Discussion

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Mike is right!

Common ground:

- Monetarism:

  Monetary policy can and should control inflation.

- Friedman, 1992:

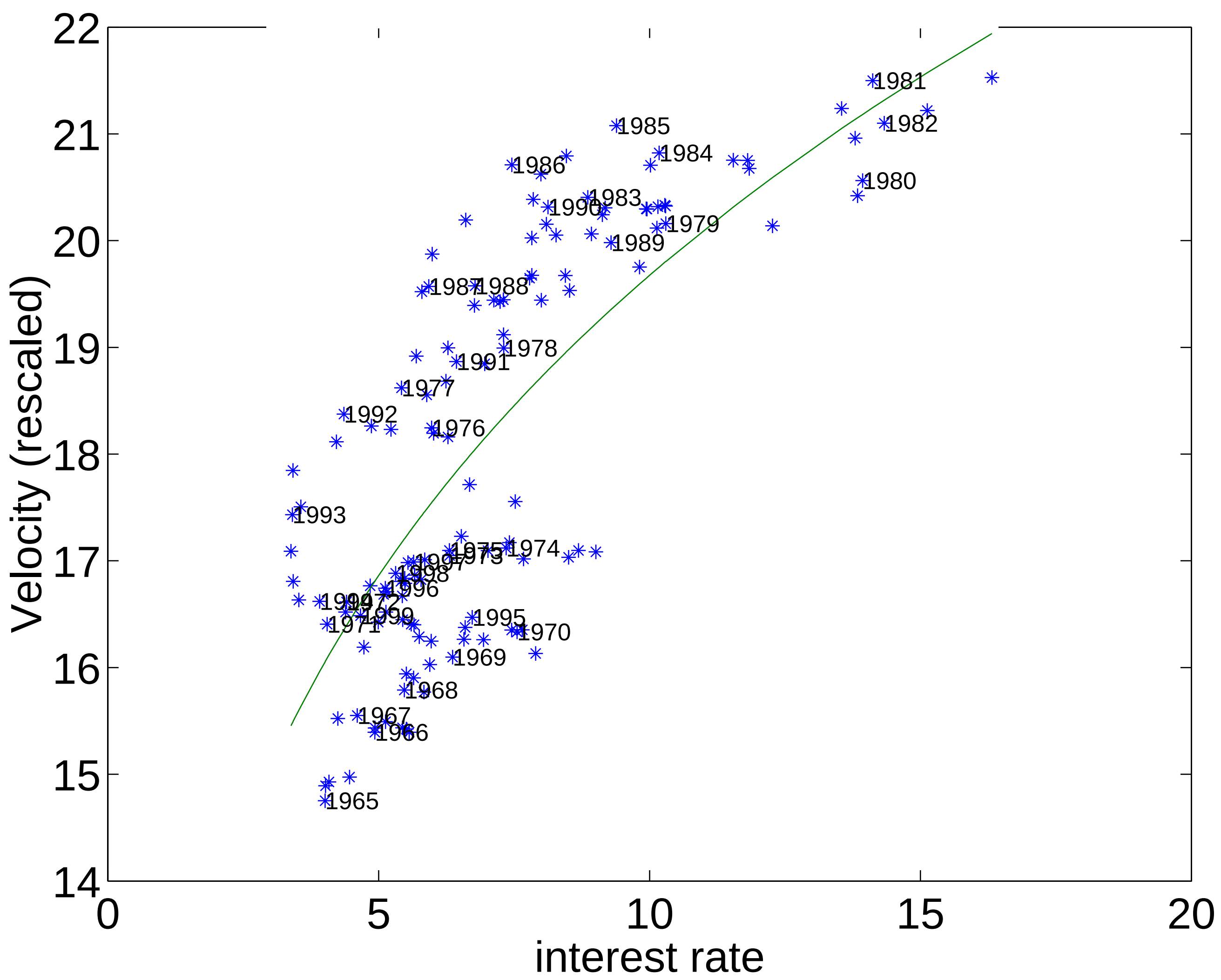
  „Inflation is always and everywhere a monetary phenomenon“

