Understanding Non-Inflationary Demand Driven Business Cycles

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(Long) Introduction

The modern approach to business cycles fluctuations : Shocks

- The economy is hit by "shocks",
- Realistic shocks are either "supply" or "demand",
- Supply :
  - Technology,
  - Oil price,
  - Taxes.
- Demand :
  - Monetary shocks,
  - Fiscal,
  - Investors mood.
- Empirical work (Smets and Wouters) brings a lot of unrealistic shocks (preference shocks, markup shocks, shocks to arbitrage equations, etc...).

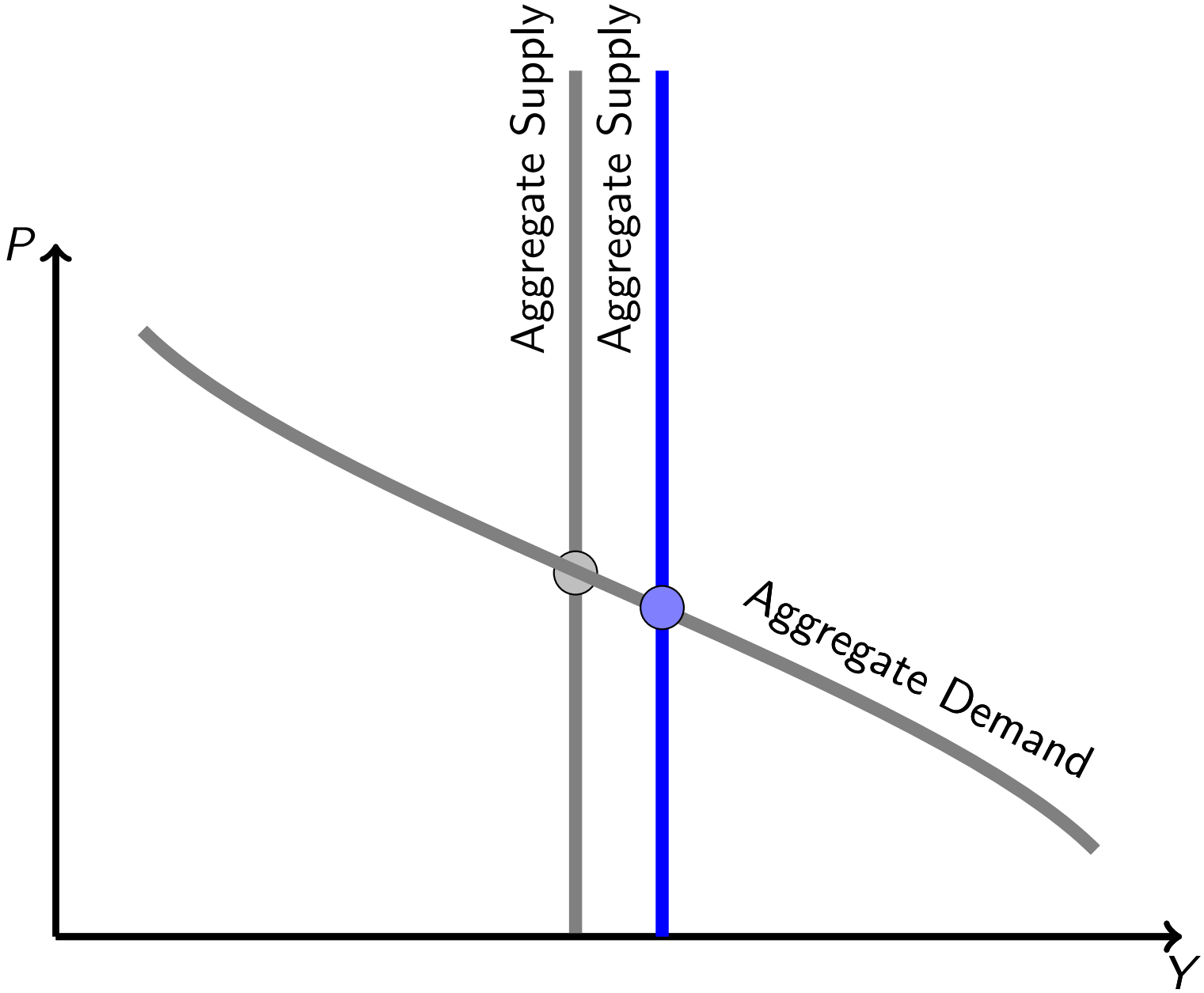
(Long) Introduction

The modern approach to business cycles fluctuations : Models

- Models are of two types : "Real Business Cycles" Models and "New-Keynesian" ones :
- Real Business Cycles :
  - Flexibles Prices,
  - Supply shocks,

(Long) Introduction

Real Business Cycles Models



(Long) Introduction

The modern approach to business cycles fluctuations : Models

- Models are of two types : "Real Business Cycles Models" and "New-Keynesian" ones :
- New-Keynesian Models :
  - Prices are sticky,
  - Monetary rules (Taylor rules) matter,
  - Demand shocks.

