

Inflation, Deflation, and Debt

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Fiscal theory



$$\# \text{ Shares} \times \text{Price} = \text{Expected discounted dividends}$$



$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Expected discounted surpluses}$$

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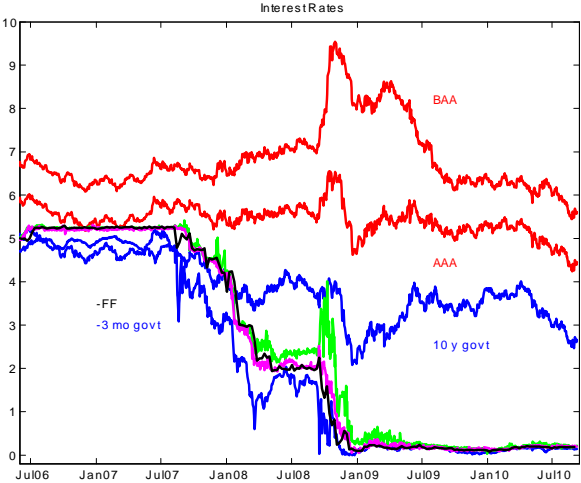
$$(\text{Money} + \text{Deposits}) \times \text{Velocity} = \text{Price} \times \text{Income}$$

Classic doctrines

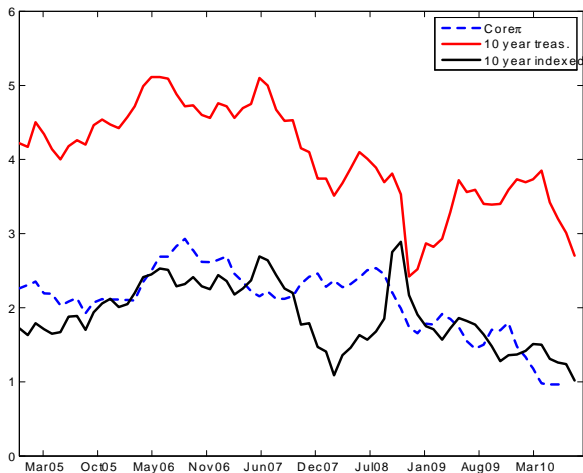
$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Expected discounted surpluses}$$

- ▶ Money vs. Debt?
- ▶ Inside vs. outside?
- ▶ Peg rates, “provide liquidity.”
- ▶ Deficits and inflation.

Interest rates 06-10



Long rates, TIPS, inflation and expected inflation

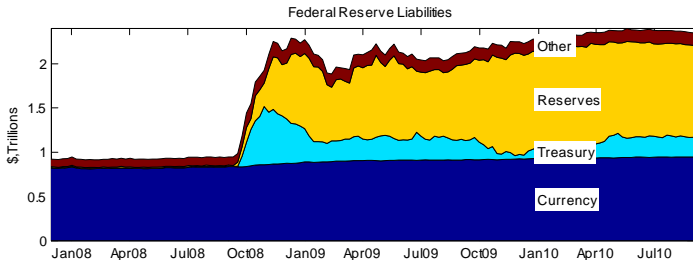
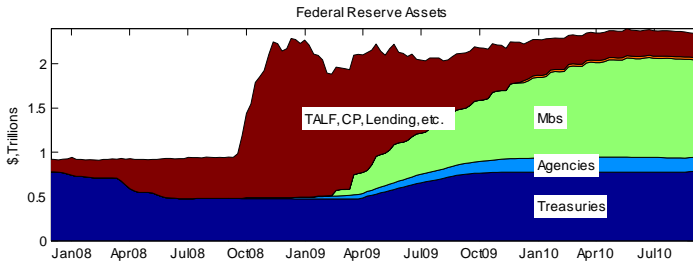


Fighting recessions and deflations

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Expected discounted surpluses}$$

- ▶ Cause? *Discounted.*
- ▶ Tools?
 1. Rates = 0?
 2. Quantitative Easing I – short bonds.
 3. Quantitative Easing II – long bonds.
 4. Quantitative Easing III – private/government debt.
 5. Announcements: Desperation?
 6. Helicopter drops?