- We are all monetarists now!
- Monetarism: Quantity Theory

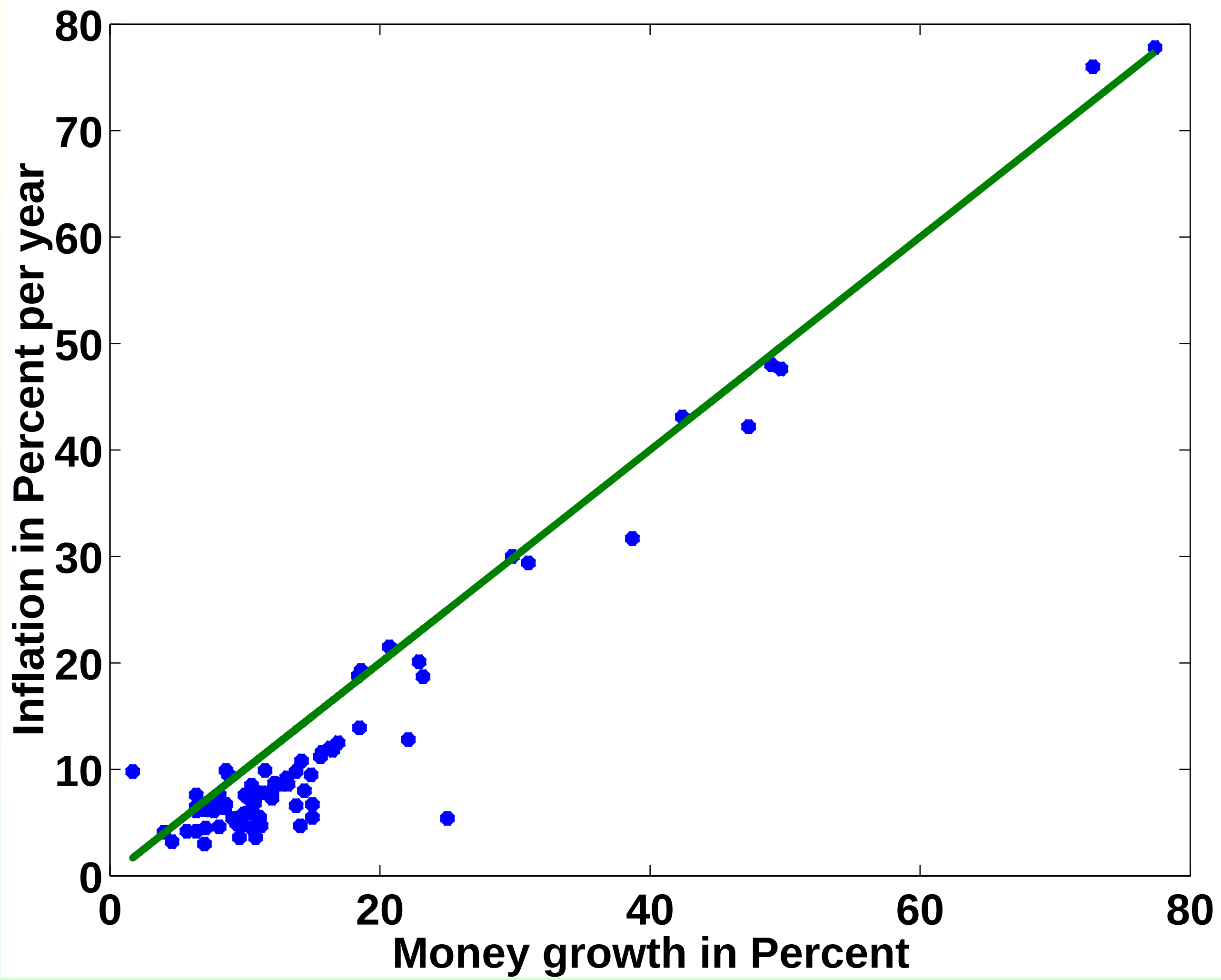
Quantity Theory:
$M\ V(i) = P\ Y$

- Symbols:
  - M: Money
  - V: Velocity, depending on interest rate i
  - P: Price level
  - Y: Output
- Implies: a long-run relationship between money growth and inflation.

Time Series Evidence: United States



Cross-Country Evidence: all countries



Two approaches:

- Monetarists: control money growth! Then you control inflation.
- New Keynesians Theories:
  - no reference to money growth.
  - instead: interest rates, output gaps and inflation.
- Disagreement?

Michael Woodford:

- **No disagreement**!
- „Quantity Theory“ can be added to New Keynesian models without problems.
  - No conflict with evidence on money and inflation.
- New Keynesian models are Monetarist!

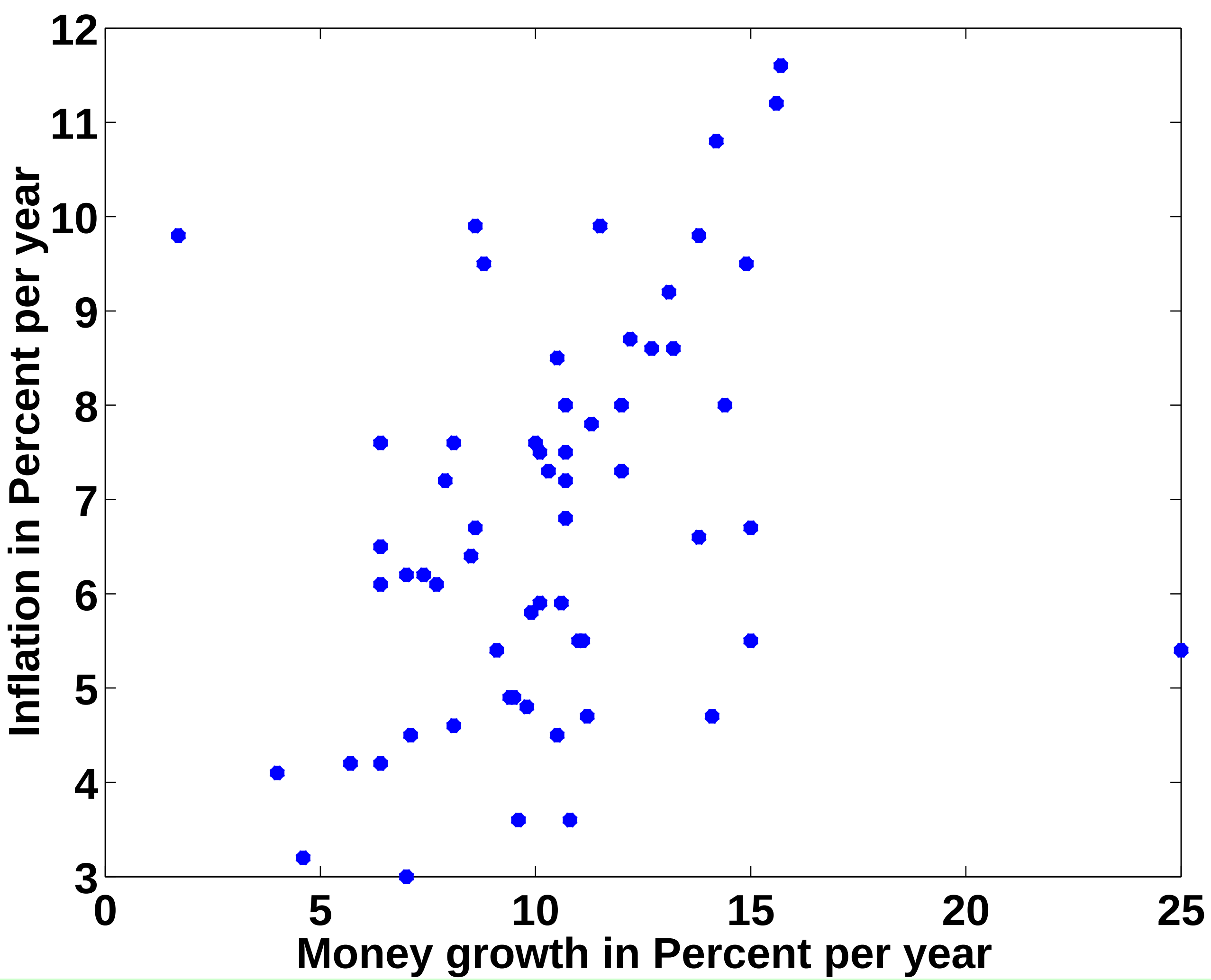
Michael Woodford: BUT...!!

- no special role for money:
  - many arguments. None stands.
- **Just control inflation!**
- How? Just do it.