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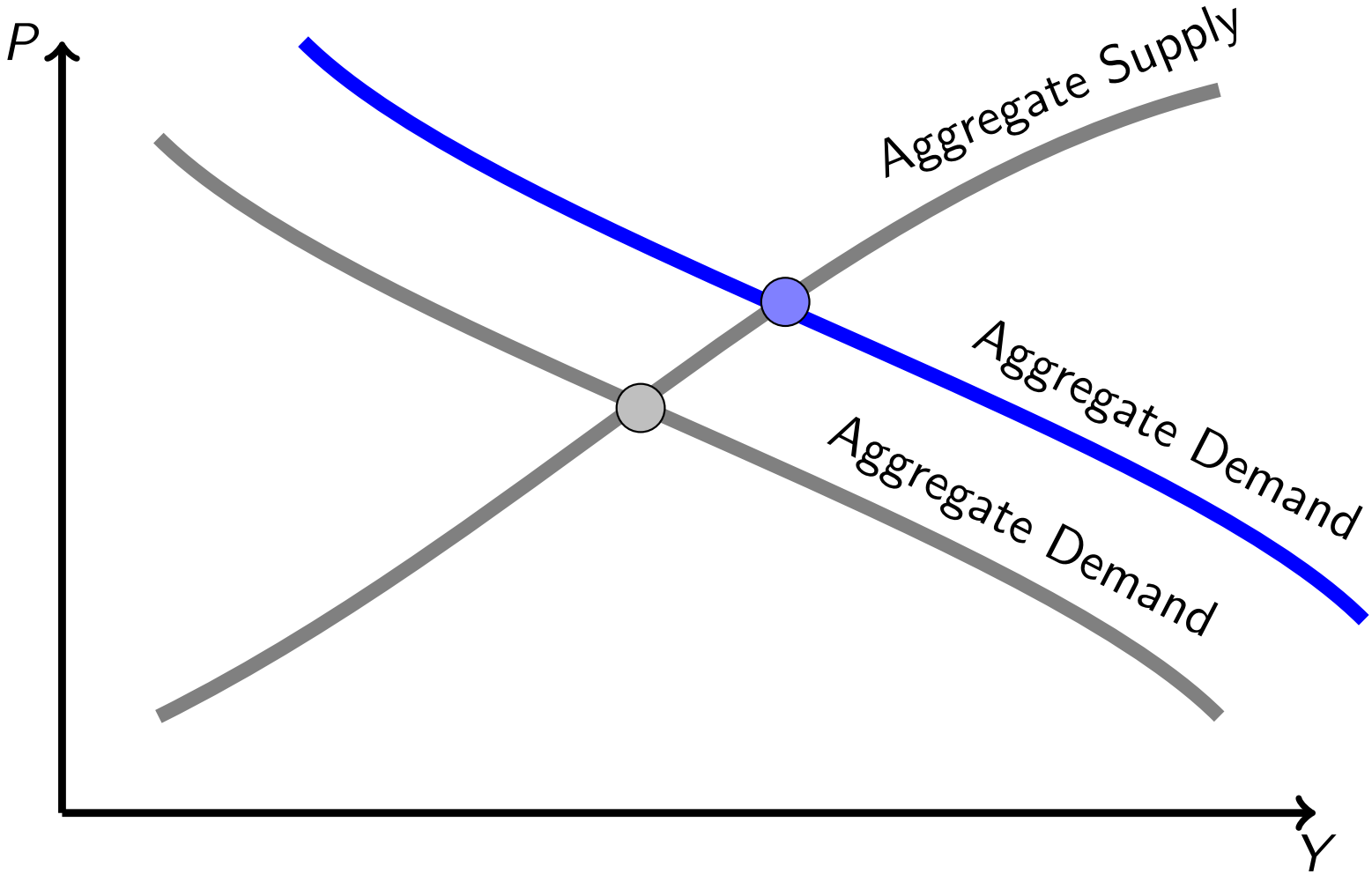
New Keynesian Models



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The modern approach to business cycles fluctuations : Models

- Both models and shocks have are time to explain the recent periods (last 30 years).

