

## Instruments of M Policy M+B 21

### M vs i

M can control  $P, \pi$  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.

## i - Rules

- 1. No  $\pi$  - feedback  
i held const (M+B19)
- 2. 100%  $\pi$  - feedback  
r held constant (M+B19)
- 3. Strong  $\pi$  - feedback  
> 100% feedback (M+B21)
- 4. Taylor Rule (M+B21)  
Incorporates strong  $\pi$  - feedback  
+ tries to stabilize  $y$

1. No  $\pi$ -feedback

$i = i^* = \text{constant}$

$\pi_0^e = \text{initial } \pi^e$

• If  $i^* < r_0 + \pi_0^e$ ,

$r = i^* - \pi_0^e < r_0$

$\Rightarrow m^x(r) > 0$

$\Rightarrow \pi > \pi^e, \pi^e \uparrow$

$\Rightarrow r \downarrow, m^x(r) \uparrow, \pi \uparrow \uparrow$

• If  $i^* > r_0 + \pi_0^e$

Vice-versa,  $\pi \downarrow \downarrow$ .

$\Rightarrow \pi$  destabilized.

•  $r_0$  changes continually w/  $S_{\text{sum}}(r), D_{\text{sum}}(r)$

$\pi_0^e$  uncertain,

so  $i^* = r_0 + \pi_0^e$  won't last.

## 2. 100% feedback ( $r$ target)

$$\underline{i = r^* + \bar{\pi}}$$

$$\underline{r^* = r \text{ target}}$$

$$\underline{\bar{\pi} = \text{last 12 mo } \pi \approx \pi^e}$$

• If  $r^* < r_0$ ,

$m^x(r^*) > 0$  permanently,

$\Rightarrow \pi > \pi^e$  permanently,

$\Rightarrow \pi^e, \pi$  creep up perpetually

• If  $r^* > r_0$ ,

$\pi^e, \pi$  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

(ch 21)

$$i = r^* + \bar{\pi} + a(\bar{\pi} - \pi^*) \quad (2)$$

$$\underline{a > 0}$$

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

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

Implies

$$\bullet \underline{i = (r^* - a\pi^*) + (1+a)\bar{\pi}} \quad (3)$$

$1+a > 100\%$  since  $a > 0$ .

$$\bullet \underline{\bar{\pi} \uparrow} \Rightarrow \underline{i - \bar{\pi} \approx i - \pi^e = r \uparrow},$$

$m_x(r) < 0$  eventually,  
 $\bar{\pi} \downarrow$ .

If  $r^* \neq r_0$ ,

$$\underline{\bar{\pi} \rightarrow \pi^* + \frac{r_0 - r^*}{a}} \quad \text{when } r_0 = i - \bar{\pi} \quad (4)$$

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

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

but  $i$  more sensitive to  $\pi$ .

#### 4. The "Taylor Rule" - John Taylor / Stanford

1987-92, Fed followed rule for Fed Funds Rate

$$\underline{i^* = 1.0 + 1.5 \bar{\pi} + 0.5 \Delta y_{gap}}$$

Incorporates Strong  $\pi$ -Feedback,  
with " $a$ " = 0.5,  $r^* - a\pi^* = 1.0$

$$\underline{\Delta i^* = 1.5 \Delta \bar{\pi} + 0.5 \Delta y_{gap}}$$

Consistent with several combos of  $\pi^*$ ,  $r^*$

$\pi^*$	$r^*$
0%	1%
2%	2%
4%	3%

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

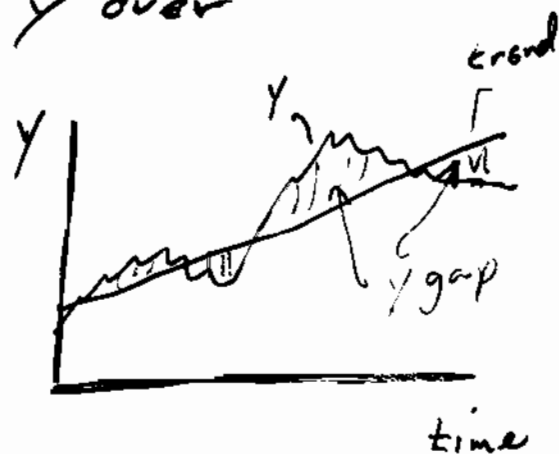
(And same combos of  $\bar{\pi}$ ,  $r_0$ .)

"y gap" term in Taylor Rule

= % excess of  $y$  over

trendline

avg value  $\equiv 0$ .