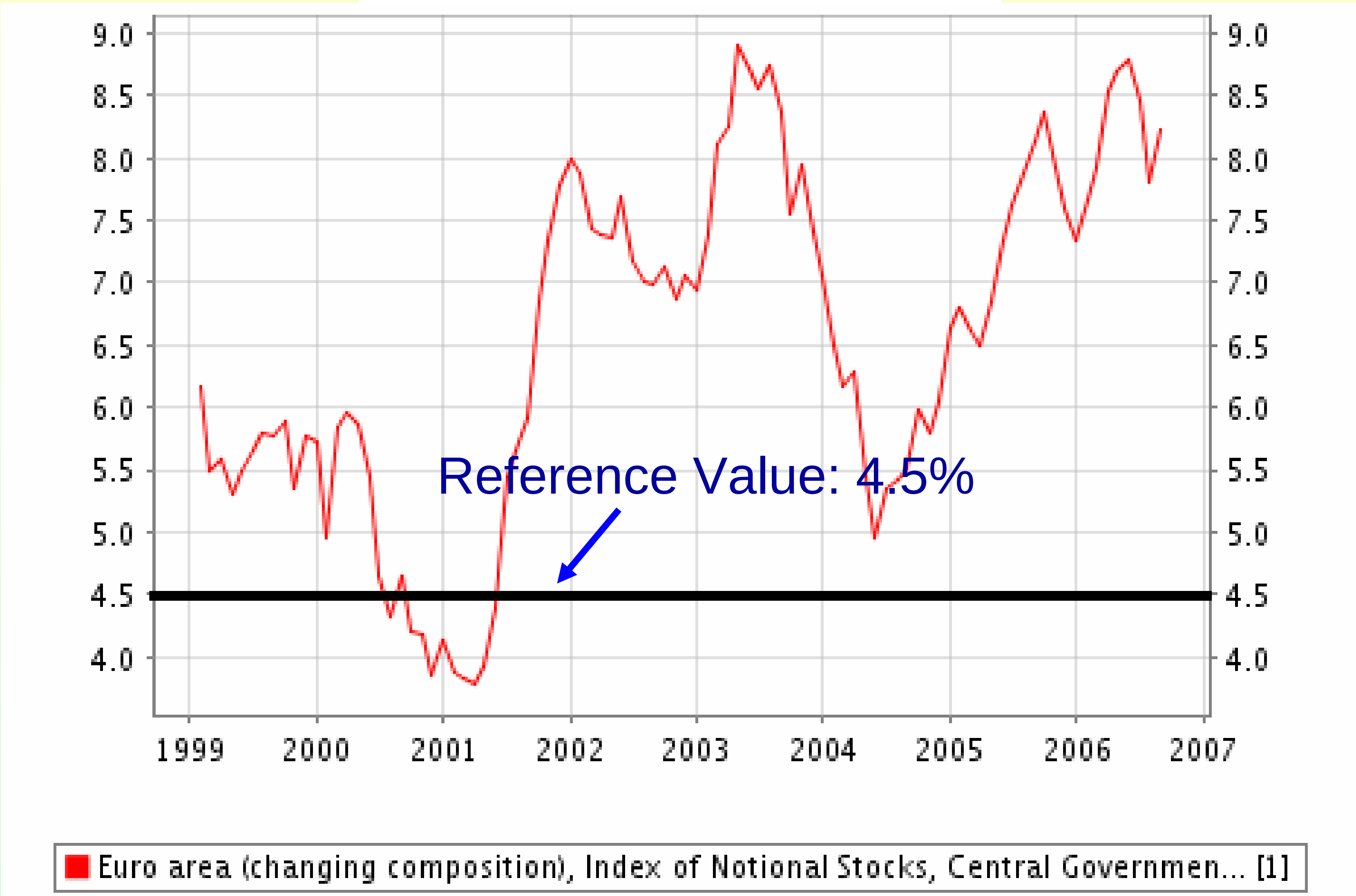
Money pillar: confusing, not helpful.

- Evidence:
  - Low inflation countries
  - ECB behaviour
- Money growth can be high, if
  - inflation is high.
  - nominal interest rates are approaching zero. Japan.

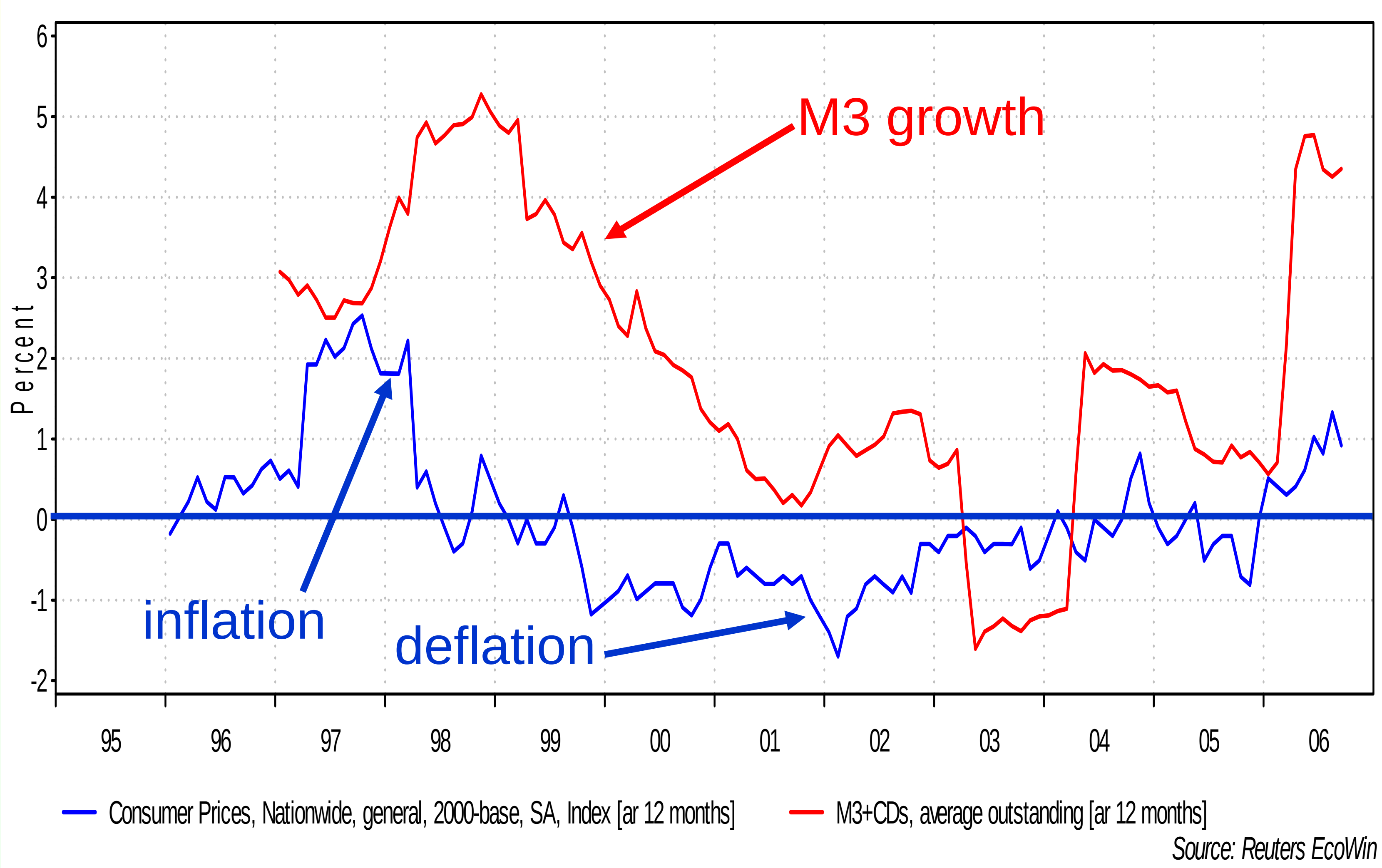
Cross-Country Evidence: low-inflation countries



ECB Behaviour:



Japan



M3 growth
inflation
deflation
Percent
6
5
4
3
2
1
0
-1
-2
95
96
97
98
99
00
01
02
03
04
05
06
Consumer Prices, Nationwide, general, 2000-base, SA, Index [ar 12 months]
M3+CDs, average outstanding [ar 12 months]
Source: Reuters EcoWin

Mike is right!