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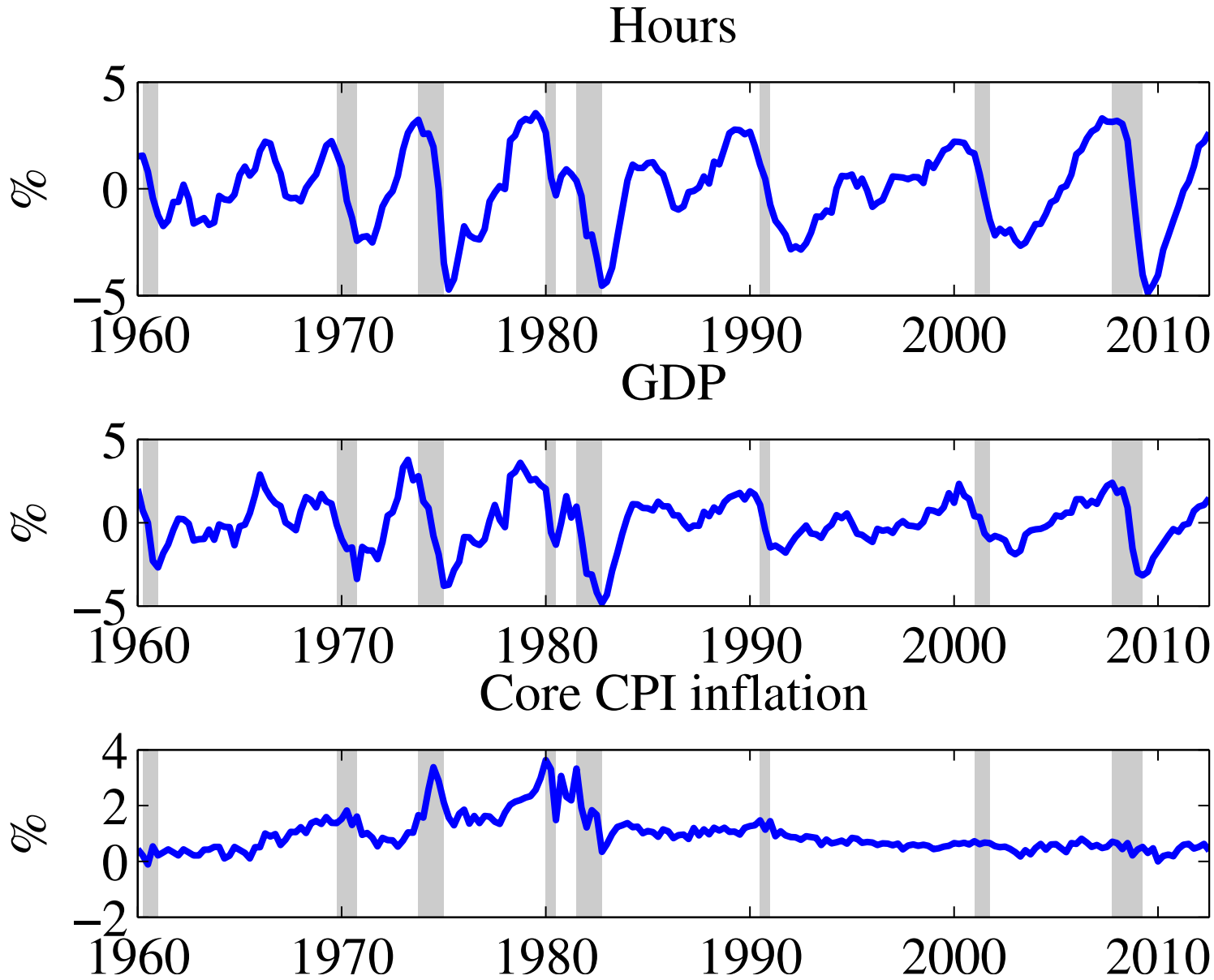
Some Intriguing Facts over the last 3 cycles : Non inflationary business cycles



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Intriguing Facts for Usual Shocks and Models

