Discussion of Labor Force Participation, Wage Rigidites and Inflation

by Francesco Nucci and Marianna Riggi

Regis Barnichon (CREI and Universitat Pompeu Fabra)

ECB, November 2015

This paper

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- NK model with search frictions, real wage rigidity, endog. LFP $=>$ more wage rigidity in Euro area can generate counter-cyclical LFP
- Theoretical point: Search with endog. FP, irrelevance of real wage ridigity for inflation dynamics

Very interesting observation

- Most of recent discussion between US and Euro area labor markets focused on UR
  - Sky-rocketed in Spain and remained high
  - Decreased in Germany
  - Increased in US but mean-reverted (relatively) quickly
- Less discussed fact
  - LFPR decreased dramatically in US
  - LFPR increased in Euro area (true for **all** countries)

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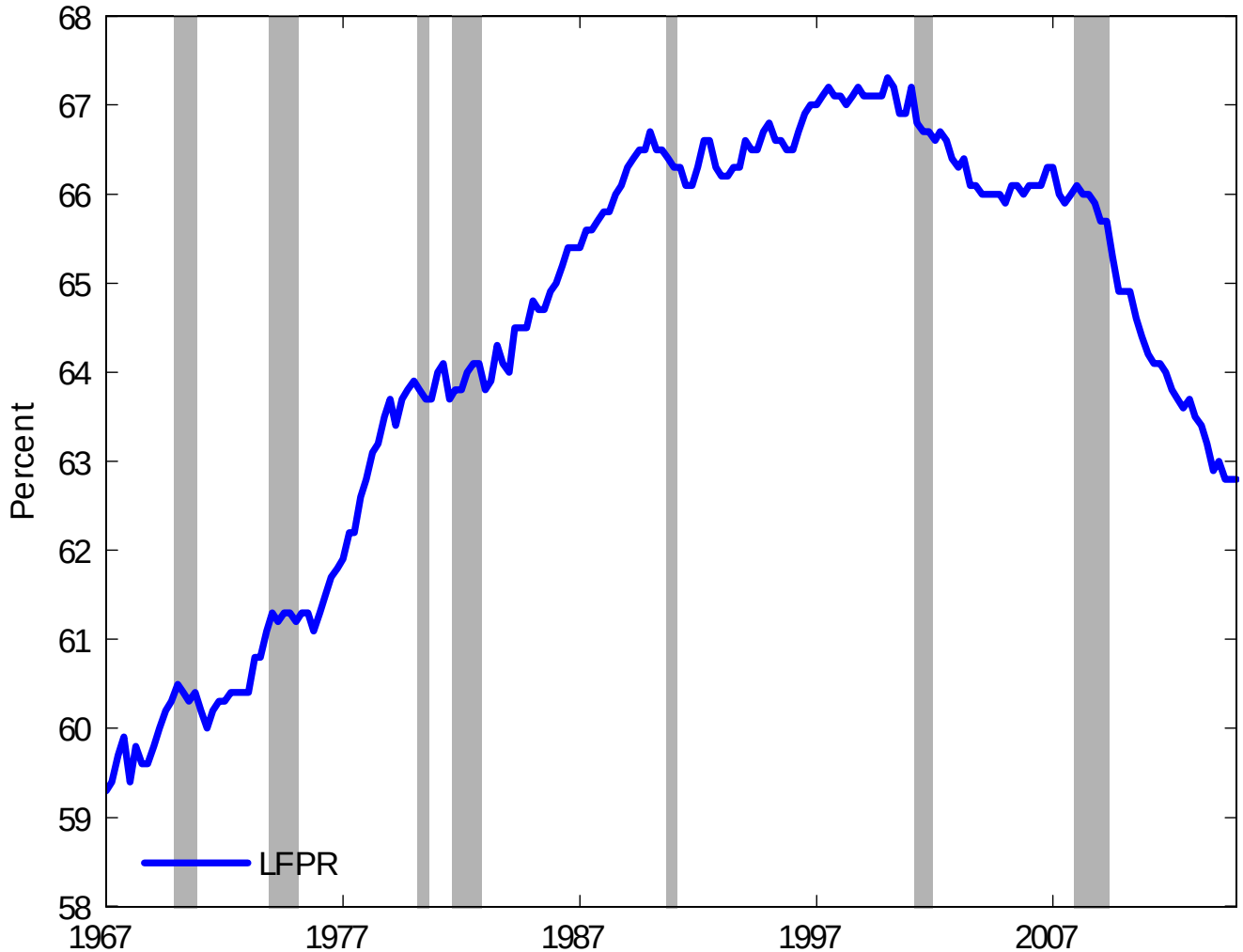
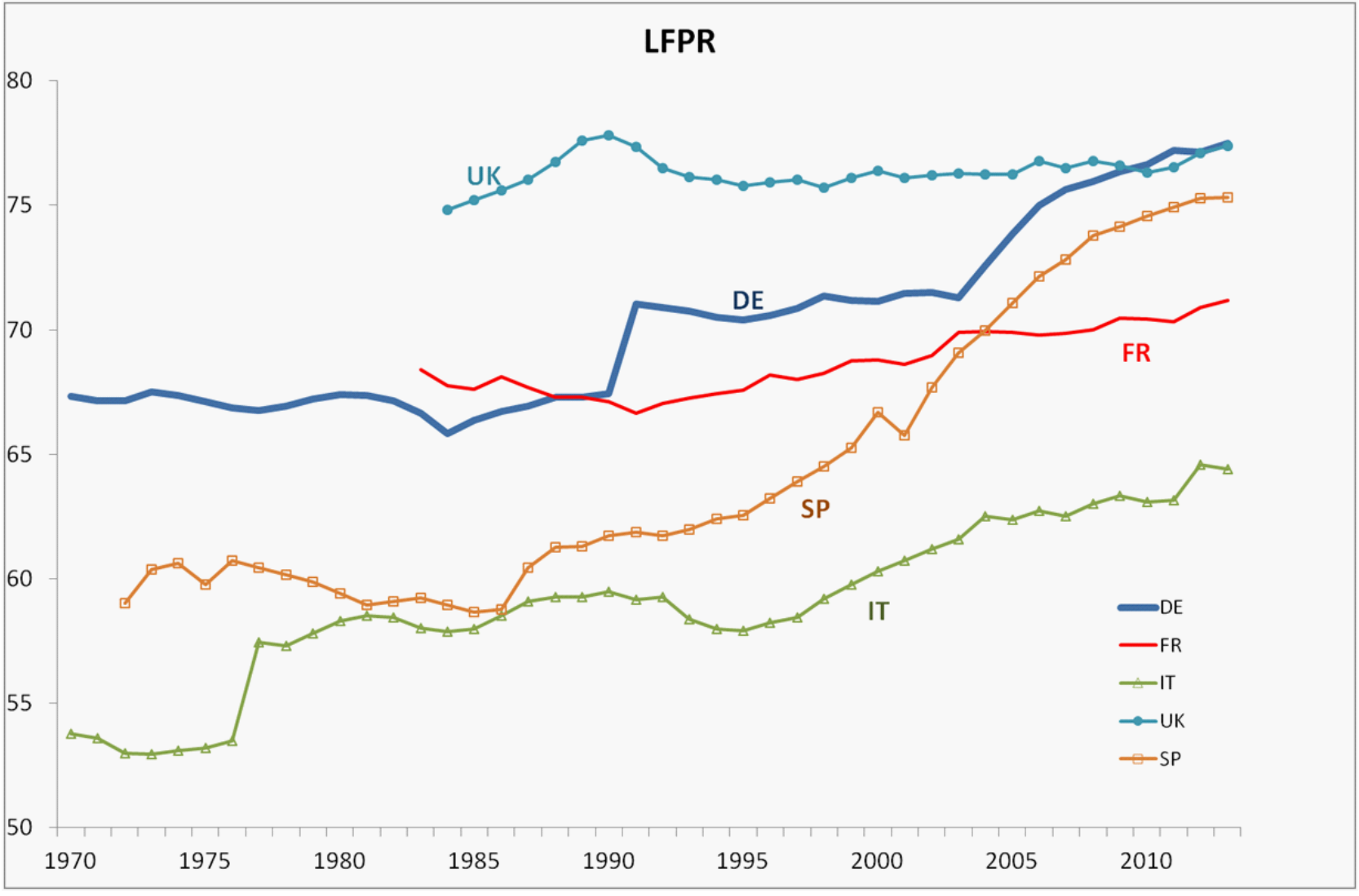
LFPR, US