- focus on inflation, not money ...
- ... even/especially if you are a monetarist.
- Abandon the „money pillar“
- Use models, use analysis.

Mike is right!

Larry, Roberto and Massimo:
force us to think right!

The intuitive story:

- (Irrational?) exuberance: people expect techn. breakthroughs in the future.
- This induces a boom today:
  - in economic activity
  - in the stock market
- ... and a reversal, once disappointed.

Larry, Roberto and Massimo:

stop! You must use a model.

Standard model, implication 1:

- marg.util.of leisure / marg.util.of cons. = wage
- work harder now => less leisure => **less** consumption: **wrong way!**
- ... unless wages increase.
- But: marg.product of labor **falls**!
- This is a **problem** for the „intuitive story“

Standard model, implication 2:

- With a techn. boom in the future, ...
- consumption will grow fast ...
- ... and so will interest rates.
- Higher **discounting of future** diminishes the stock market boom.
- This is a **problem** for the „intuitive story“

Larry, Roberto and Massimo:

- What would it take to generate the intuitive story?
- Carefully examine the pieces!
- You need to combine
  - habit formation
  - costs to adjusting investment
  - sticky wages
  - inflation-targeting monetary authority

Figure 9:

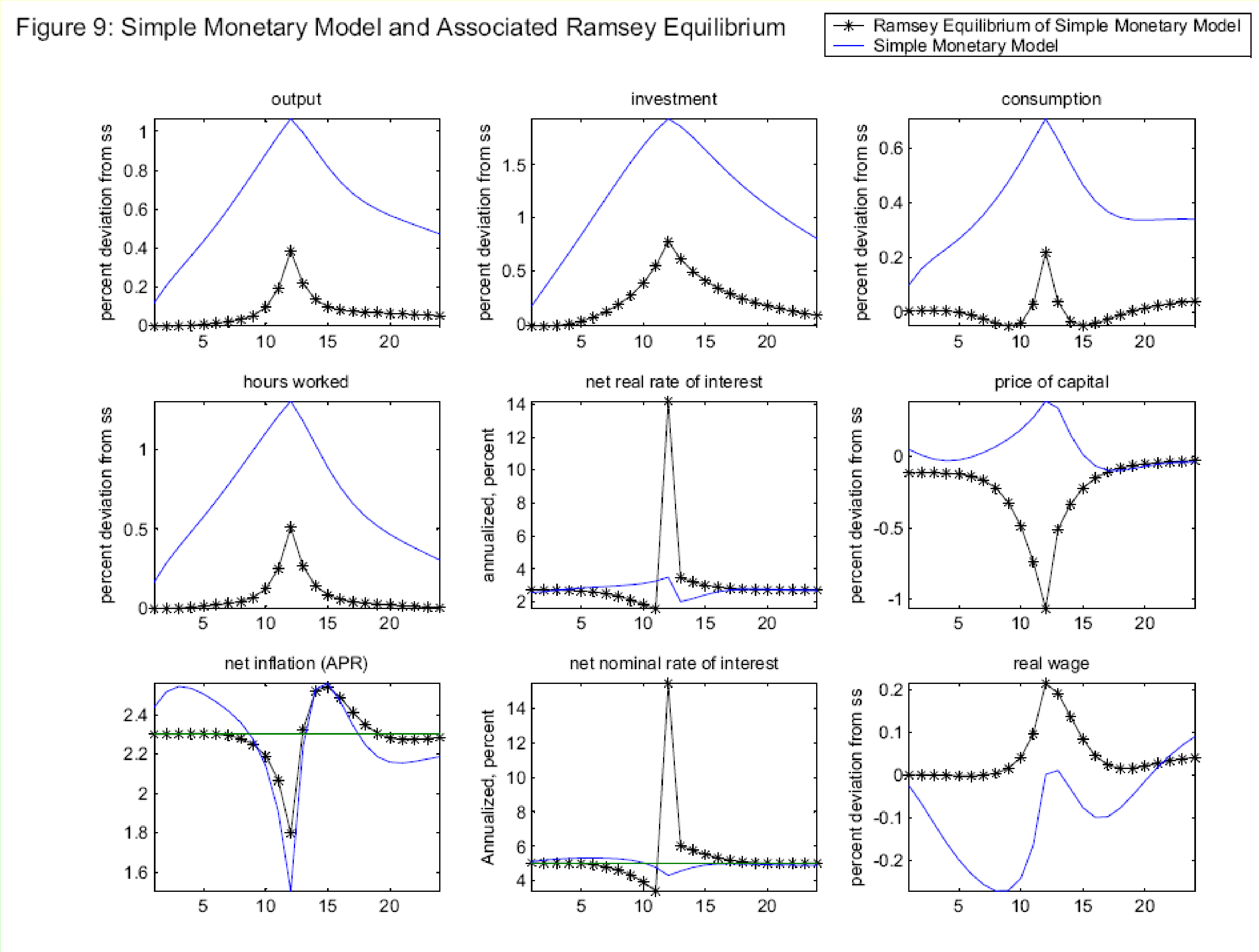


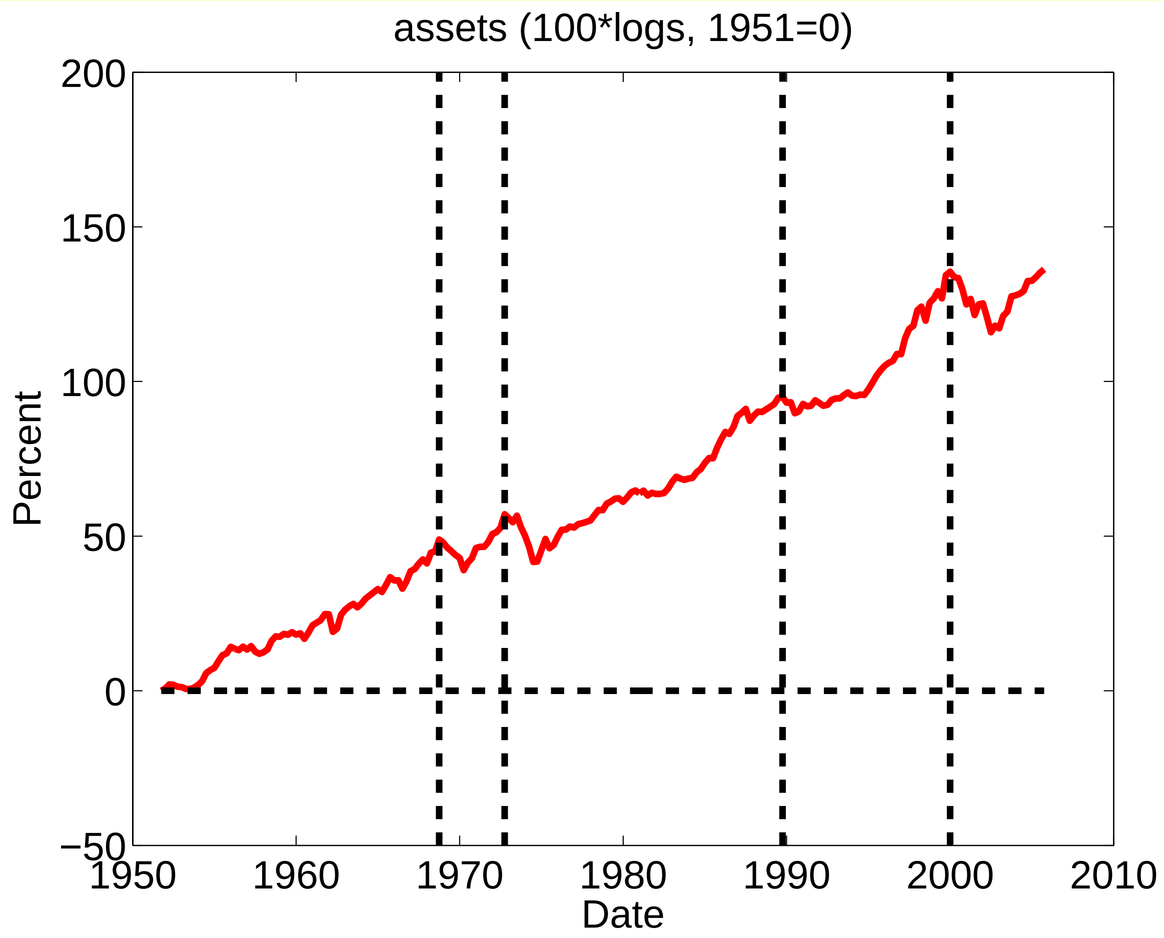
Figure 9: Simple Monetary Model and Associated Ramsey Equilibrium
Ramsey Equilibrium of Simple Monetary Model
Simple Monetary Model
output
investment
consumption
hours worked
net real rate of interest
price of capital
net inflation (APR)
net nominal rate of interest
real wage
percent deviation from ss
annualized, percent
Annualized, percent

Comment:

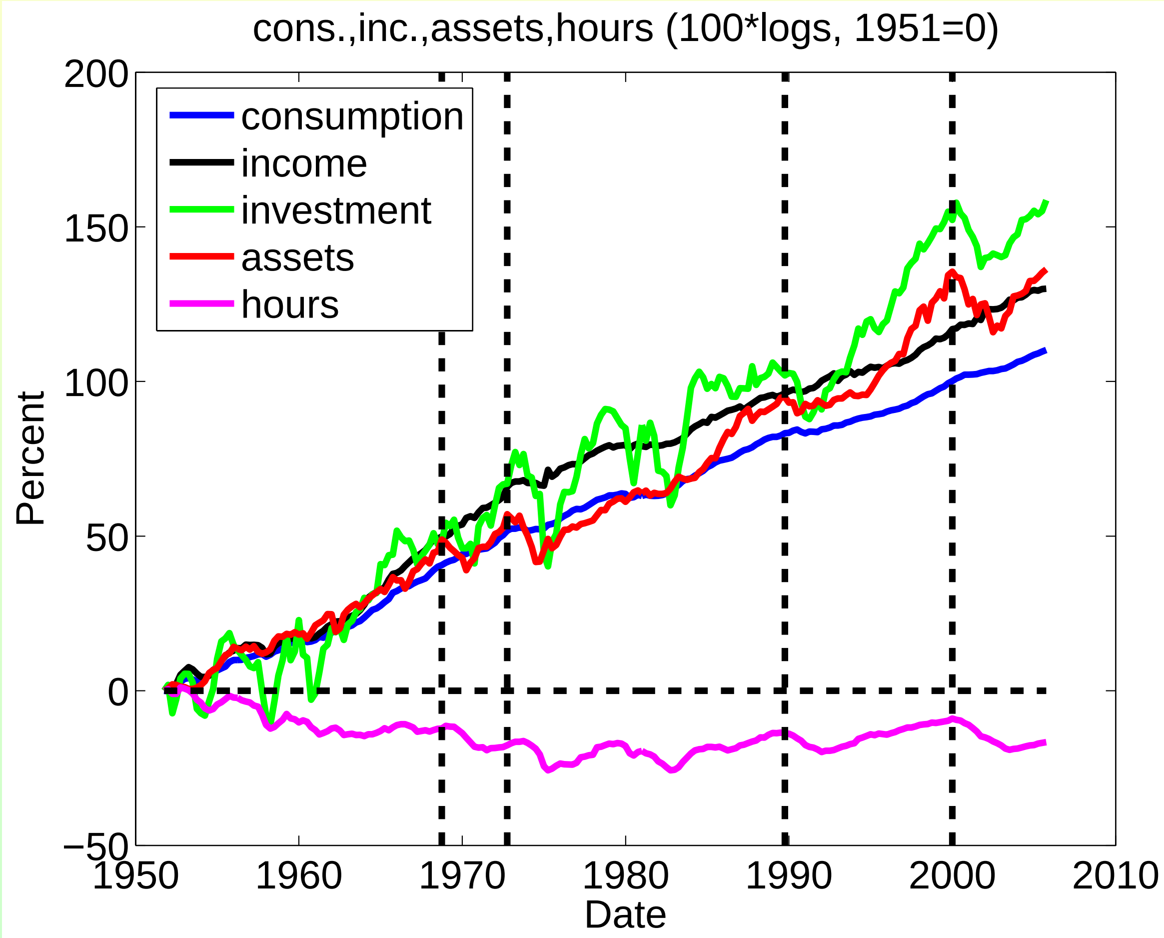
- A possibility? Yes. But...
- monetary policy: the culprit? Here:
  - does the wrong thing ...
  - wages and prices don‘t adjust much in boom-bust.
  - Can that be right?
  - Across countries? Across time periods?
- Consumption? Here:
  - it moves a lot in „exuberant boom“:
  - as much as the price of capital.
  - Really? Think of 2000.

Data: assets...