- Demand shocks ?
  - Should be inflationary in New-Keynesian models,

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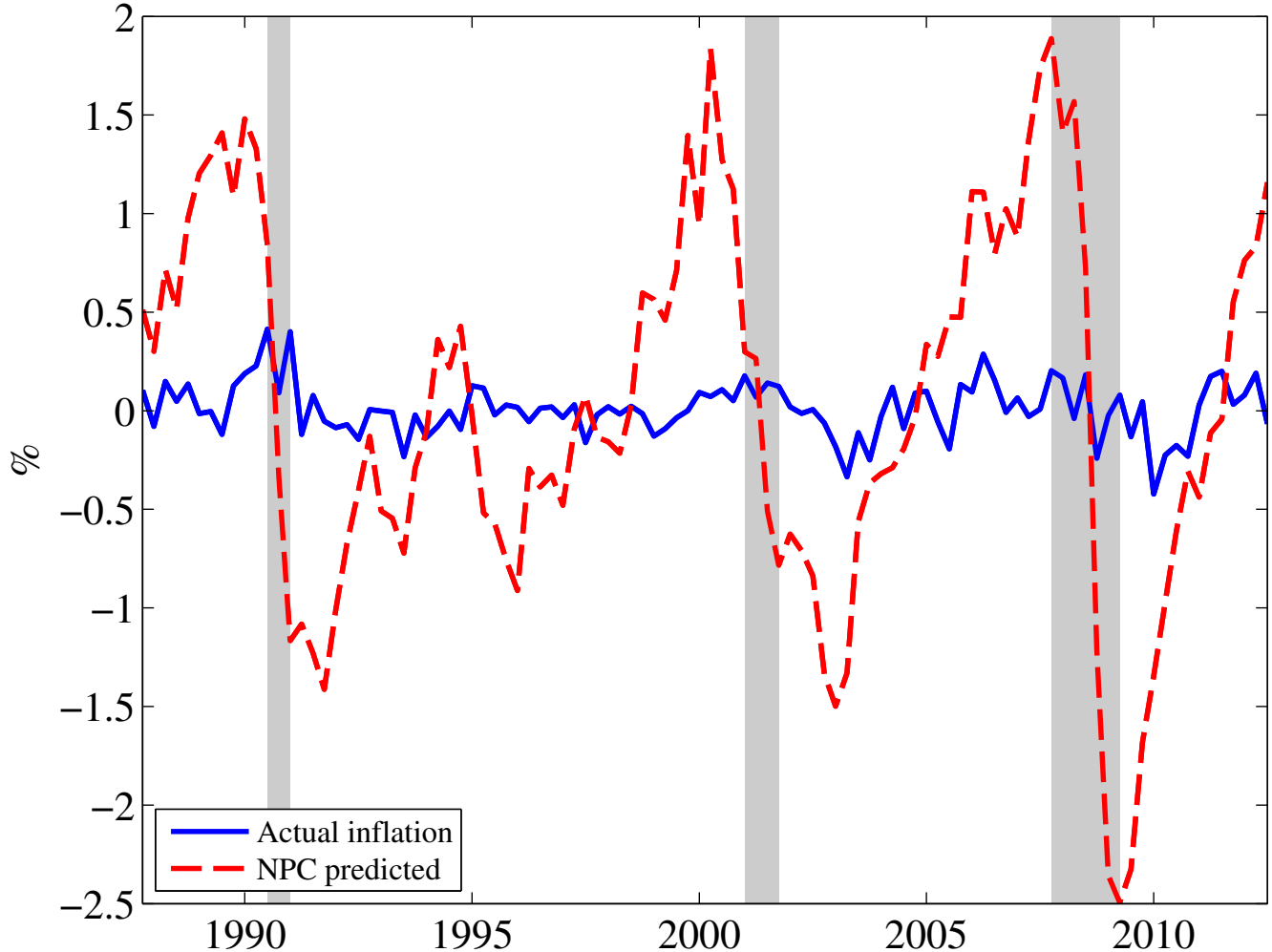
The Trouble with New Keynesian Models



- Post Volcker, New Phillips Curve implies that s.d. of inflation is **350%** of the actual one

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Intriguing Facts for Usual Shocks and Models

- Demand shocks ?
  - Should be inflationary in New-Keynesian models,
  - In flex prices, C and I move in opposite direction following a demand shock.
  - Why ?
    - Consumption and leisure are two normal goods,
    - Demands shocks typically do not distort their relative price,
    - If C increases, leisure increases, and I should decrease to finance the C increase.