68
67
66
65
64
63
62
61
60
59
58
Percent
1967
1977
1987
1997
2007
LFPR

LFPR, Euro countries

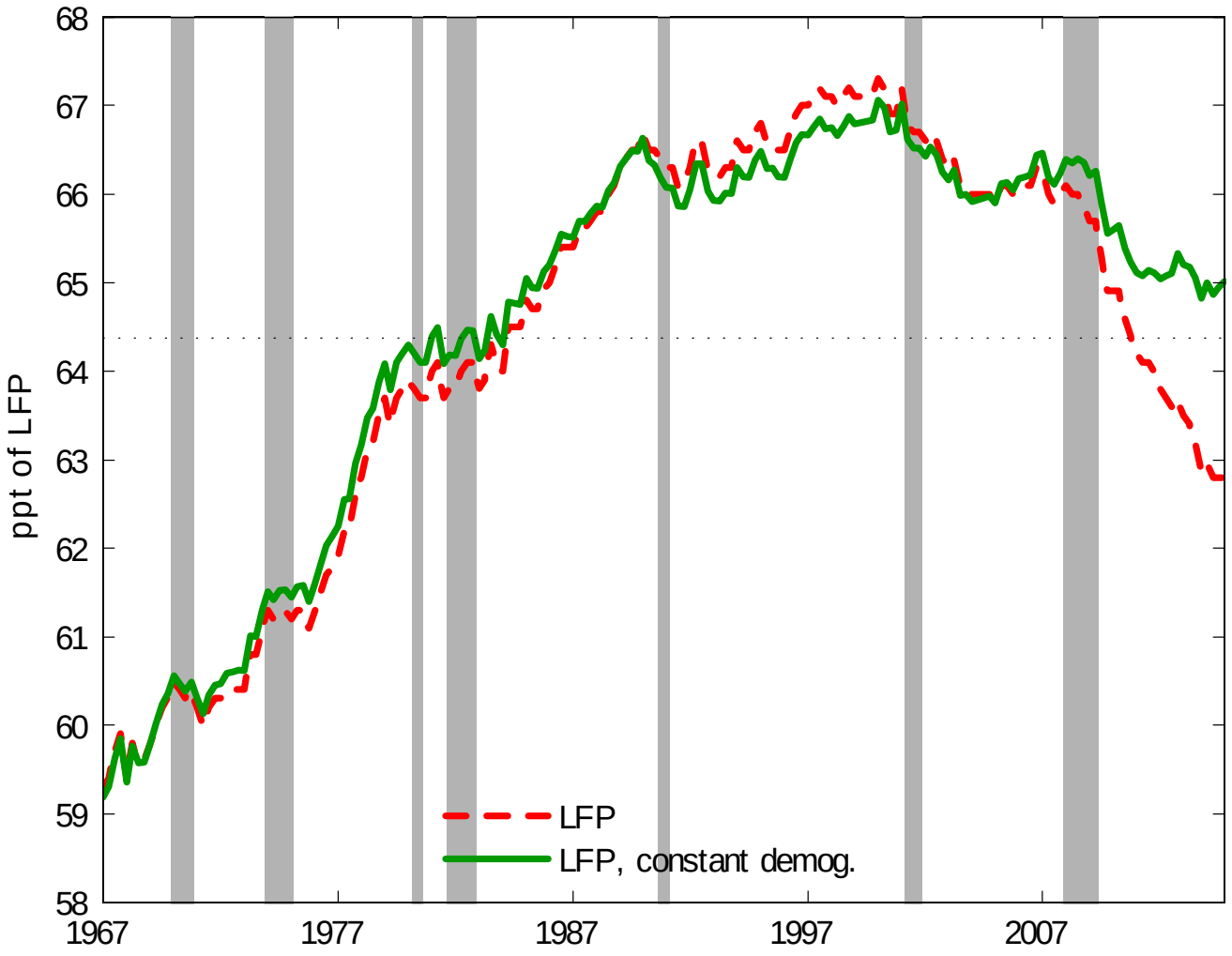


Understanding movements in LFPR

LFPR used to be considered pretty acyclical

- What is cycle?
- What is trend?
- Difficult to answer except for demographics/aging of baby boom generation