Quantitative easing I II III, Debt Operations



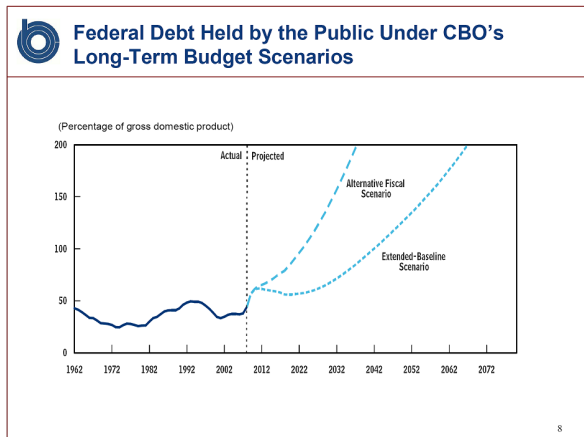
Announcements



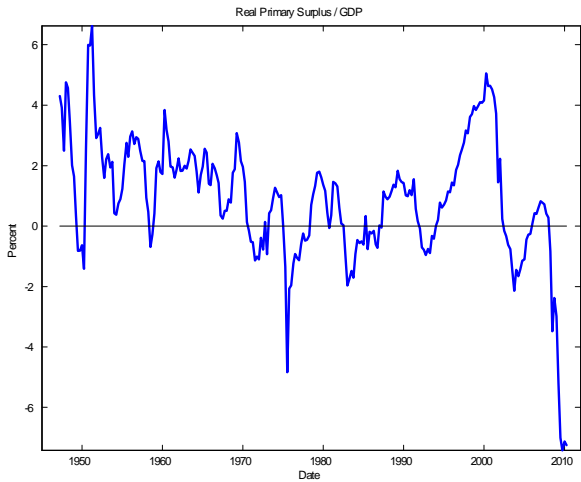
COURTESY: GERALD R. FORD PRESIDENTIAL MUSEUM

Fighting inflation

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Expected discounted surpluses}$$



Real primary surplus / GDP



Fighting inflation

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price Level}} = \text{Expected discounted surpluses}$$

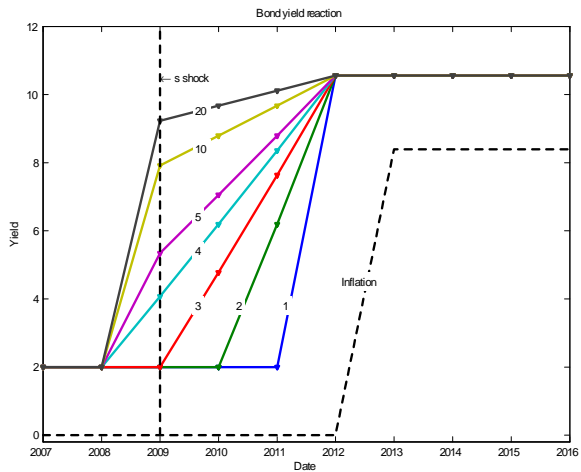
- ▶ “Unsustainable” long-run deficits
- ▶ Nominal credit guarantees (houses), government salaries, pensions, state/country bailouts.
- ▶ Present value Laffer curve: **slow growth is the enemy.**

$$PV_t = \frac{\tau Y_t}{r - g}$$

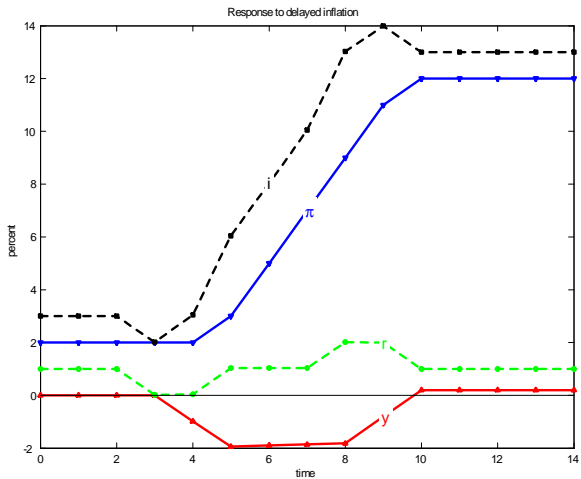
$$\frac{\partial \log PV}{\partial \log \tau} = 1 + \frac{\partial \log Y}{\partial \log \tau} + \frac{1}{r - g} \frac{\partial g}{\partial \log \tau}$$

- ▶ $\tau = 30 \rightarrow 35\% = 15\%$ reduction in Y .,
- ▶ $\tau = 30 \rightarrow 35\% = 0.3\%$ reduction in g !

Inflation scenario



Inflation scenario – New Keynesian+fiscal model



Is the Fed Worried?