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

$$\text{FF Target } i^* = 1.0 + 1.5\bar{\pi} + 1.5 \text{ ygap}$$

a. If  $\bar{\pi} = 2\%$ ,  $\text{ygap} = 0$ ,

$$\begin{aligned} i^* &= 1.0 + 1.5(2) + 1.5(0) \\ &= 4.0\% \end{aligned}$$

b. If  $\bar{\pi} \uparrow$  to  $4\%$ ,

$$\begin{aligned} i^* &\rightarrow 1.0 + 1.5(4) + 1.5(0) \\ &= 7.0\% \quad (\Delta i = 1.5 \Delta \bar{\pi} = +3\%) \end{aligned}$$

c. If  $\bar{\pi} = 2\%$ ,  $\text{ygap} = -2\%$ ,

$$\begin{aligned} i^* &\rightarrow 1.0 + 1.5(2) + 1.5(-2) \\ &= 3.0\% \quad (\Delta i = 0.5(-2\%) \\ &= -1\% \text{ from case a}) \end{aligned}$$

d. If  $\bar{\pi} = 2\%$ ,  $\text{ygap} = +2\%$ ,

$$\begin{aligned} i^* &\rightarrow 1.0 + 1.5(2) + 1.5(+2) \\ &= 5.0\% \quad (\Delta i = 0.5(+2\%) \\ &= +1\% \text{ from case a}) \end{aligned}$$



Clarida, Gali + Gertler (2000)

- Martin, Burns, Miller (1951-79)

used weak  $\pi$  feedback

(~60%)

→  $\pi$  accelerated

- Volcker, Greenspan (79 - their study)

used strong  $\pi$ -feedback

(~200%)

→  $\pi$  brought back under control

## The Deflation Concern

- What if  $\pi, \pi^e < -r_0$ ?

- iff can't go below 0

Since M pays 0.

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

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

$\Rightarrow$  Deflationary Spiral of Death?

- Japan's problem in 1990's?

Should Fed target  $\pi^* > 0$

(eg 2%) to give it room  
to lower iFF if  $\bar{\pi} < \pi^*$   
and/or  $y_{gap} < 0$ ?

Bernanke say YES

Cons —

- Indexed debt can eliminate  
debt → creditor redist.
- M policy should stabilize  $\pi$ ,  
not  $U$  or  $y$
- Fed can target longer maturities  
if iFF hits 0. - 3mo, 6mo, 1yr, etc
- Japan's problem was "Zombie Firms"  
(unresolved insolvencies),  
not  $\pi < 0$ .

## Maturity Issues and Taylor Rule

Fed Funds Rate iff is overnight rate  
1-day maturity

Has negligible effect on borrowing,  
savings by itself.

Is only a trivial portion of longer term  
rates. (5-yr auto loans, 30-yr Mortgages)

But - FOMC only meets every 6 weeks, holds  
iff const between meetings (usually)

⇒ iff target move like 6-week rate

Still has only weak effect on spending.

If iff target falls to 0

Fed can still stimulate spending by reducing  
longer rates

eg 3 mo, 6 mo, 1yr Treasury Rates

with OMO if necessary.

## Stabilization Policy

M+B (22)

### FR Act Section 2a: M Policy Objectives:

The BOG of the FRS 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 int rate" goal achievable?

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

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

Fed can permanently reduce, stabilize  $i$   
with low, steady  $\pi$  policy.  
 $\Rightarrow$  low, steady  $\pi^e, i = r_0 + \pi^e.$

- But "Maximum Employment" goal problematic

Natural Rate Hypothesis (M. Friedman 1968)

Fed cant permanently hold  $U$  below  $U_N$

w/o accelerating  $\pi$ .

Now generally accepted

even by "New Keynesians"

At best, Fed might be able to stabilize

employment  $y$ , 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<sub>t</sub>
- "Advance" estimate out end of 1st mo of next Q<sub>t</sub>  
 $\Rightarrow$  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.

### "1960"

- 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  $\Delta i$  ( $\pm 25$  bp)  
to one large  $\Delta i$ .

• Can add 6-12 mo to Inside Lag.