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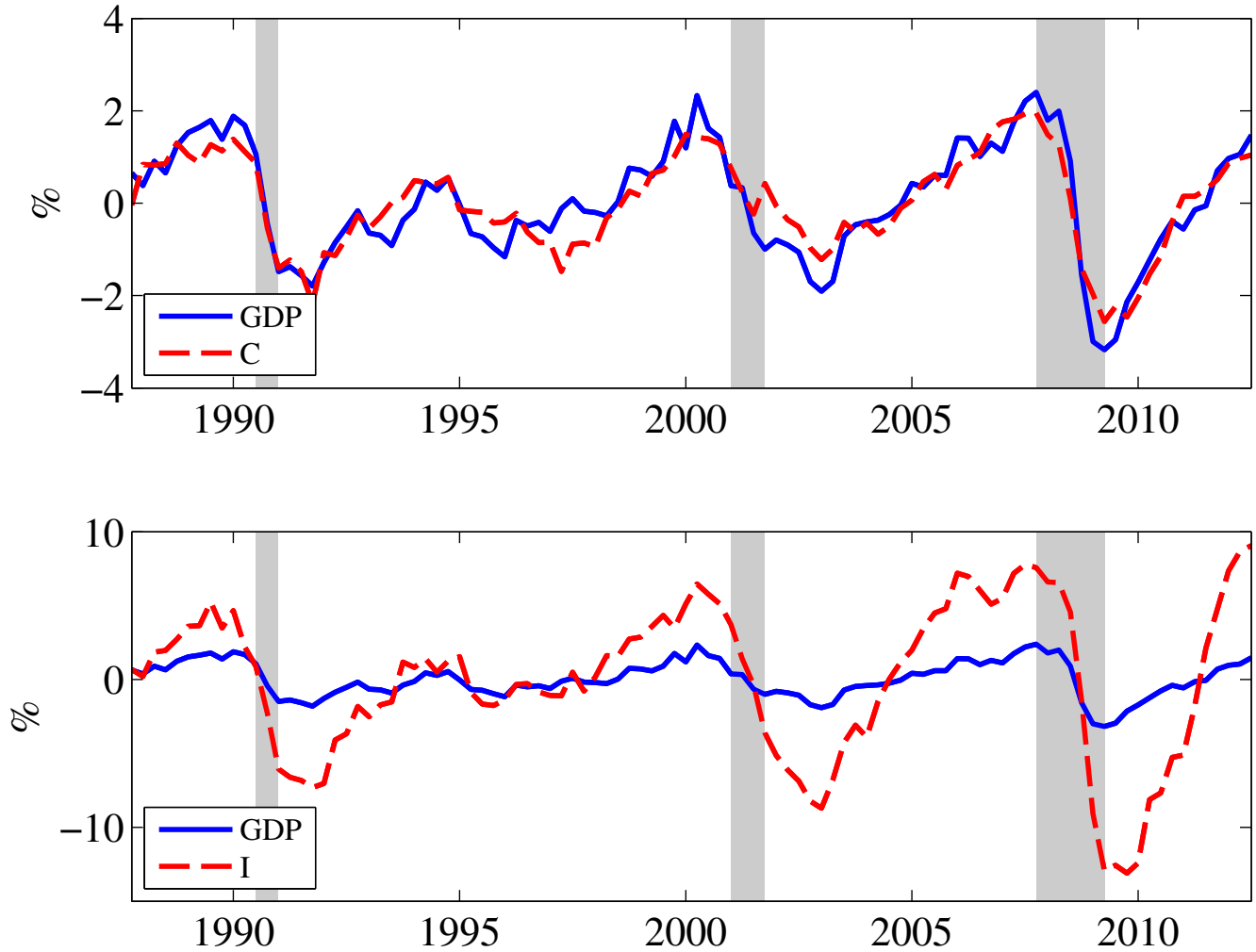
The Trouble with RBC Models : Demand Shocks



- Post-Volcker, correlations with HP filtered output are **.92** for C and **.91** for I.

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Intriguing Facts for Usual Shocks and Models

- Demand shocks ?
  - Should be inflationary in New-Keynesian models,
  - In flex prices, C and I move in opposite direction following a demand shock
- Supply shocks ?
  - Total Factor Productivity should be procyclical