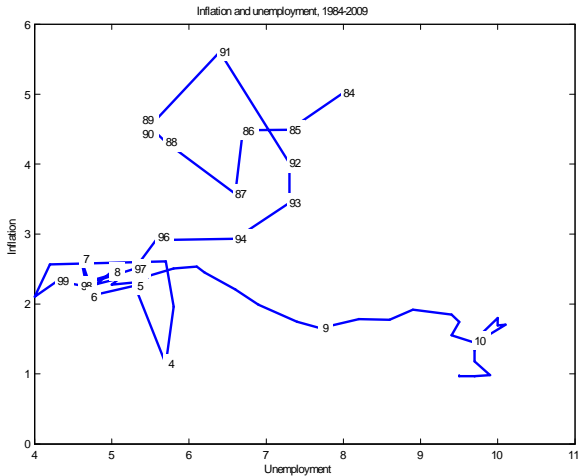
"Measures of underlying inflation have trended lower in recent quarters and, with substantial resource slack continuing to restrain cost pressures and longer-term inflation expectations stable, inflation is likely to be subdued for some time."

(FOMC August 10 2010)

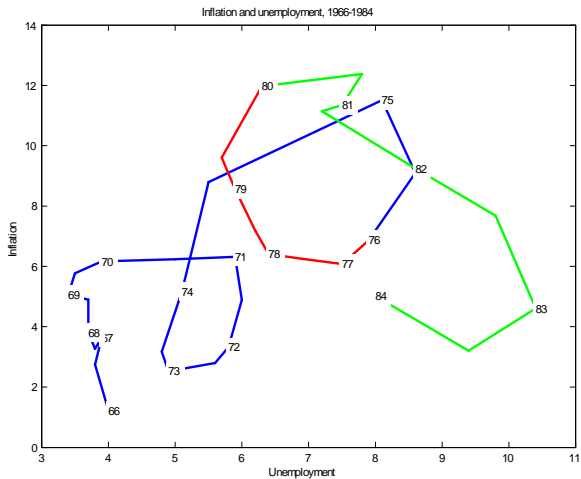
Fed view

Fed $r \rightarrow$ other $r \rightarrow$ "demand" \rightarrow "slack," "gaps" $\rightarrow \rightarrow$ inflation
Other shocks \nearrow expectations, costs \nearrow

Phillips curves don't work



Phillips curves don't work – 70s



- Inflation can break out despite “slack!”

Better monetary/fiscal arrangements

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Expected discounted surpluses}$$

- ▶ New tools?
 1. Modern Commodity standard?
 2. CPI futures/TIPS spread?
 3. Long term debt
 4. "Government equity"

More

“Fiscal theory of the price level”

1. “Understanding Policy”
2. “Money as Stock”
3. “Long Term Debt and Optimal Policy”
4. “Determinacy and Identification in New-Keynesian Models”
5. “A Frictionless view of US inflation”
6. Etc., Etc., Etc.

<http://faculty.ChicagoBooth.edu/john.cochrane/research/Papers/>

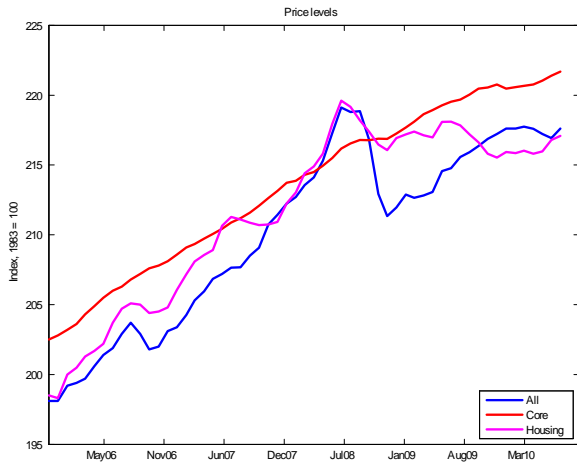
SPARE GRAPHS FOLLOW

Greece and Euro

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price Level}} = \text{Expected discounted surpluses}$$