## Outside Lag

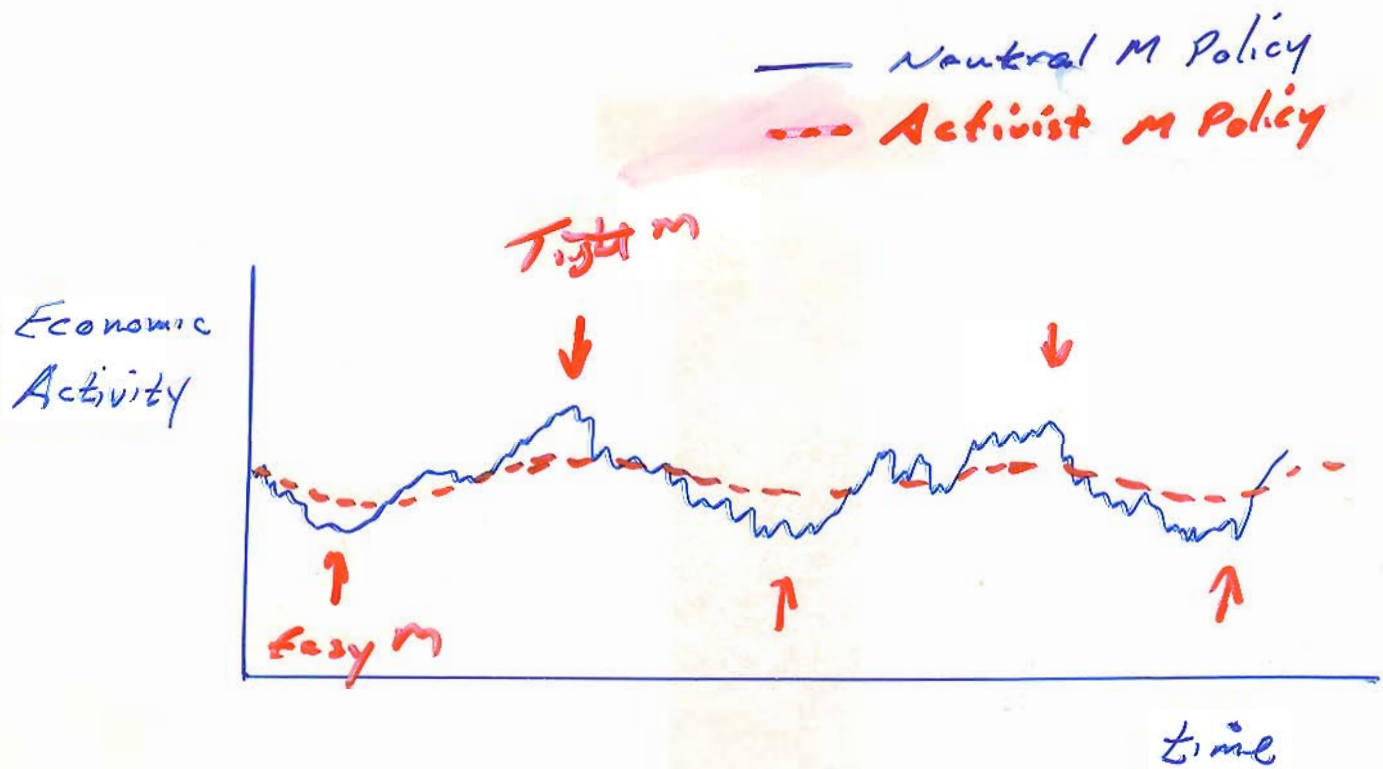
$$\left. \begin{array}{l} \Delta B \rightarrow \Delta M \\ \text{or} \\ \Delta i_{FF} \rightarrow \Delta i_{Loy} \end{array} \right\} \rightarrow \text{Spending} \rightarrow P, Y$$

Outside lag alone could be 1-2 yrs.