Controlling for aging, US



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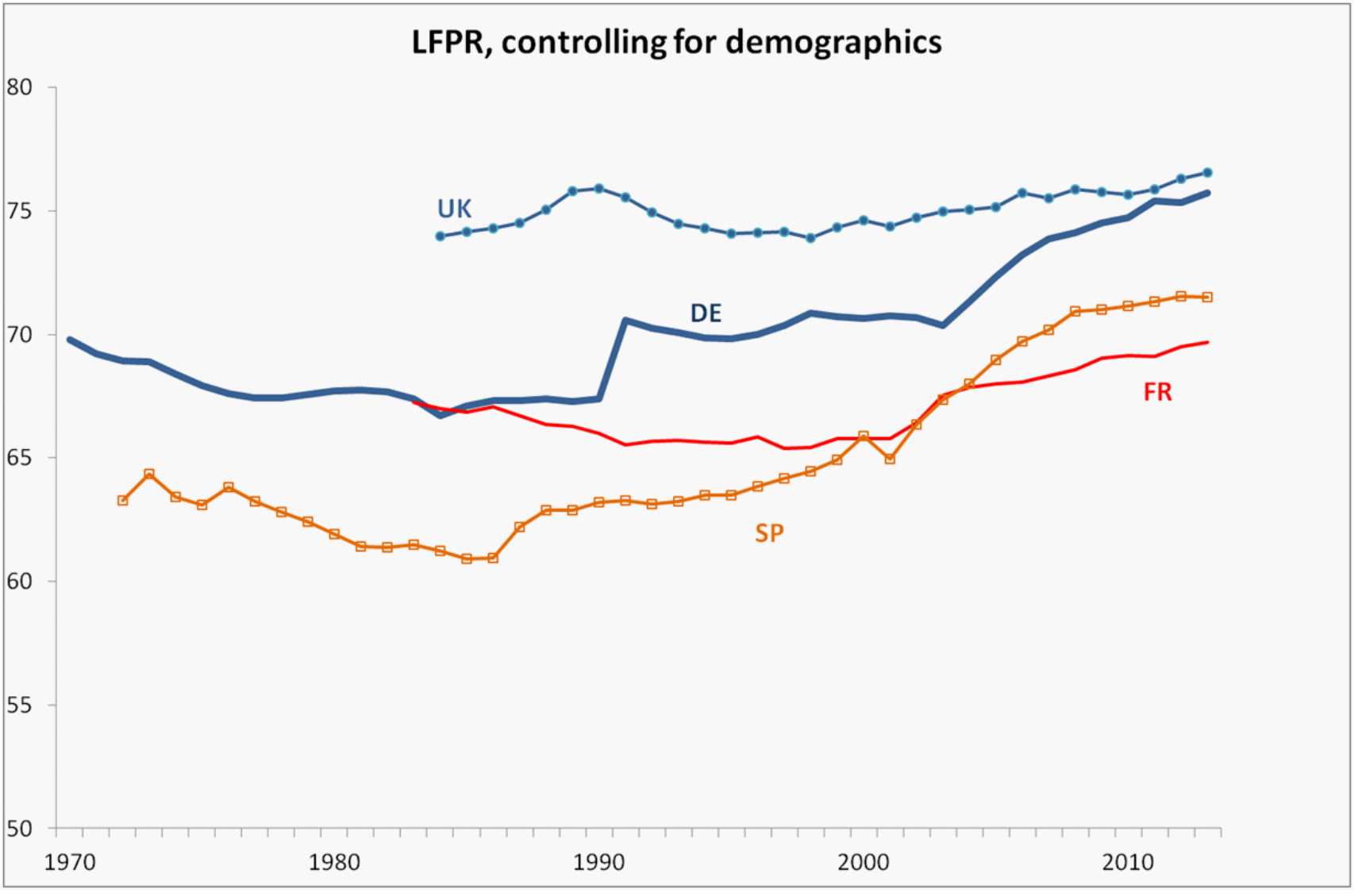
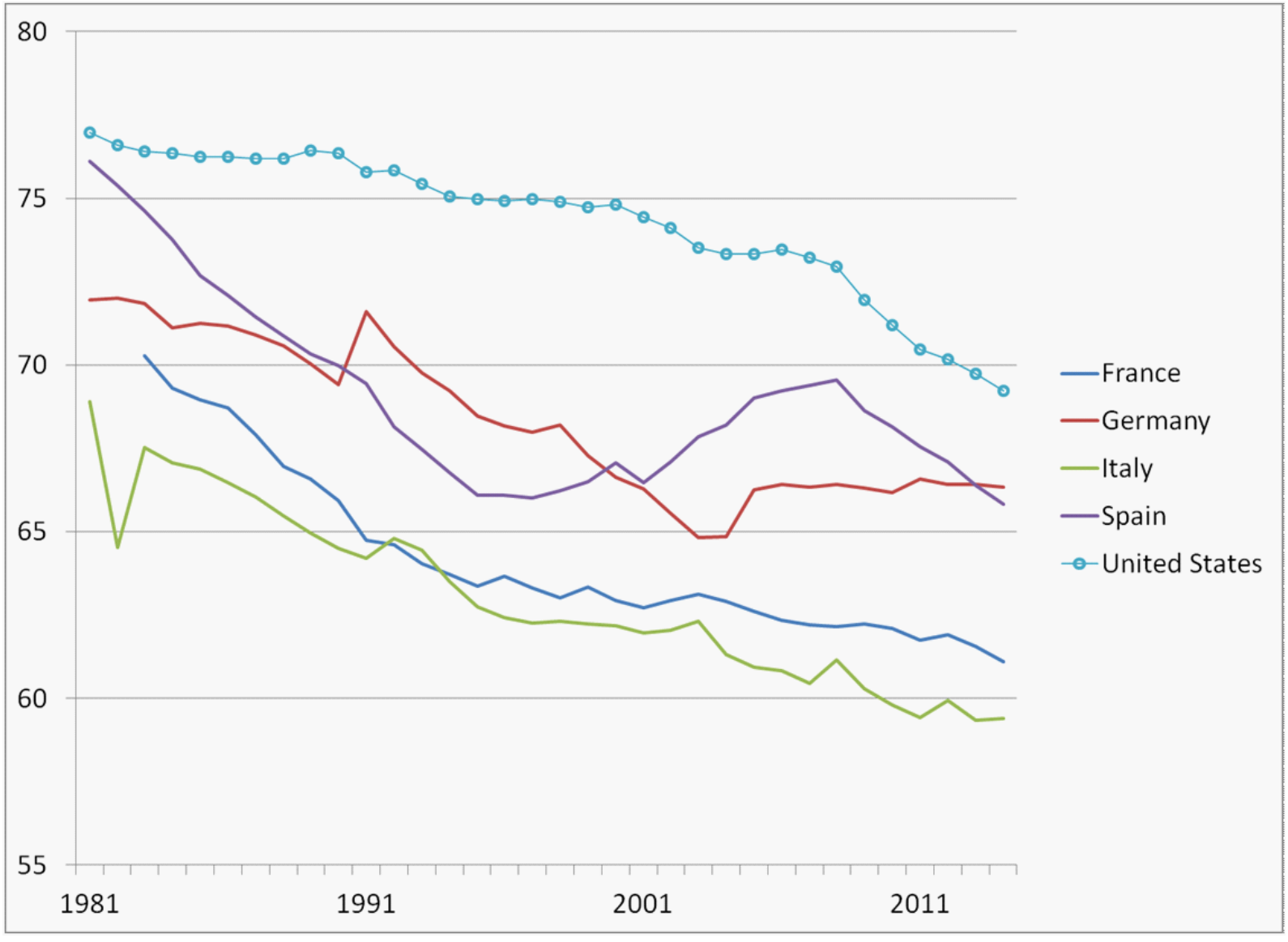