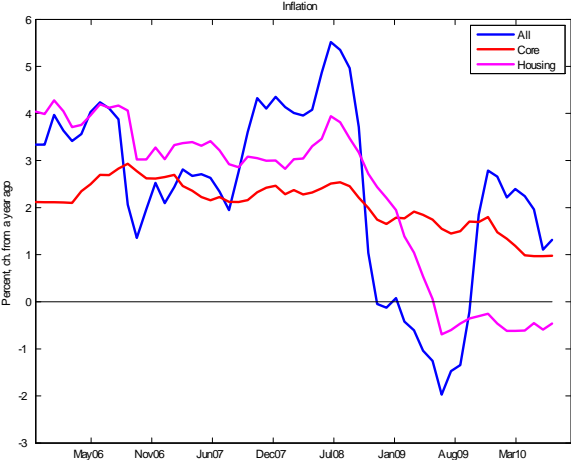
- ▶ Debt vs. Equity; inflation vs. default
- ▶ Currency union and fiscal union
- ▶ “Optimal currency area”
- ▶ Commitment to pay ex-post lets you borrow more ex-ante
- ▶ “Capital ratios” – long term debt
- ▶ “Government equity?”

Price levels 06-10

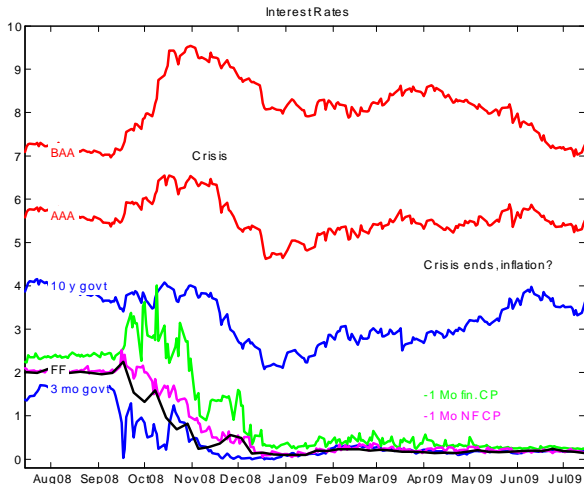


Note food&energy, housing

Inflation 06-10

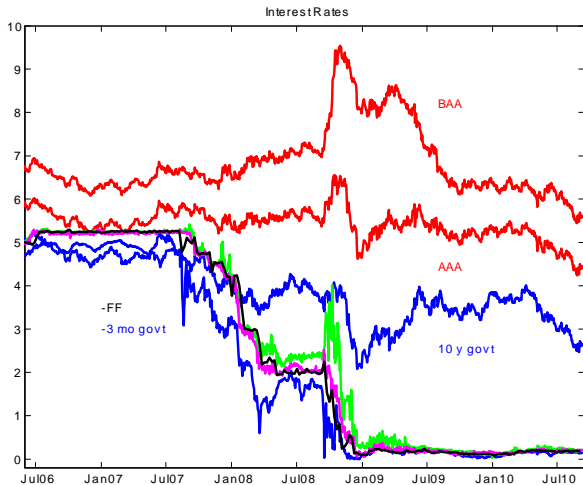


Interest rates and inflation? Interest rates 08-09

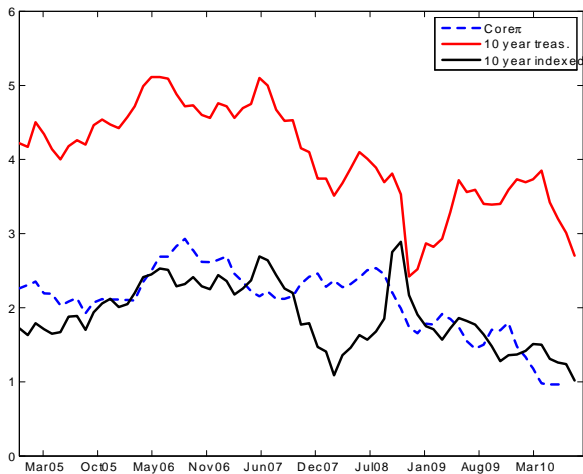


Crisis/credit risk premium! Inflation? Low rates = loose policy?
“Fed sets rates?”