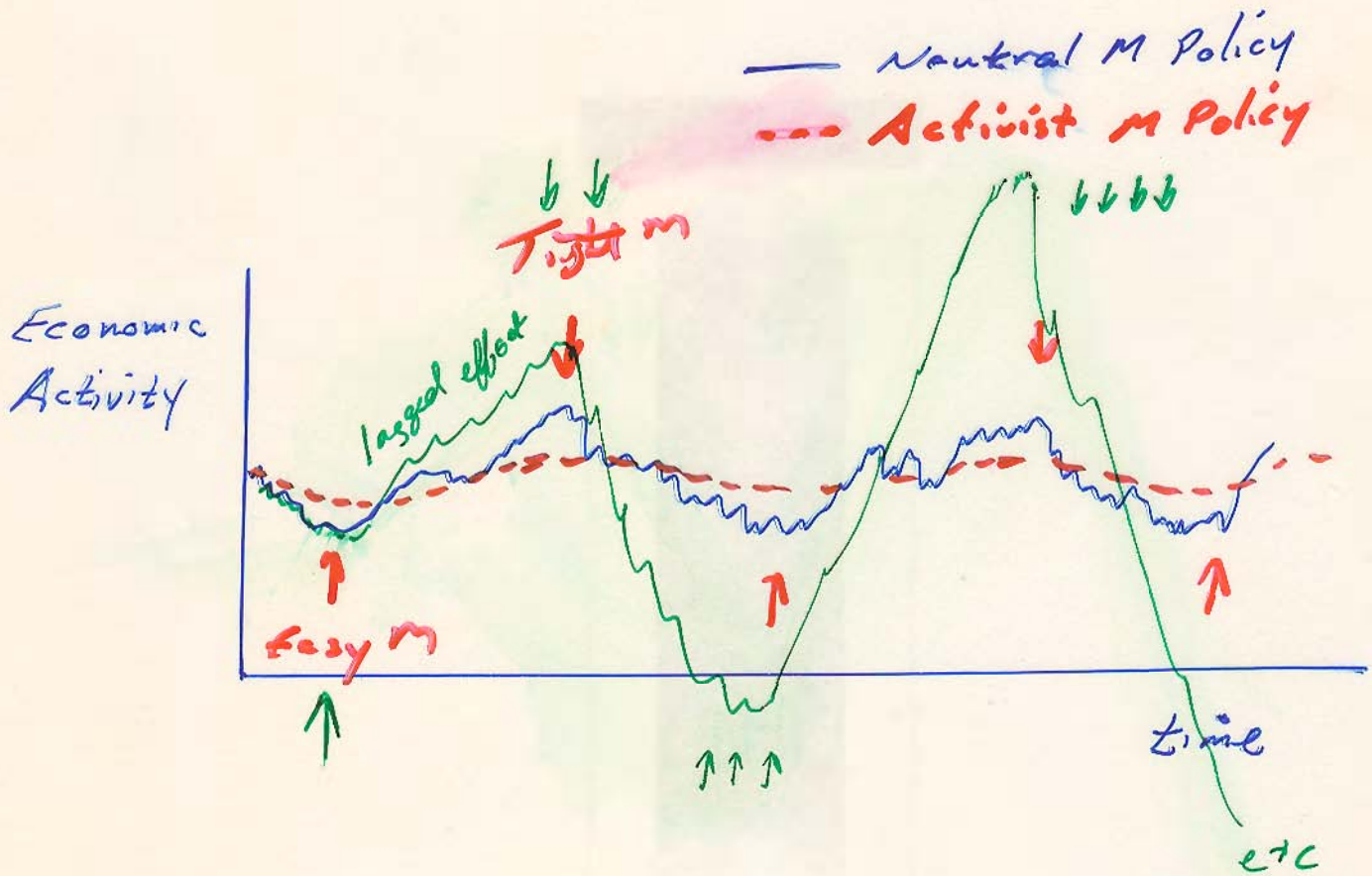
Inside + Outside lag may be years.

Situation may have completely changed  
by then.

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



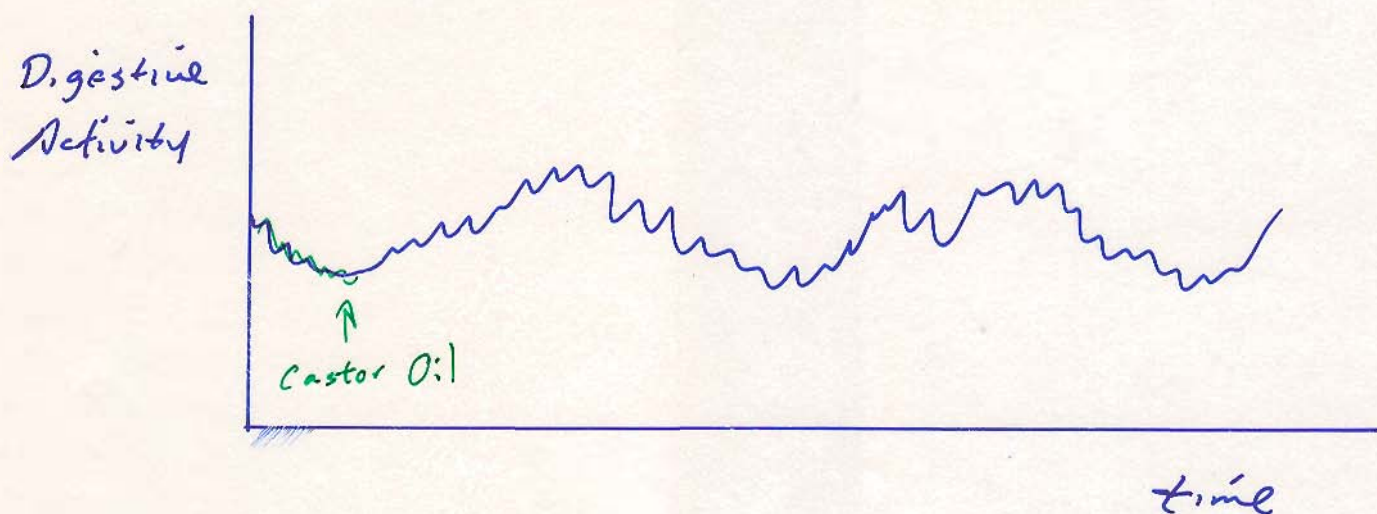
Desired effect of "ygap" term in Taylor Eq'n:



Destabilizing actual effect with Lags. —

## Castor Oil / Bismuth cycle

Castor Oil - Laxative  
Bismuth - Anti-Diarrheal



Friedman -

$y$  gap feedback can have similar results

Best to just stabilize  $P, \pi$  with  $M$  policy,

Let  $y, U$  take care of solvos,

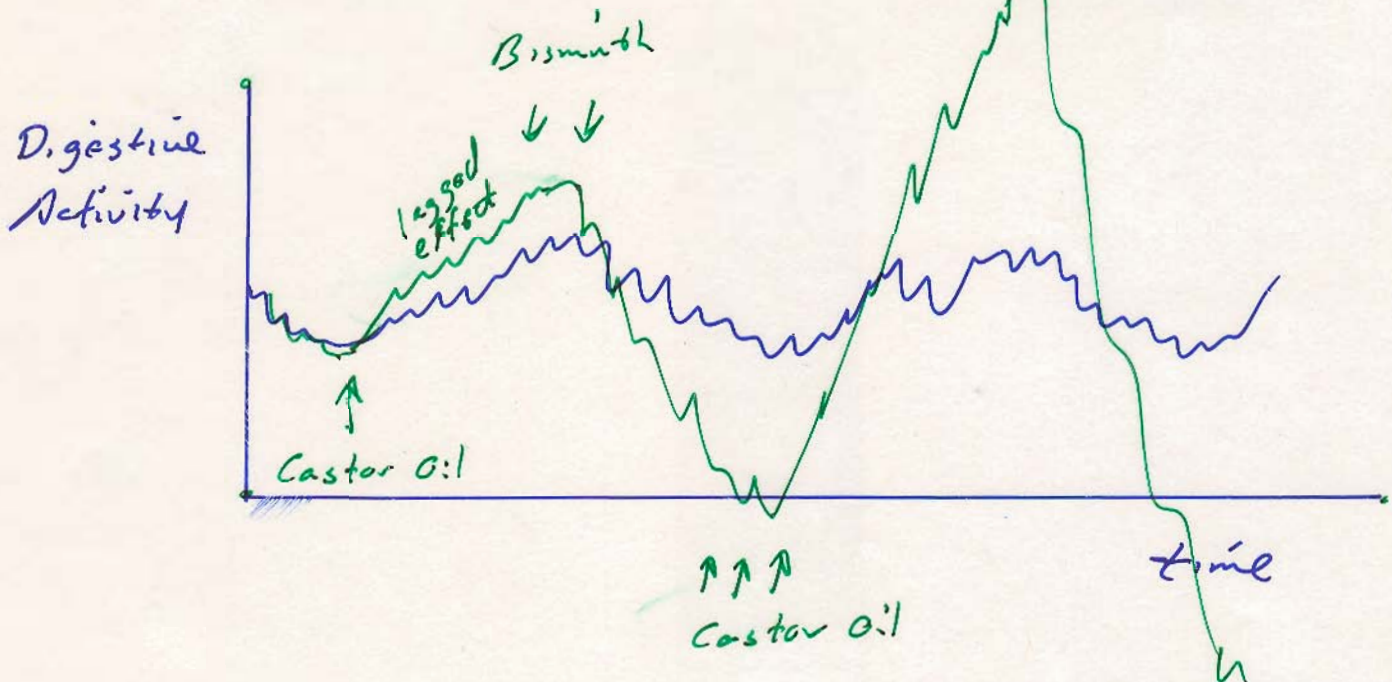
Try to minimize  $|\pi - \pi^a|$ .