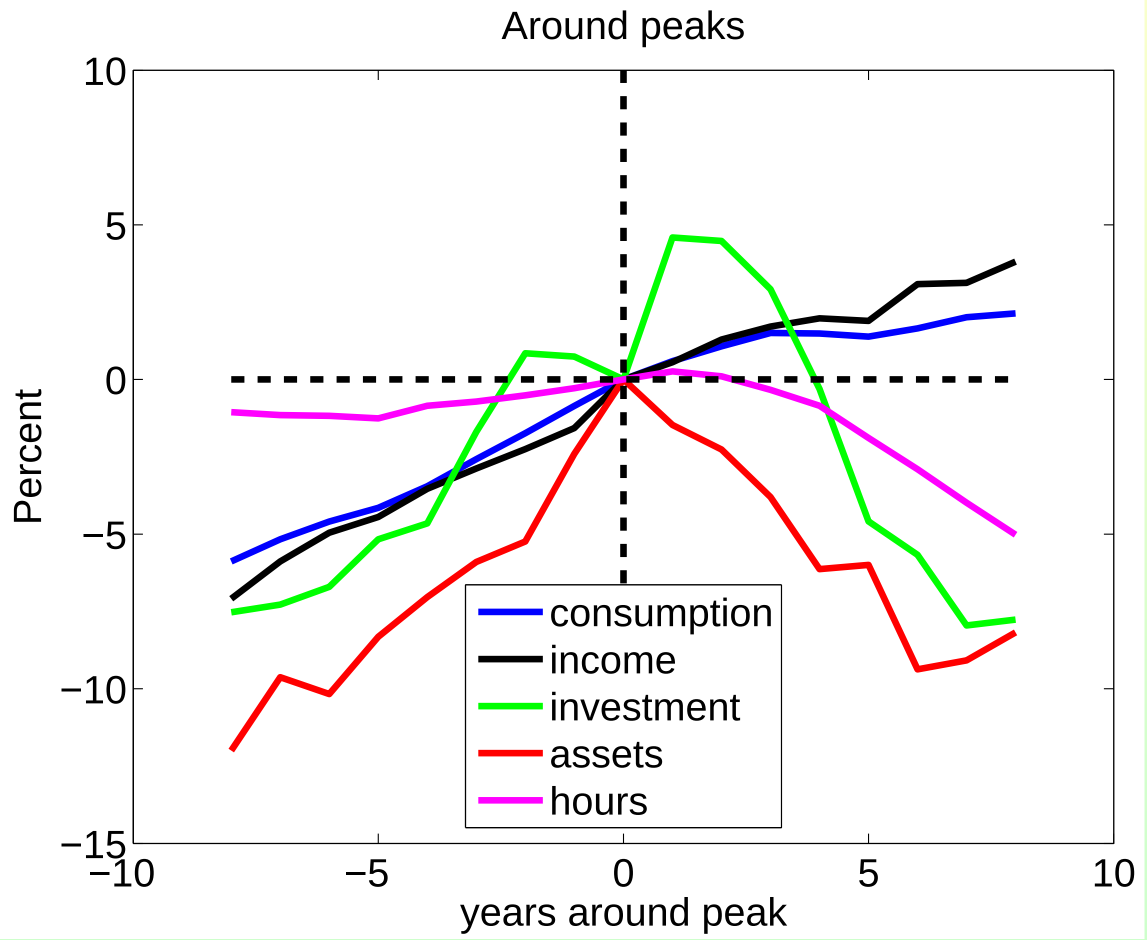
US, per person. Source: Lettau-Ludvigson.



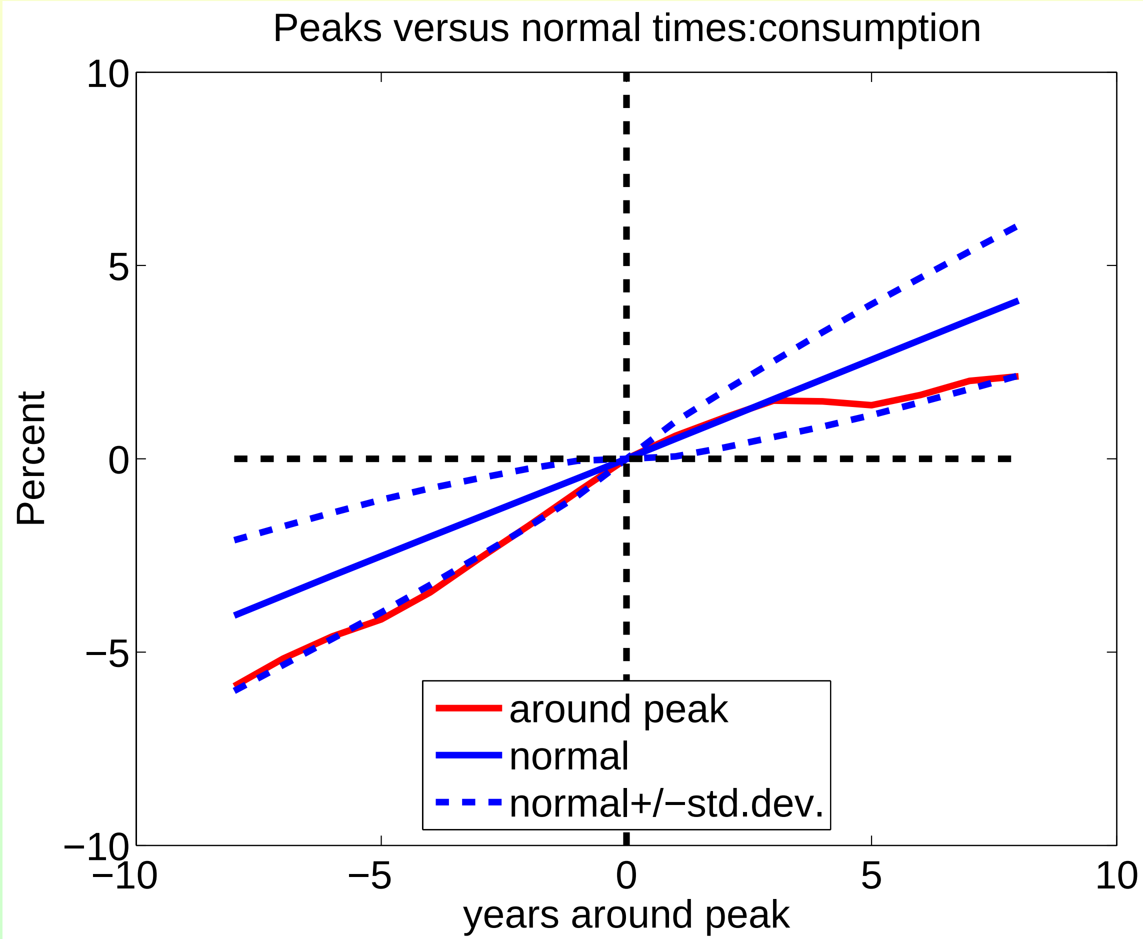
... and other variables.