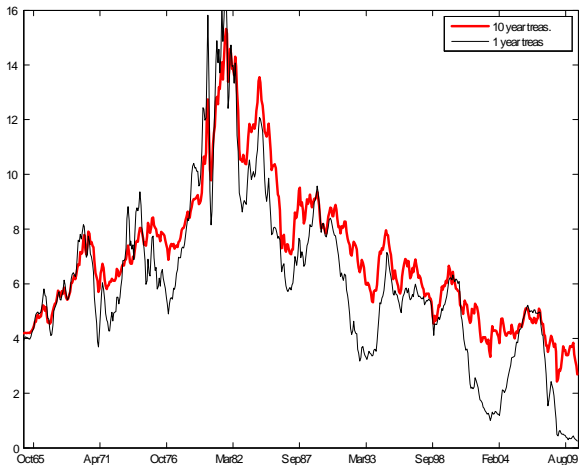
Interest rates 06-10



Long rates, TIPS, inflation and expected inflation

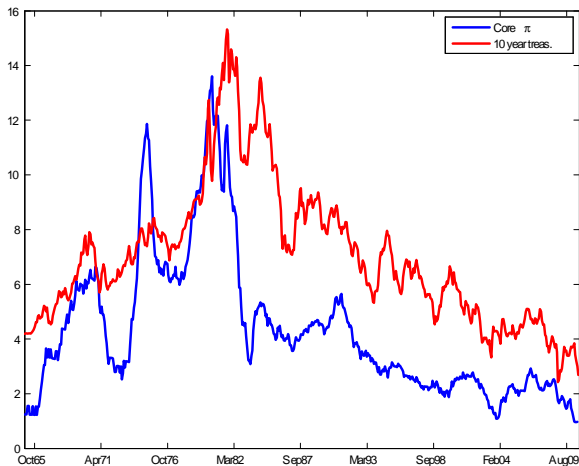


What do long rates tell us, really?



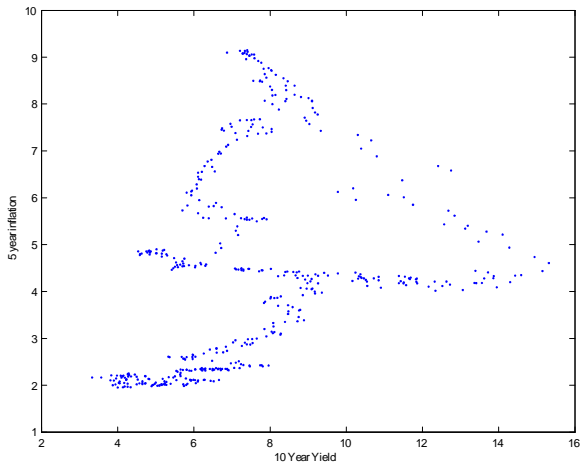
Usual cyclical pattern

Long rates do not forecast inflation!



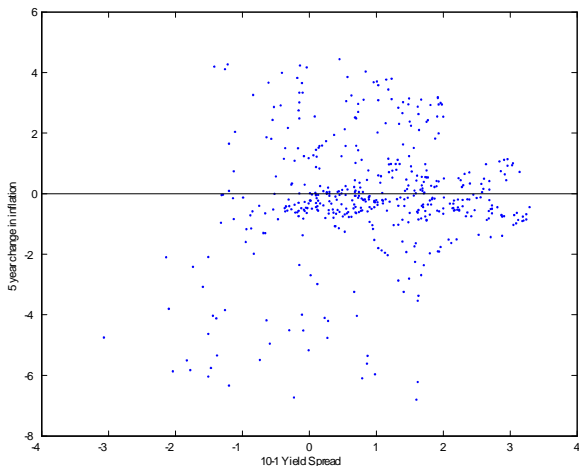
Do long rates today tell you where *future* inflation will be?
Long rates did not warn of 70s inflation, 80s disinflation “

Long rates do not forecast inflation!



x: 10 year treasury y: inflation in next 5 years

Long rates do not forecast inflation!



Why not? 1) risk premium obscures inflation 2) inflation is not forecastable

We have to think! Pundits?

Different opinions? Different theories! You choose!

▶ Fed view

Fed $r \rightarrow$ other $r \rightarrow$ "demand" \rightarrow "slack," "gaps" $\rightarrow \rightarrow$ inflation
other shocks \nearrow costs, expectations \nearrow

("Credit constraints" vs. "Old-Keynesian")

▶ New-Keynesian view

$$\pi_t \uparrow \implies i_t \uparrow\uparrow \implies \pi_{t+1} \uparrow\uparrow$$

"Coordinate expectations on unique local equilibrium"

▶ Monetarist view

$$MV = PY$$

Today's $M \rightarrow$ tomorrow's P ? Deficits \rightarrow more M ?