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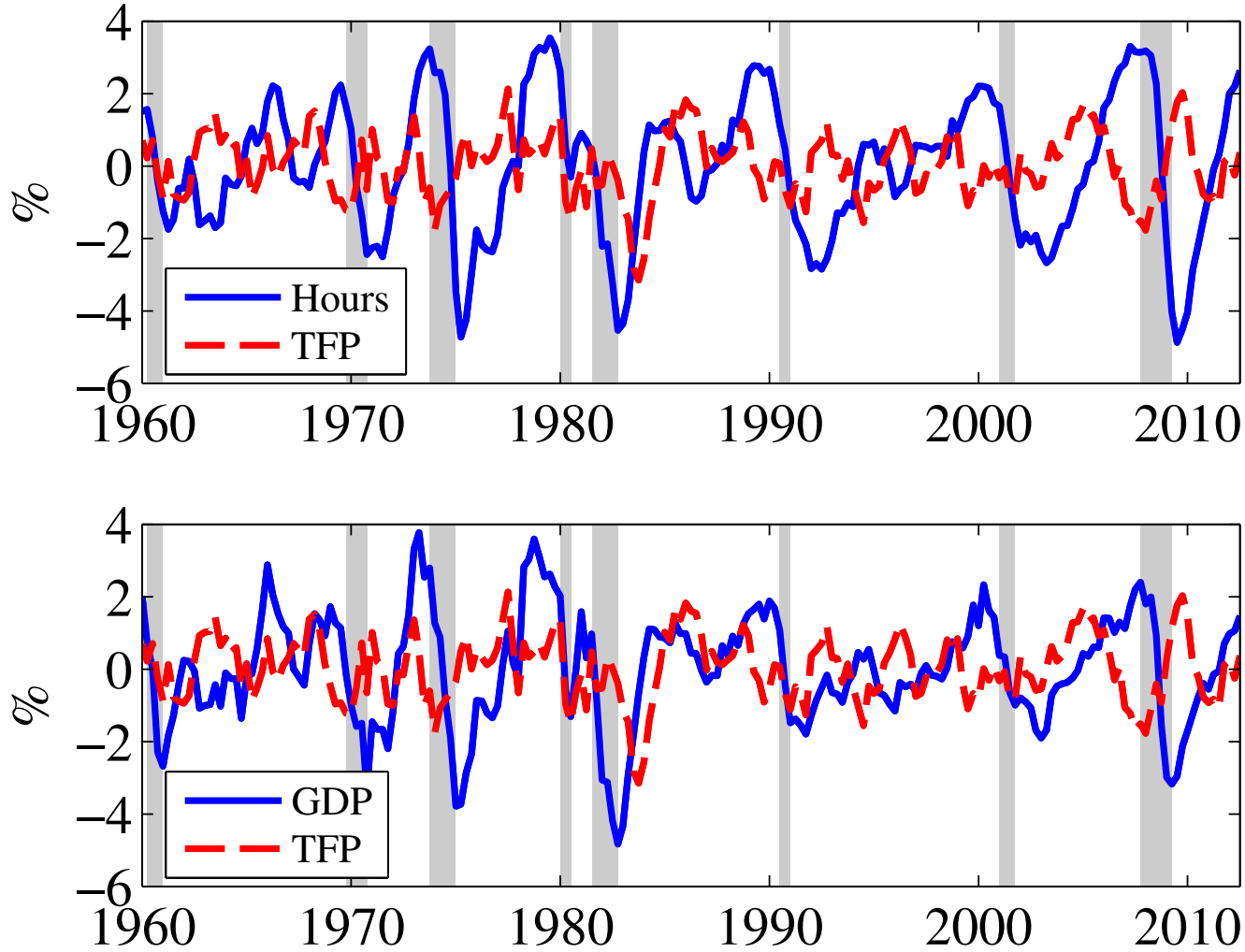
The Trouble with RBC Models : TFP



- Post-Volcker, correlation between hours worked and TFP is **-.64**, correlation between GDP and TFP is **-.23**.

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Intriguing Facts for Usual Shocks and Models

- Demand shocks ?
  - Should be inflationary in New-Keynesian models,
  - In flex prices, C and L move in opposite direction following a demand shock
- Supply shocks ?
  - Total Factor Productivity should be procyclical
  - Investment Specific Technology shocks : investment price should be countercyclical

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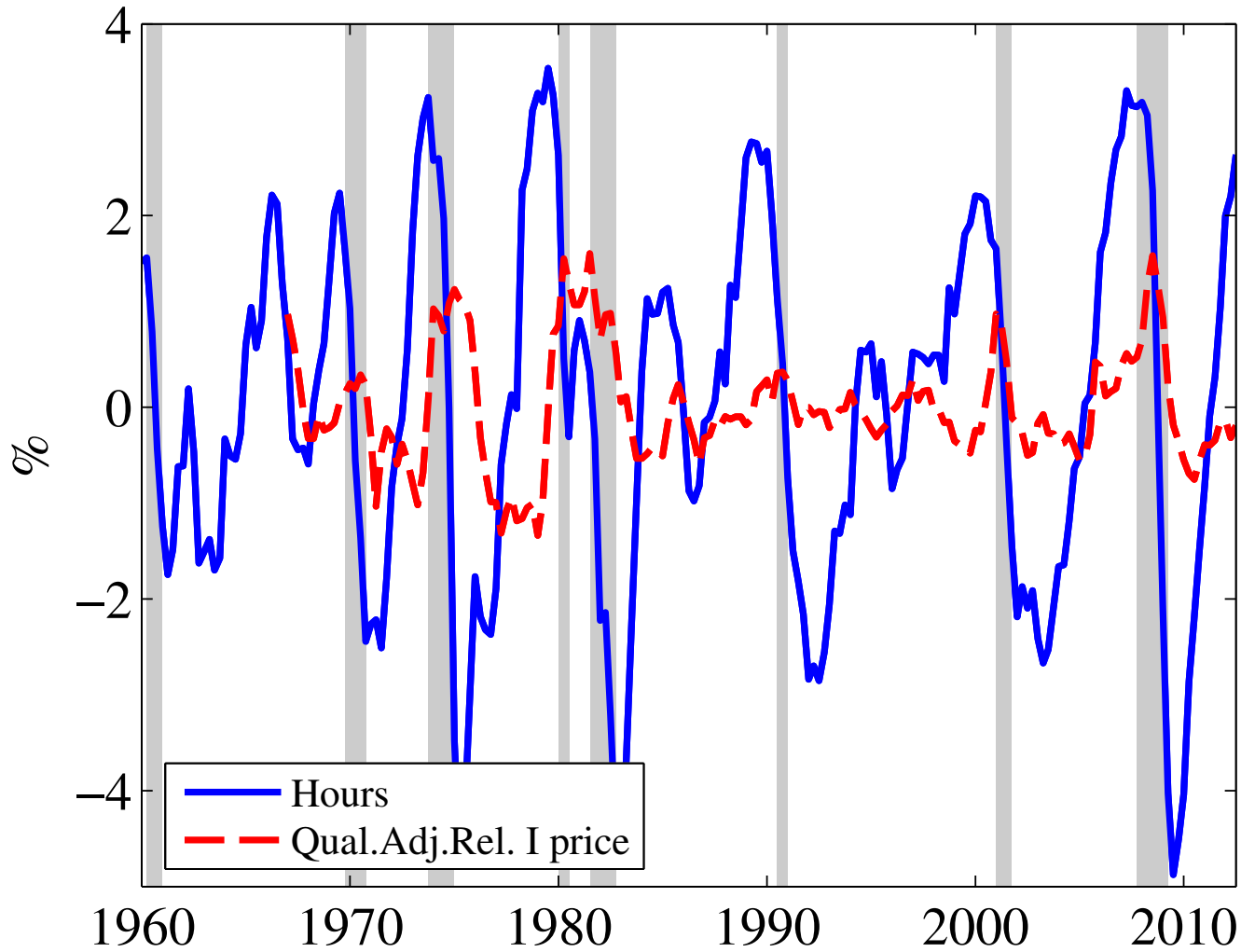
The Trouble with RBC Models : IST shocks