## Castor Oil / Bismuth cycle

↓↓↓↓ Bismuth

Castor Oil - Laxative

Bismuth - Anti-Diarrhea



Friedman -

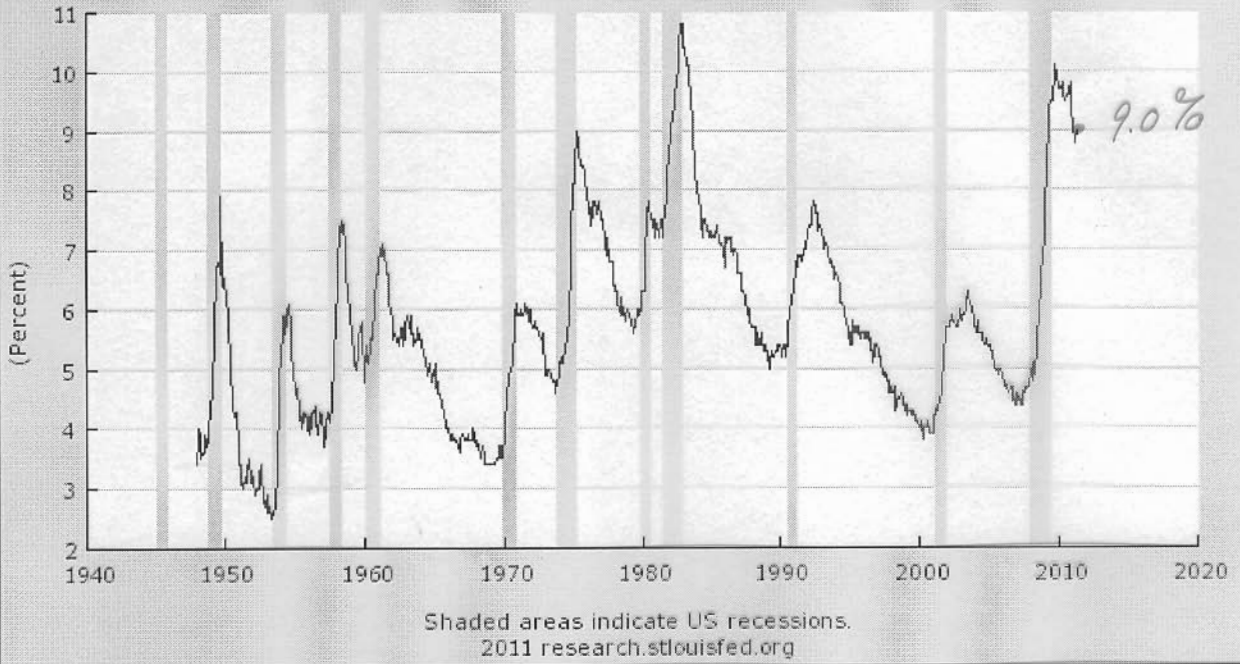
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Let  $y, U$  take care of solvos,

Try to minimize  $|\pi - \pi^a|$ .

Civilian Unemployment Rate (UNRATE)  
 Source: U.S. Department of Labor: Bureau of Labor Statistics



• So why is U still so high?

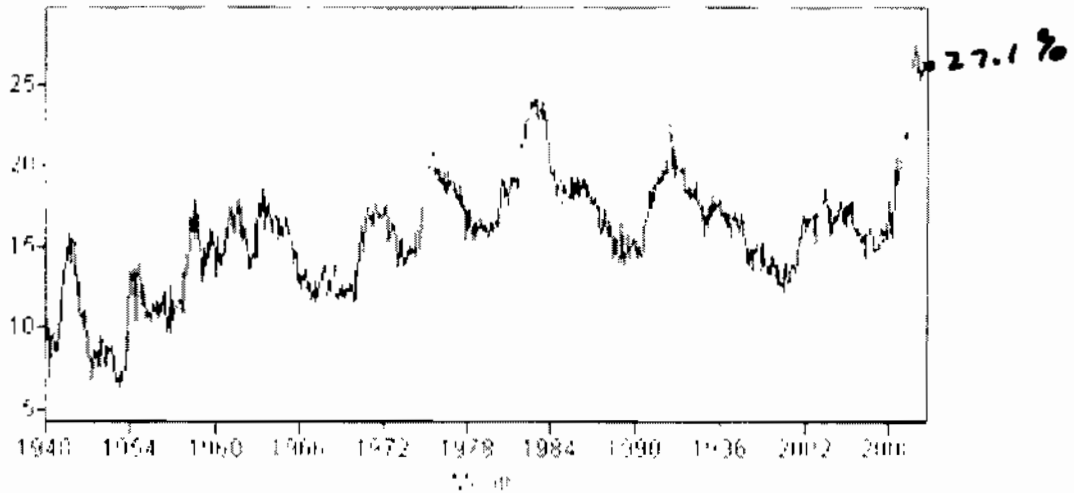
9.0% 4/11, up from 8.8% 3/11

• Does this warrant easy M? ( $i_{FF} \approx 0$ )