▶ Fiscal theory

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Present value [Real primary surpluses]}$$

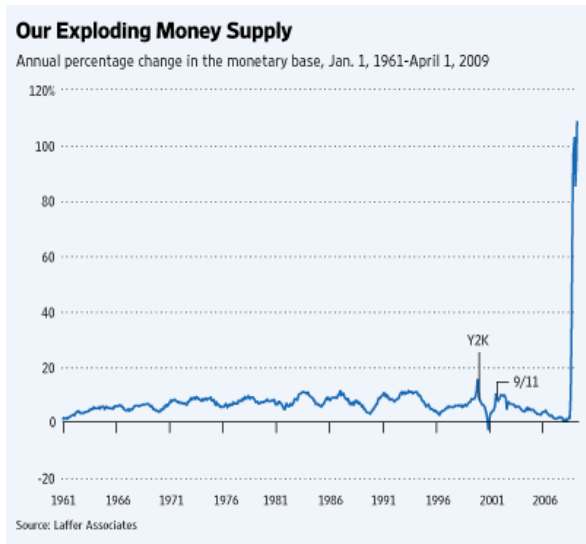
Laffer – Money

“Get Ready for Inflation and Higher Interest Rates...

The unprecedented expansion of the money supply could make the '70s look benign....We can expect rapidly rising prices and much, much higher interest rates over the next four or five years...

..the panic demand for money has begun to and should continue to recede. The dramatic drop in output and employment in the U.S. economy will also reduce the demand for money. Reduced demand for money combined with rapid growth in money is a surefire recipe for inflation and higher interest rates...”

Laffer – Money



<http://online.wsj.com/article/SB124458888993599879.html>

Feldstein – Money, and deficits can tempt monetization

Inflation is looming on America's horizon

The unprecedented explosion of the US fiscal deficit raises the spectre of high future inflation... There is ample historic evidence of the link between fiscal profligacy and subsequent inflation.

...the large US fiscal deficits are being accompanied by rapid increases in the money supply... The excess reserves of the banking system have ballooned from less than \$3bn a year ago to more than \$700bn (€536bn, £474bn) now.

The money supply consists largely of government-insured bank deposits that households and businesses are holding because of a concern about the liquidity and safety of other forms of investment. But this could change when conditions improve, turning these money balances into sources of inflation.

Krugman – Deflation!

“Deflation, not inflation, is the clear and present danger.

...why the inflation worries? Some claim that the Federal Reserve is printing lots of money, which must be inflationary, while others claim that budget deficits will eventually force the U.S. government to inflate away its debt. The first story is just wrong. The second could be right, but isn't.

...Banks aren't lending out their extra reserves. They're just sitting on them — in effect, they're sending the money right back to the Fed. So the Fed isn't really printing money after all

Krugman – Deflation and the usual insults

...Is there a risk that we'll have inflation after the economy recovers? That's the claim of those who look at projections that federal debt may rise to more than 100 percent of G.D.P. and say that America will eventually have to inflate away that debt..

Such things have happened in the past. For example, France ultimately inflated away much of the debt it incurred while fighting World War I. But more modern examples are lacking.

If inflation isn't a real risk, why all the claims that it is?.. it's hard to escape the sense that the current inflation fear-mongering is partly political..

http://www.nytimes.com/2009/05/29/opinion/29krugman.html?_r=2

Bernanke/Fed – Credit channel; Phillips curve; “cost-push”

BB June 2009: Even after a recovery gets under way, the rate of growth of real economic activity is likely to remain below its longer-run potential for a while, implying that the current slack in resource utilization will increase further. ...In this environment, we anticipate that inflation will remain low.... cost pressures generally remain subdued. As a consequence, inflation is likely to move down some over the next year relative to its pace in 2008. That said, improving economic conditions and stable inflation expectations should limit further declines in inflation.

FOMC March 16 2010: “With substantial resource slack continuing to restrain cost pressures and longer-term inflation expectations stable, inflation is likely to be subdued for some time.

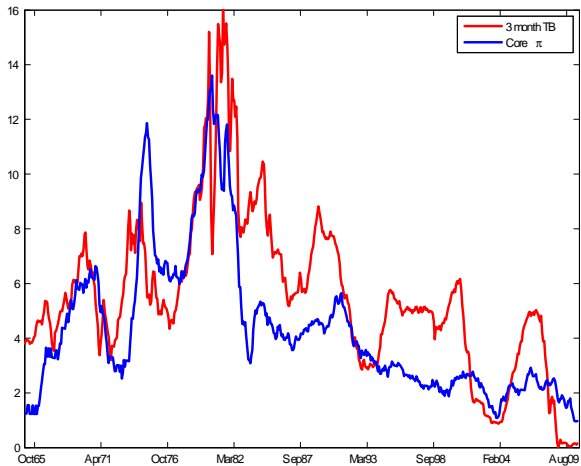
Bernanke/Fed – Credit channel; Phillips curve; “cost-push”