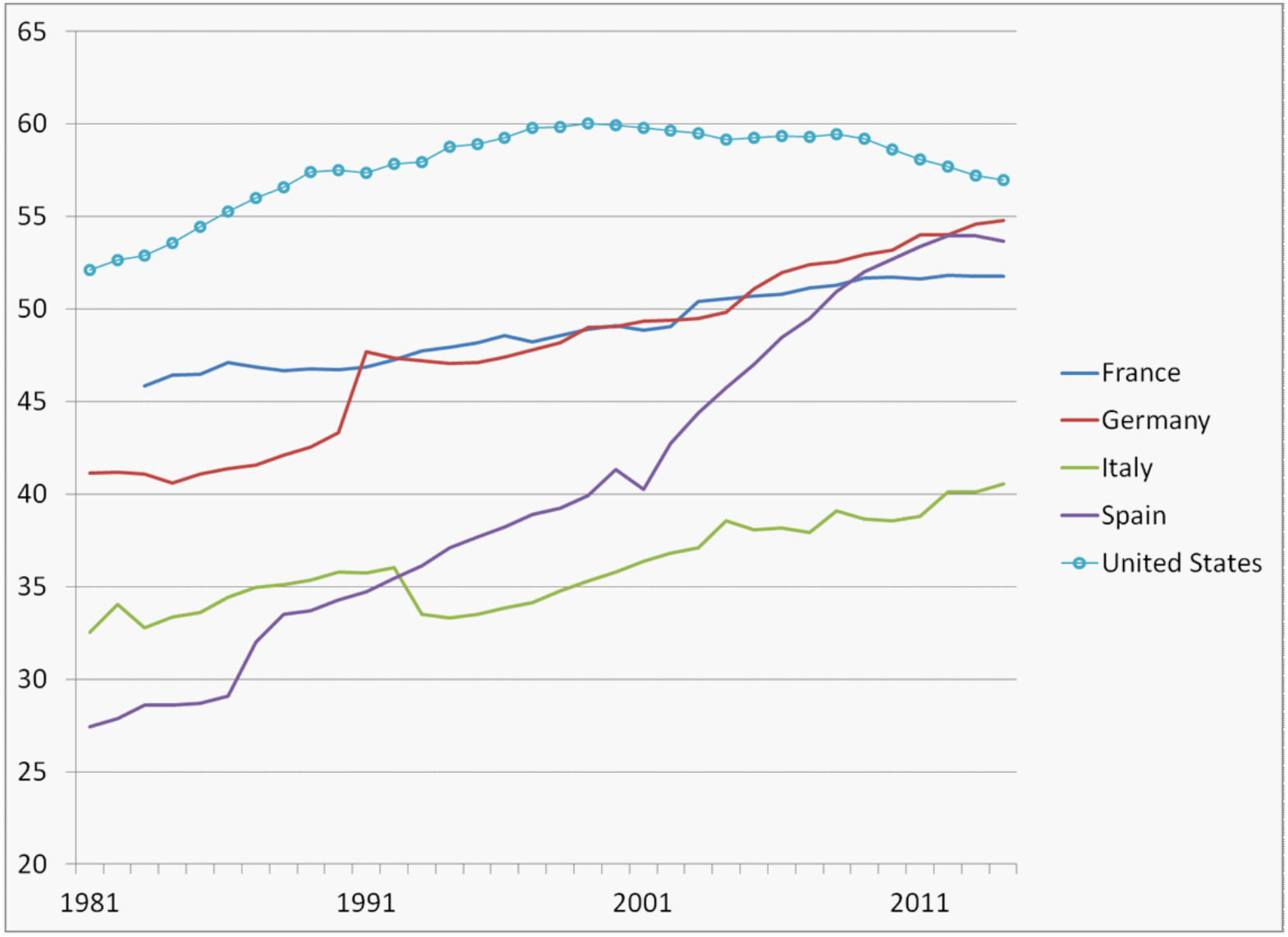
Women vs Men

- In fact, the difference betw EU and US due to women
- LFP^{male} decreased for all countries
- LFP^{female} increased for all countries **except** US

LFPR, Men


80
75
70
65
60
55
1981
1991
2001
2011
France
Germany
Italy
Spain
United States

LFPR, Women


65
60
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50
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35
30
25
20
1981
1991
2001
2011
France
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United States

Cycle vs. trend

- US: LFPR has cyclical feature in last recession
- Euro: Not so clear.. could just be women's LFPR catching up with men
- Perhaps, the most interesting cyclical question is the US? Why so cyclical now? why not before?