- Post-Volcker, correlation between hours worked and relative price of investment is **.56**.

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The Trouble with RBC and NK Models

- Possible to "fix" these commonly used RBC or NK models to fit facts : "Marginal Efficiency of Investment" shocks, preference shocks, fixed price ("backward-looking" Phillips curve), adjustment costs to the investment rate, in-sample correlation of shocks, etc...
- Those explanations in our opinion are not very compelling, intuitive or robust.
- We propose the following story ...

(Long) Introduction

A Story

- Spain
- Two types of households
- Carpenters and Farmers
- Houses (capital good) and tomatoes (consumption good)
- In the short run, specialization is given.

(Long) Introduction

A Story (continued)

- The carpenter needs to eat, the farmer needs a shelter
- Static Gains from Exchange (from *Trade*) between the two.
- Assume that the perceived value of houses decreases (downward revision of expectations, bad news, pessimism, ...)
- The relative price of houses in terms of tomatoes p will go down
- The carpenter will work less for two reasons
  1. he does not want as many houses as before
  2. he cannot trade as many houses as before
- L_I and $I \searrow$
- The farmer does not want to buy as many houses as before, and does not need to produce as many tomatoes for the trade : L_C and $C \searrow$

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A Story (continued)

- $C \searrow$, $I \searrow$, $L \searrow$ in both sectors, $Y = C + pI \searrow$
- If reallocation of workers take some time, the recession is likely to be protracted.
- Changes in perceptions about the future are affecting the width of Gains from Trade today
- Fluctuations are here related with variations in the amount of Gains from Trade between agents.
- This is about *natural output* fluctuations $\rightarrow$ does not move inflation.

(Long) Introduction

What do we do

- Two key ingredients in our modeling :
  1. Some specialization in production .
  2. Some market incompleteness (this will become clear later)
- We show in a constructive way why we need those ingredients
- One key concept : Gains from Trade between agents and how do they fluctuate.
- That model allows to revisit a large set of macroeconomic issues (not in this talk)
  - The role of expectations (news, revisions, sentiments, optimism, changes in uncertainty...)
  - The size of the fiscal multiplier
  - The existence of non inflationary boom-bust cycles and monetary policy
  - The Paradox of Thrift
- We address those issues through the lens of changes in gains from trade between agents

Roadmap

1. Framework
2. Perception Driven Fluctuations
3. Contingent Claims and Ex Ante Markets

Roadmap

1. Framework
2. Perception Driven Fluctuations
3. Contingent Claims and Ex Ante Markets

1. Framework

Setup

- Two-agents/two-sector economy

1. Framework

Setup

- Houses and Tomatoes
- Carpenters and Farmers

1. Framework

Preferences

- $U^i(C_i, 1 - L_i) + V^i(K_i; \Omega^i)$
- $V^i(K_i; \Omega^i)$ represents the *perceived* continuation value of investment, given information Ω^i that is considered as relevant by agent i.
- V concave in K_i and $\frac{\partial^2 V^i(K_i;\Omega)}{\partial K_i \partial \Omega} > 0$

1. Framework

Information

- We assume that agents all share the same informations/beliefs :

$$\Omega^i = \Omega.$$

1. Framework

Technology

- Concave CRS technologies in both sectors.
- $C = F^C(L_1^C, L_2^C)$ and $K = F^I(L_1^I, L_2^I)$.
- We will contrast :
  - "Integrated labor markets" : $C = F^C(L_1^C + L_2^C)$ and $K = F^I(L_1^I + L_2^I)$.
  - "(very) Segmented labor markets" : $C = F^C(L_1)$ and $K = F^I(L_2)$.

