$$  

$$\pi^1 \Rightarrow i - \pi = i - \pi^e = r^1,$$

$m_x(v) < 0 \text{ eventually},$

$$\pi^1 \not\downarrow.$$

If $r^* \neq r_0,$

$$\pi \rightarrow \pi^* + \frac{r_0 - r^*}{a} \text{ when } r_0 = i - \pi.$$  \hspace{1cm} (4)

Fed misses $\pi$ target, but $\pi$ stable,

High $a \Rightarrow \pi \text{ close to } \pi^*,$

but $i$ more sensitive to $\pi.$
The "Taylor Rule" - John Taylor / Stanford

1987-92, Fed followed rule for Fed Funds Rate

\[ i^* = 1.0 + 1.5 \bar{\pi} + 0.5 \text{ygap} \]

Incorporate Strong \( \pi^- \) Feedback,
with \( a = 0.5 \), \( r^* - a \pi^* = 1.0 \)

\[ \Rightarrow i^* = 1.5 \bar{\pi} + 0.5 \text{ygap} \]

Consistent with several combos of \( \pi^* \), \( r^* \)

<table>
<thead>
<tr>
<th>( \pi^* )</th>
<th>( r^* )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>4%</td>
<td>3%</td>
</tr>
</tbody>
</table>

\[ \Rightarrow r^* - a \pi^* = 1.0 \text{ with } a = 0.5 \]

(And same combos of \( \bar{\pi}, r_0 \).)
\( y_{gap} \) term in Taylor Rule

\[ = \% \text{ excess of } y \text{ over trendline} \]

avg value = 0.

Try to exploit SR Phillips Curve to stabilize y about trend without accelerating \( \Pi \).

Must be restrictive when \( y \) high, \( U \) low
(as in 2005-2007) to make up for easy money when \( y \) low, \( U \) high (as 2009-11)
Taylor Rule Examples

FF Target \( i^* = 1.0 + 1.5 \pi + 1.5 ygyp \)

a. If \( \pi = 2\% \), \( ygyp = 0 \),

\[ i^* = 1.0 + 1.5(2) + 1.5(0) \]
\[ = 4.0\% \]

b. If \( \pi \uparrow \) to \( 4\% \),

\[ i^* \rightarrow 1.0 + 1.5(4) + 1.5(0) \]
\[ = 7.0\% \quad (\Delta i = 1.5 \; \pi = 3\%) \]

c. If \( \pi = 2\% \), \( ygyp = -2\% \),

\[ i^* \rightarrow 1.0 + 1.5(2) + 1.5(-2) \]
\[ = 3.0\% \quad (\Delta i = 0.5(-2\%)) \]
\[ = -1\% \quad \text{from case a) } \]

d. If \( \pi = 2\% \), \( ygyp = +2\% \),

\[ i^* \rightarrow 1.0 + 1.5(2) + 1.5(+2) \]
\[ = 5.0\% \quad (\Delta i = 0.5(+2\%)) \]
\[ = +1\% \quad \text{from case a) } \]
Cladio, Cali + Gebrler (2000)

- Martin, Bume, Miller (1951-79)
  
  used weak IT feedback

  (~ 60%)

  ⇒ IT accelerated

- Volcker, Greenspan (79- their study)
  
  used strong IT feedback

  (~ 200%)

  ⇒ IT brought back under control
The Deflation Concern

- What if $\pi, \pi^e < -v_0$?

  - *iff* can't go below 0
    
    since $M$ pays 0.

  $\Rightarrow v > v_0$ even at *iff* = 0

  $\Rightarrow$ Pushes $\pi^e$ even lower.

  $\Rightarrow$ Deflationary Spiral & Death?

  - Japan's problem in 1990's?
Should Fed target $\pi^* > 0$

(e.g. 2%)

to give it room
to lower if $\pi < \pi^*$

and/or yield < 0?

Bernanke say yes

Cons —

• Indexed debt can eliminate
debtor \rightarrow creditor redistribution.

• M activists stabilize $\pi$,

\textit{not} 0 or y

• Fed can target longer maturities

\textit{if} interest 0: 3m, 6m, 1y, etc.

• Japan's problem is "Zombie Firms"
\textit{(unresolved insolvencies)}

\textit{not} $\pi^* < 0$. 
Maturity Issues and Taylor Rule

FOMC Funds Rate iff is overnight rate

- 1-day maturity
- Has negligible effect on borrowing, savings by itself.

It's only a trivial portion of longer term rates (5-yr auto loan, 30-yr mortgage)

But - FOMC only meets every 6 weeks, holds

iff const between meetings (usually)

iff target more like 6-week rate

iff still has only weak effect on spending.

If iff target falls to 0

FOMC can still stimulate spending by reducing

longer rates

e.g. 3 mo, 6 mo, 1 yr Treasury Rates

with OMO if necessary.
Stabilization Policy

FR Act Section 2a: M Policy Objectives:

The Board of the FR System and the FOMC shall maintain long-run growth of the M and credit aggregates commensurate with the economy's long-run potential to increase production so as to promote effectively the goals of

- maximum employment
- stable prices, and
- moderate long-term interest rates.

Fed can stabilize prices using \( M \) or \( i \)

(if it knows \( m^0 \) or \( r_0 \))

But can it achieve other 2 goals w/o destabilizing prices?
Moderate long-term interest rate goal achievable?