FOMC August 10 2010: Measures of underlying inflation have trended lower in recent quarters and, with substantial resource slack continuing to restrain cost pressures and longer-term inflation expectations stable, inflation is likely to be subdued for some time

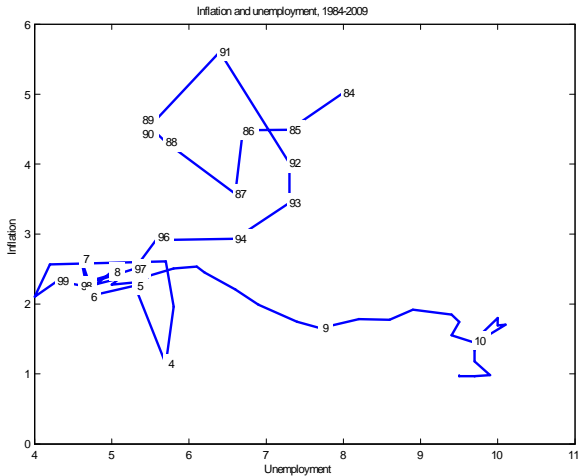
BB Aug 27: Recently, inflation has declined to a level that is slightly below that which FOMC participants view as most conducive to a healthy economy in the long run. With inflation expectations reasonably stable and the economy growing, inflation should remain near current readings for some time before rising slowly toward levels more consistent with the Committee’s objectives. At this juncture, the risk of either an undesirable rise in inflation or of significant further disinflation seems low.

- ▶ Internal: Big debate on how to stop deflation.

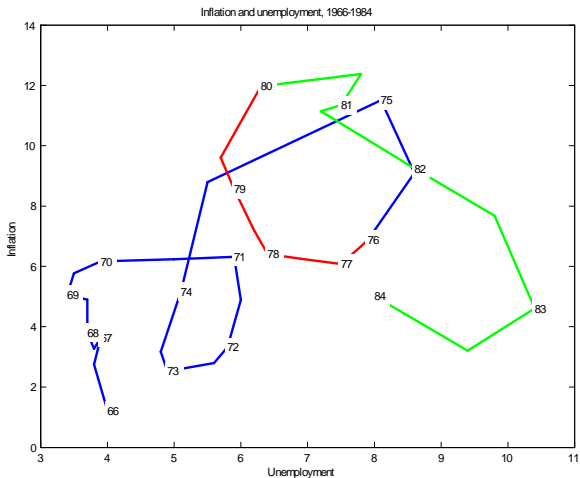
Low rates do not cause inflation



Phillips curves don't work

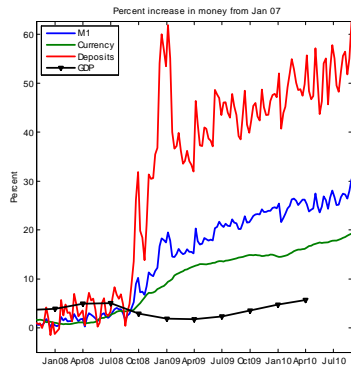
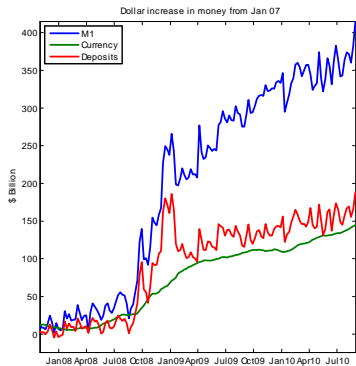


Phillips curves don't work – 70s



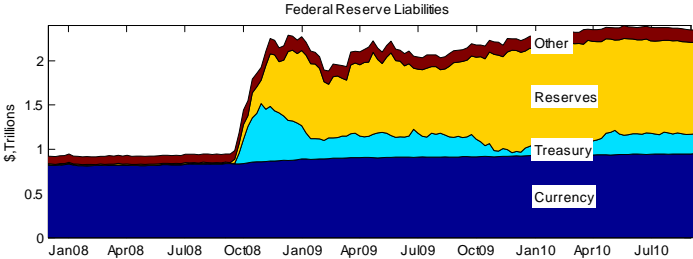
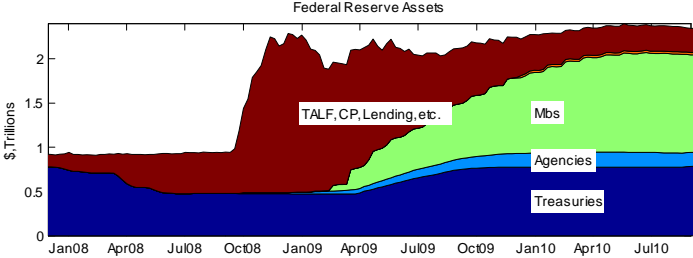
- Inflation can break out despite “slack!”