1. Framework

Competitive Equilibrium

- We study the competitive equilibrium of this economy

Roadmap

1. Framework
2. Perception Driven Fluctuations
3. Contingent Claims and Ex Ante Markets

2. Perception Driven Fluctuations

The Question

- Under which conditions does a increase in the perceived marginal value of capital ($d\Omega > 0$) does create a boom ? Does a decrease create a bust ?
- We view such a shock as a prototypal *demand* shock.

2. Perception Driven Fluctuations

Competitve equilibrium puts little restrictions on allocations

Proposition 1 : *Following a change in perceptions,*

- *Positive co-movements (C, I and L increasing) are possible,*
- *What General Equilibrium excludes is that all individual C^i, L^i and I^i co-move.*

2. Perception Driven Fluctuations

The representative agent case

Corollary 1 : *With a representative agent, positive co-movements are not possible.*

2. Perception Driven Fluctuations

The importance of labor market segmentation

- What does matter for aggregate positive co-movements ?
- Preference heterogeneity or labor market segmentation ?

2. Perception Driven Fluctuations

The importance of labor market segmentation

Proposition 2 :

- *If labour markets are fully integrated, positive co-movement are not possible.*
- *If preferences are identical and labour markets not fully integrated, positive co-movement are possible.*

2. Perception Driven Fluctuations

Mechanism

- Assume labor market are fully integrated.
- The economy-wide allocations are simply the replication of individual choices (no meaningful trade)
- $d\Omega > 0$: capital is more valuable : all agents shift labor from the C sector to the K sector.
- C moves down, L and K move up.

2. Perception Driven Fluctuations

Mechanism

- Assume full specialization
- Positive co-movement in C and I because of the intra-temporal gains from trade induced by the labour market segmentation.
- $d\Omega > 0$: : capital is more valuable : C-workers want to buy K from K-workers.
- With upward sloping labour supply curve (sufficient condition), K-workers will respond by favoring a greater trade flow between the two types of workers.
- Both workers could reduce their purchase of their own good to offset these increased interpersonal transactions.
- Not under reasonable conditions.

Roadmap

1. Framework
2. Perception Driven Fluctuations
3. Contingent Claims and Ex Ante Markets

3. Contingent Claims and Ex Ante Markets

Robustness of the general framework

- We explored :
  - Capital in production.
  - Partial specialization.
  - More than two agents.
  - More than two goods.
- All results go through
- We have not allowed for financial trade between agents.
- Let's do it now.

3. Contingent Claims and Ex Ante Markets

Contigent Claims

- Agents trade among themselves state contingent claims.
- The contingencies are different possible realizations of the random variables in S.
- $S = \{\text{predetermined endo. variables}, \text{exog. variables}\}$
- All results go through

3. Contingent Claims and Ex Ante Markets

Ex Ante Markets

- Things are different ones we allow for contingencies to include realizations of the perceptions themselves (Ω).
- (Realistic ?)
- Both agents consumptions become independent of the realization of Ω
- (in our simple setup with additive labor disutility)

Proposition 3 : *When agents are allowed to trade contingent claims written on the realization of Ω, then positive aggregate co-movements are not possible if*

1. *labor is homogeneous*
2. *or if labor specialized and the preferences $U(C, 1-L)$ are separable.*

- The market incompleteness that is needed is the impossibility to insure against changes in perceptions

3. Contingent Claims and Ex Ante Markets

Normative issues

- Assume the Planner shares the same perceptions Ω
- With ex ante markets, consumption is smoothed w.r.t. changes in perceptions .
- This suggests that in our setup without ex ante markets, consumption is too volatile and investment not enough.
- Suggests that stabilization policies that aim at smoothing consumption are going in the right direction.
- This is exactly what unemployment benefits aim at doing.
- One should not aim at stabilizing investment.
- Policy advice : subsidize the tomatoes consumption of carpenters, not the housing sector.

Extension

- Fully specified dynamic models,
- Check the assumptions using micro data,
- Study Fiscal policy, Monetary policy, etc...
- This is done in the paper.
- In progress : quantitative model.