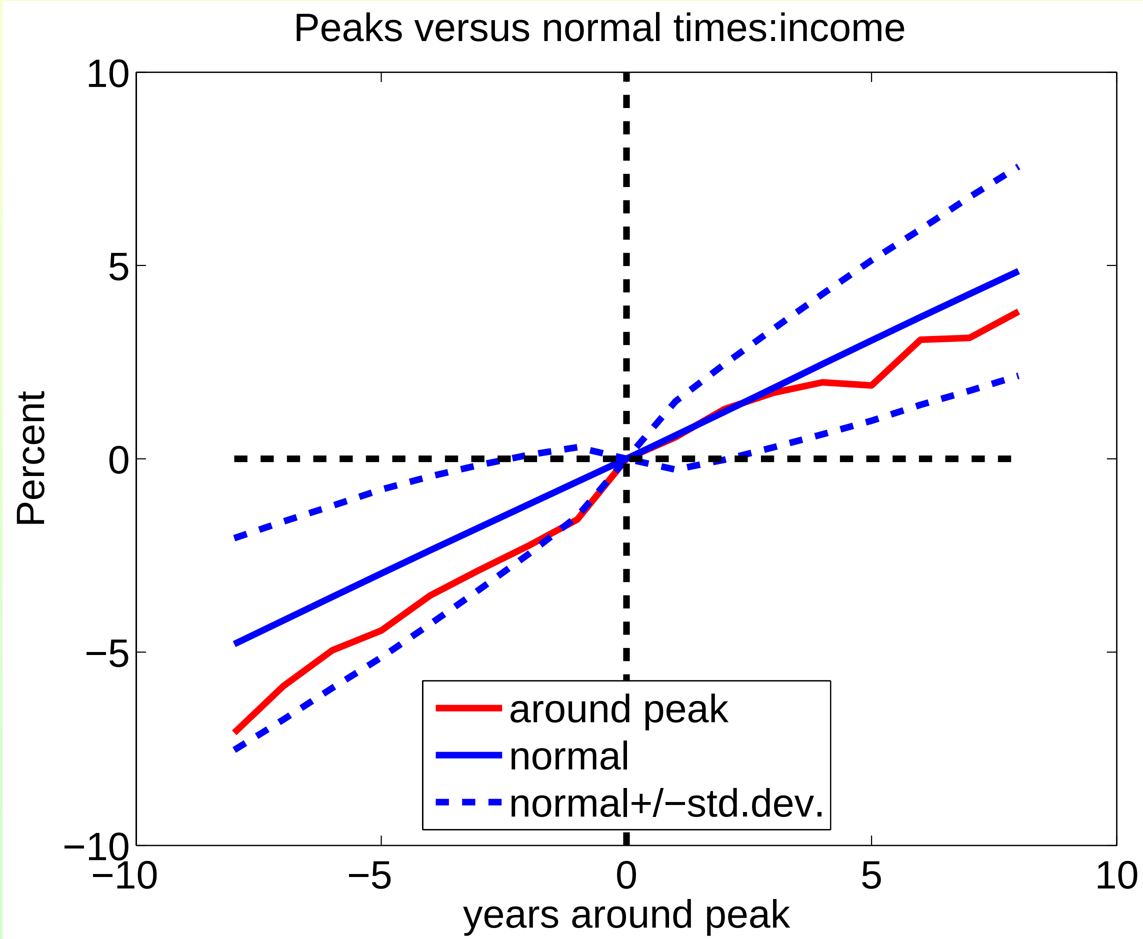
Around the peaks, ...