2008-2010 – Money expands a lot!

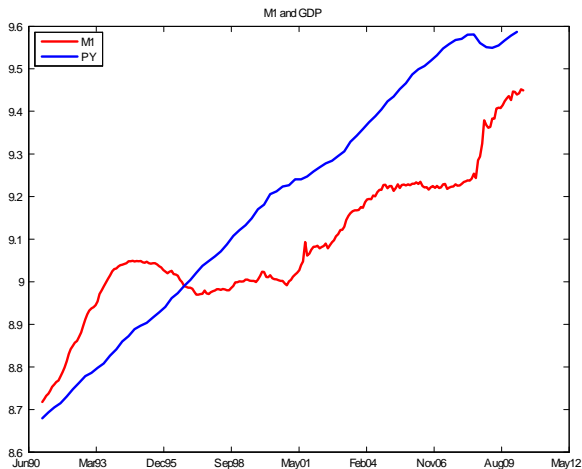


Large increase

Balance sheet – Reserves expand more!

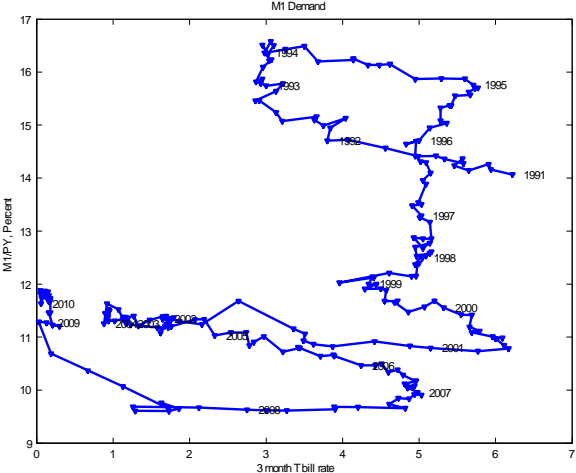


But...Money has little actual correlation with inflation!



And if it did, will smoking a cigar make you rich?

Money demand



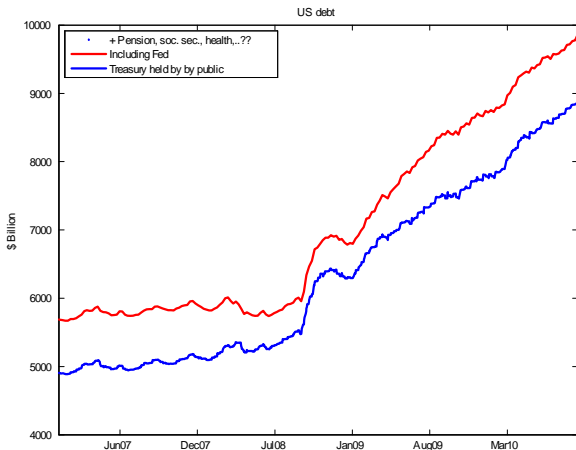
At 0 rates, money demand is huge!

Does monetary expansion mean more inflation?

- ▶ Fed does not print money; “open market operations”; M&Ms
- ▶ Easy to reverse: As M_d declines (panic, r), it's easy for the Fed to soak it up
- ▶ Conversely, at 0 rates Fed is powerless to stop deflation!
- ▶ *When interest rates are zero, buying and selling debt of different maturities has no effect.*

Fiscal: inflation? M+B is rising a lot!

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Present value [Real primary surpluses]}$$



Bottom line

- ▶ Why so much confusion/debate? Wildly different theories, few of which work.

1. **Fed view**

Fed $r \rightarrow$ other $r \rightarrow$ "demand" \rightarrow "slack," "gaps" $\rightarrow \rightarrow$ inflation

2. **New-Keynesian view**

- 3. Announcements "Coordinate expectations on unique local equilibrium"

4. **Monetarist view**

$$MV = PY$$

5. **Fiscal theory**

$$\frac{\text{Money} + \text{Gov't Debt}}{\text{Price level}} = \text{Present value [Real primary surpluses]}$$

- ▶ To make a good forecast, understand mechanism!
- ▶ You don't know, but nobody else does either!