**Labor Force Statistics from the Current Population Survey**

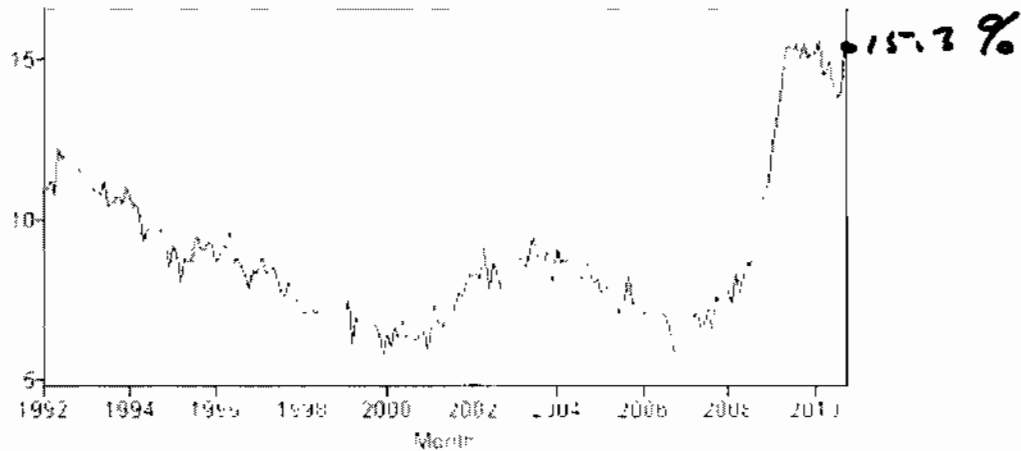
Series Id: LNS14000012  
Seasonally Adjusted  
Series title: (Seasonal) Unemployment Rate - 16-19 yrs.  
Labor force status: Unemployment rate  
Type of data: Percent or rate  
Age: 16 to 19 years



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

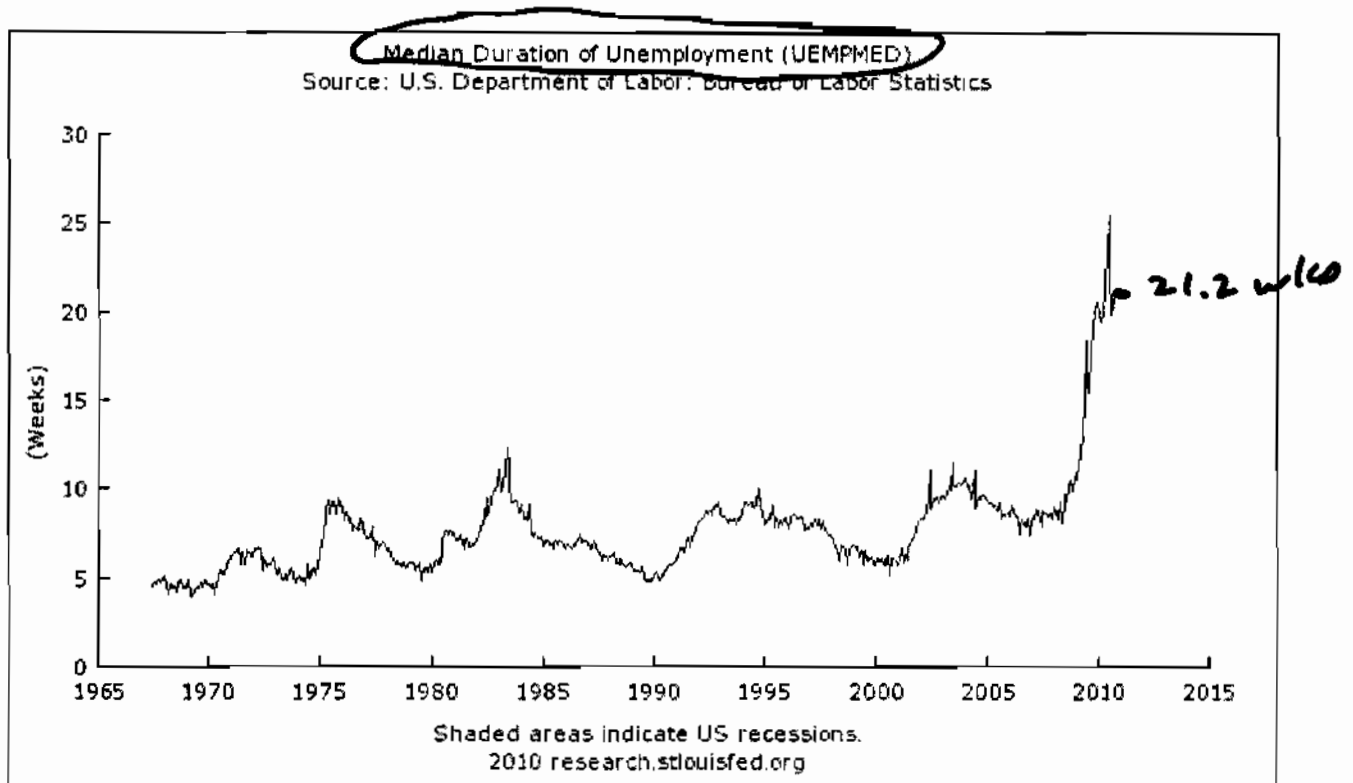
### Labor Force Statistics from the Current Population Survey