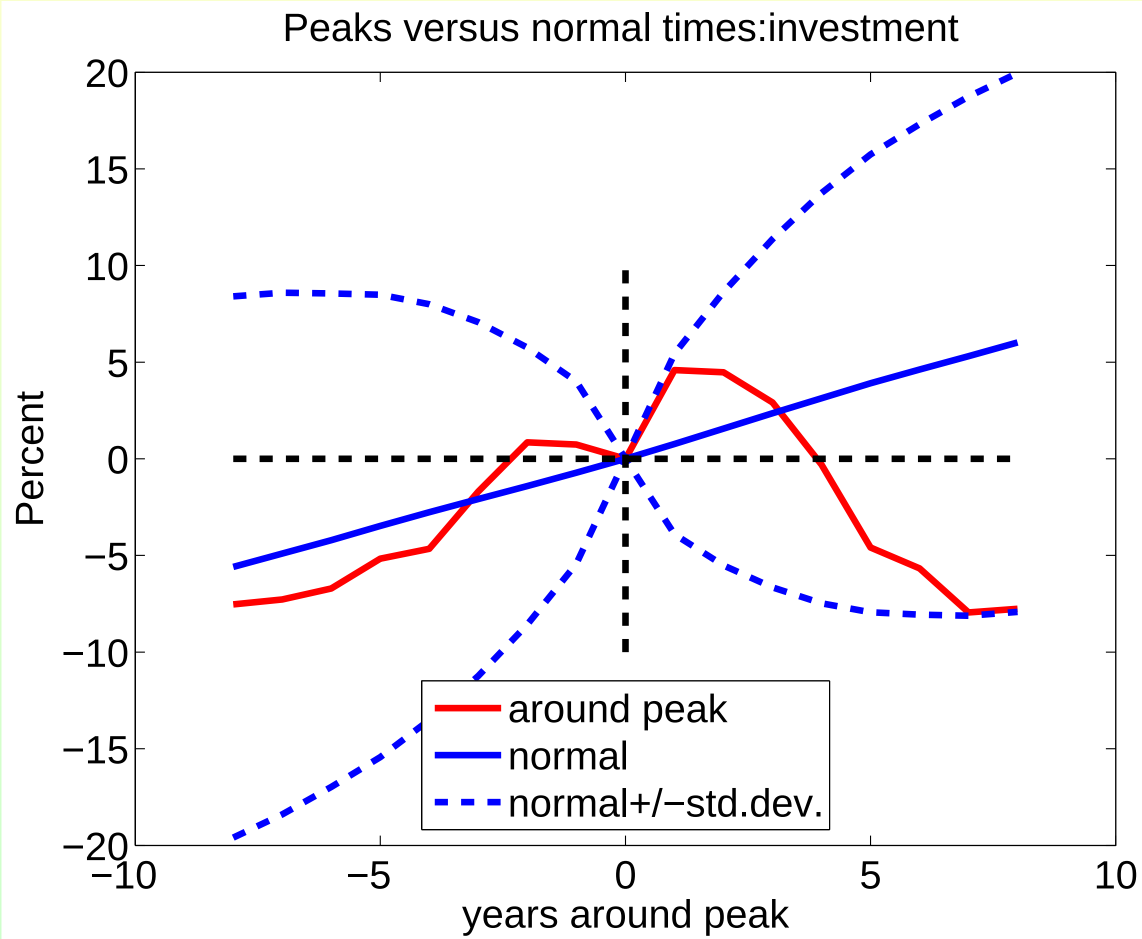
... consumption-boom-bust is small,



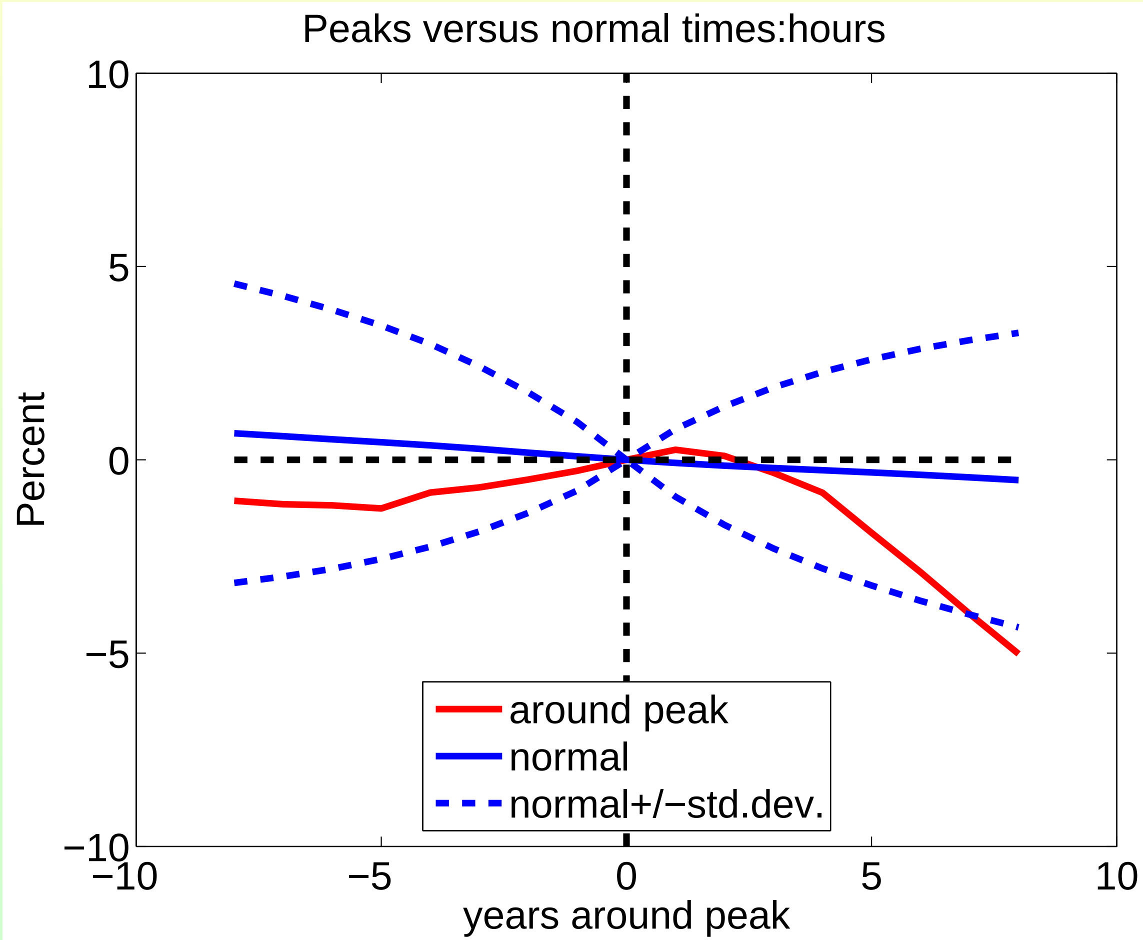
... income-boom-bust is small,



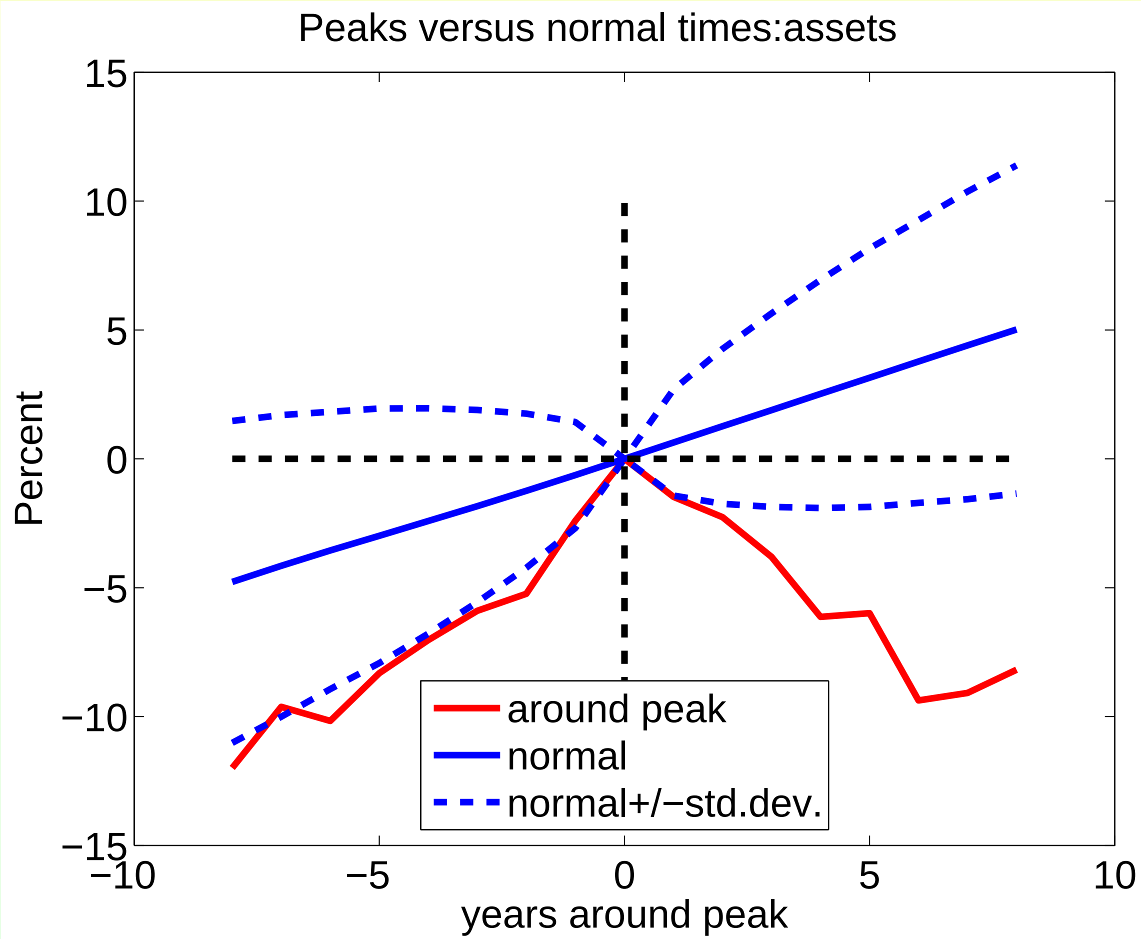
... investment-boom-bust is smaller,



... hours-bust is delayed,



... only asset boom-bust is there.



So perhaps:

- The intuitive story is just wrong.
- Stock markets boom at the **onset** of technological improvements.
- Surprisingly large productivity growth in the US in late 90s!
- Source of uncertainty: **will it continue**?

Suggestions:

- Revisions of long-run growth rate expectations may be key.
- Recent literature on long-horizon consumption risk and asset markets (Lars Hansen, others).
- Assume „time to build“ ahead of the boom?

Larry, Roberto and Massimo: force us to think right!

- labor market frictions: key to understanding asset markets.
- Equilibrium reasoning imposes discipline!
- **Do not trust simple intuition!**
- **Instead: use and understand models**!

Larry, Roberto and Massimo:
force us to think right!