Fed can't permanently reduce r
  w/o accelerating T
- M+B 19, 21

Fed can destabilize r, i
  with start/stop T policy.
- M+B 19

Fed can permanently reduce, stabilize i
  with low, steady T policy.
  \[ \Rightarrow \text{low, steady } T^e, i = v_0 + T^e. \]
But "Maximum Employment" goal problematic

Natural Rate Hypothesis (M. Friedman 1968)

Fed can't permanently hold U below UN w/o accelerating it.

Now generally accepted even by "New Keynesians"

At best, Fed might be able to stabilize employment U, with easy M when U high + y low, tight M when U low + y high.

= Rationale for y-gap term in Taylor Rule.
Friedman/Schwartz critique of Stabilization Policy. (M+B22)

May be destabilizing to y+U in practice, because M (or i) affects y (or U) only with long and variable lag.

Lags

- Inside Lag
  (Inside Policy Process)
  - Recognition Lag
  - Decision Lag
  - Implementation Lag

- Outside Lag
  (Outside Policy Process)
**Recognition Lag**

**GDP**

- Quarterly \( \Rightarrow 1.5 \) mo out of date by end of Q.

- "Advance" estimate out of 1st mo of next Q. \( \Rightarrow 2.5 \) mo lag

- "Preliminary" est out end of 2nd mo. \( \Rightarrow 3.5 \) mo lag

- "Final" est (subject to annual revision) out end of 3rd mo. \( \Rightarrow 4.5 \) mo lag

"Y gap" based on 5-yr centered trend line in original Taylor paper. \( \Rightarrow \) additional 2.5 yr lag
**Decision Lag**

FOMC only meets 8 times/yr.

May wait & see if new situation persists.

**Implementation Lag**

Fed prefers numerous small $\Delta i$ ($\pm 25bp$) to one large $\Delta i$.

* Can add 6-12 mo to Inside Lag.*
Outside Lag

$\Delta B \rightarrow \Delta M$

or

$\text{Diff} \rightarrow \Delta i \rightarrow \log$

$\rightarrow$ Spending $\rightarrow$ P, Y

Outside lag alone could be 1-2 yrs.

Inside + Outside lag may be years.

Situation may have completely changed by then.
Desired effect of "yygap" term in Taylor Eq in:

- Neutral M Policy
- Activist M Policy

Economic Activity

Tight M

Easy M

Time
Desired effect of "ygap" term in Taylor Eq 'n:

- Neutral M Policy
- Activist M Policy

Economic Activity

[Graph showing economic activity over time with labels for "Easy M", "Tight M", and "Activist M Policy" events.]

Destabilizing actual effect with lags.
Castor Oil / Bismuth cycle

Castor Oil - Laxative
Bismuth - Anti-Diarrheal

Digestive Activity

Castor Oil

Friedman - y gap feedback can have similar results
Best to just stabilize P, IT with M policy,
Let y, U take care of solvers,
Try to minimize |IT - IT^*|
Castor Oil / Bismuth cycle

Castor Oil - Laxative
Bismuth - Anti-Diarrheal

Digestive Activity

Castor Oil

Bismuth

Friedman -

\[ \gamma \text{ gap feedback can have similar results} \]

Best to just stabilize \( P, T \) with \( M \) policy,

Let \( y, u \) take care of solvers,

Try to minimize \( |\pi - \pi^*| \).
So why is U still so high?

9.0% 4/11, up from 8.8% 3/11

Does this warrant easy M? (i_F = 0)

Series Id: LNSI4000012
Seasonally Adjusted
Series title: (Seasonally Unemployment Rate - 16-19 yrs.
Labor force status: Unemployment Rate
Type of data: percent or rate
Age: 16 to 19 years

Particularly among the inexperienced?
(27.1% for 16-19 yrs olds, 10/10)

http://data.bls.gov/PDQ/servlet/SurveyOutputServlet

11/15/2010

Series Id:  LNS14627659
Seasonally Adjusted:  (Seas)
Series title:  Unemployment Rate - Less than a High School Diploma, 25 yrs. & over
Labor force status:  Unemployment rate
Type of data:  Percent or rate
Age:  25 years and over
Educational attainment:  Less than a high school diploma

And the low-skilled:

(15.3% for less than HS diploma,
25 yrs+, 10/10)
And why is median duration of unemployment so much higher than previous recessions?
(
21.2 wks 10/10, peaked at 25.5 7/6/10)

Source: U.S. Department of Labor, Bureau of Labor Statistics

http://research.stlouisfed.org/fred2/graph/?id=UEMPMED&printgraph&lo... 11/15/2010
2 obvious reasons:

1. 40.8% increase in Minimum Wage
   6/07 - 6/09
   $5.15 → $7.25
   • $5.15 was not indexing in 2007,
   • $7.25 would not be without recession.
   • But adverse shock of subprime crisis
     apparently makes $7.25 indexing for
     lowest experience, lowest skills.
   • Food can't inflate away MW if
     Congress keeps raising it.

   Real MW was higher in 1970's, but
   coverage now higher?

2. **Unemployment Benefits extended to**
   99 wks in this recession.
   26 wks permanent level
   - Extended in recession, but rarely
   > 53 wks.

- Pays about 50% of lost wage,
  up to about $350/wk
  (more w/dependents)

  - Most attractive to inexperienced
    + low skill

  - More attractive in recession
    when new job may pay less than old
    than it boom
    when new job may pay more than old.

  > automatic destabilizer

  - coverage higher than in past, also.
- Larry Summers, *Understanding Unemployment*, 1992:

  - U benefits increase level, duration of U.
  - Feel shouldn't try to use M policy to undo effects of U benefit policy.

- 99 wks extension renewed to 1/2012 but note:

  \[ U \text{ likely to stay high into 2012, regardless of } M \text{ policy.} \]