**Series Id:** LNS14027659  
**Seasonally Adjusted**  
**Series title:** (Seas) 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



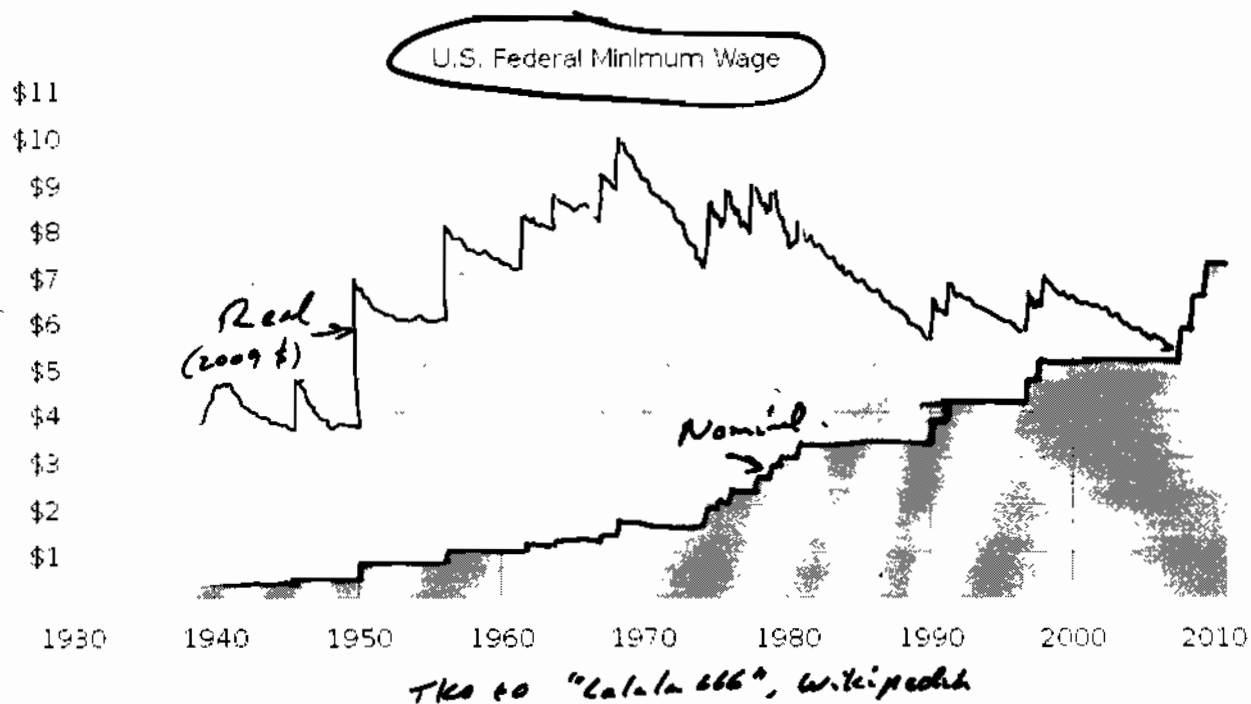
And the low-skilled?

(15.3% for less than HS diploma,  
25 yrs + , 10/10)



And why is median duration of U so much higher than previous recessions?

(21.2 wks 10/10, peaked at 25.5 7/10)



2 obvious reasons:

1. 40.8% increase in Minimum Wage,  
6/07 - 6/09  
\$5.15 → \$7.25
  - o \$5.15 was not binding in 2007,
  - o \$7.25 would not be without recession.
- o But adverse shock of subprime crisis  
apparently makes \$7.25 binding for  
lowest experience, lowest skills.
- o Fed can't inflate away MW if  
Congress keeps raising it.
- o 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 recessions, but vary by  
> 53 wks.

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

⇒ Most attractive to inexperienced  
+ low skill

⇒ More attractive in recessions  
when new job may pay less than old  
than in boom

when new job may pay more than old.

⇒ automatic stabilizer

- coverage higher than in past, also.

• Larry Summers, Understanding Unemployment,  
1992:

• U benefits increase level, duration  
of U.

• Fed shouldn't try to use M  
policy to undo effects of  
U benefit policy.

• 99 wk extension renewed to 1/2012 last Nov.

→ U likely to stay high into 2012,  
regardless of M policy.