The model

- NK model with search frictions and endogenous participation

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- Without real wage rigidity: LFP $\downarrow$
- With wage rigidity, 1. is less strong and LFP may $\uparrow$

US vs. Euro area

- More real wage rigidity in Euro area
- In recession:
  - LFP $\downarrow$ in US
  - LFP $\uparrow$ in Euro area

Supporting evidence?

Are Euro nonparticipants more likely to join the LF in recessions?
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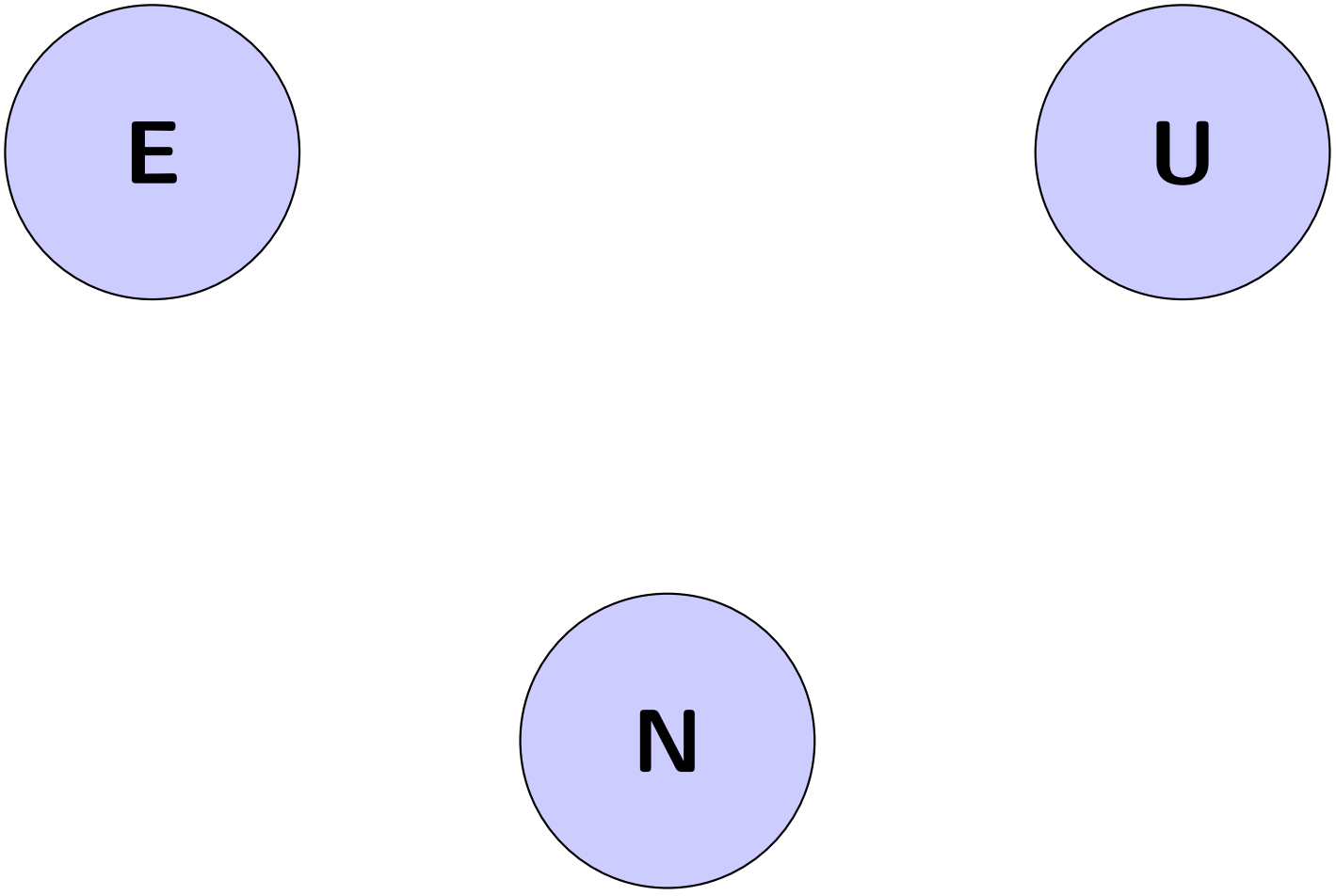
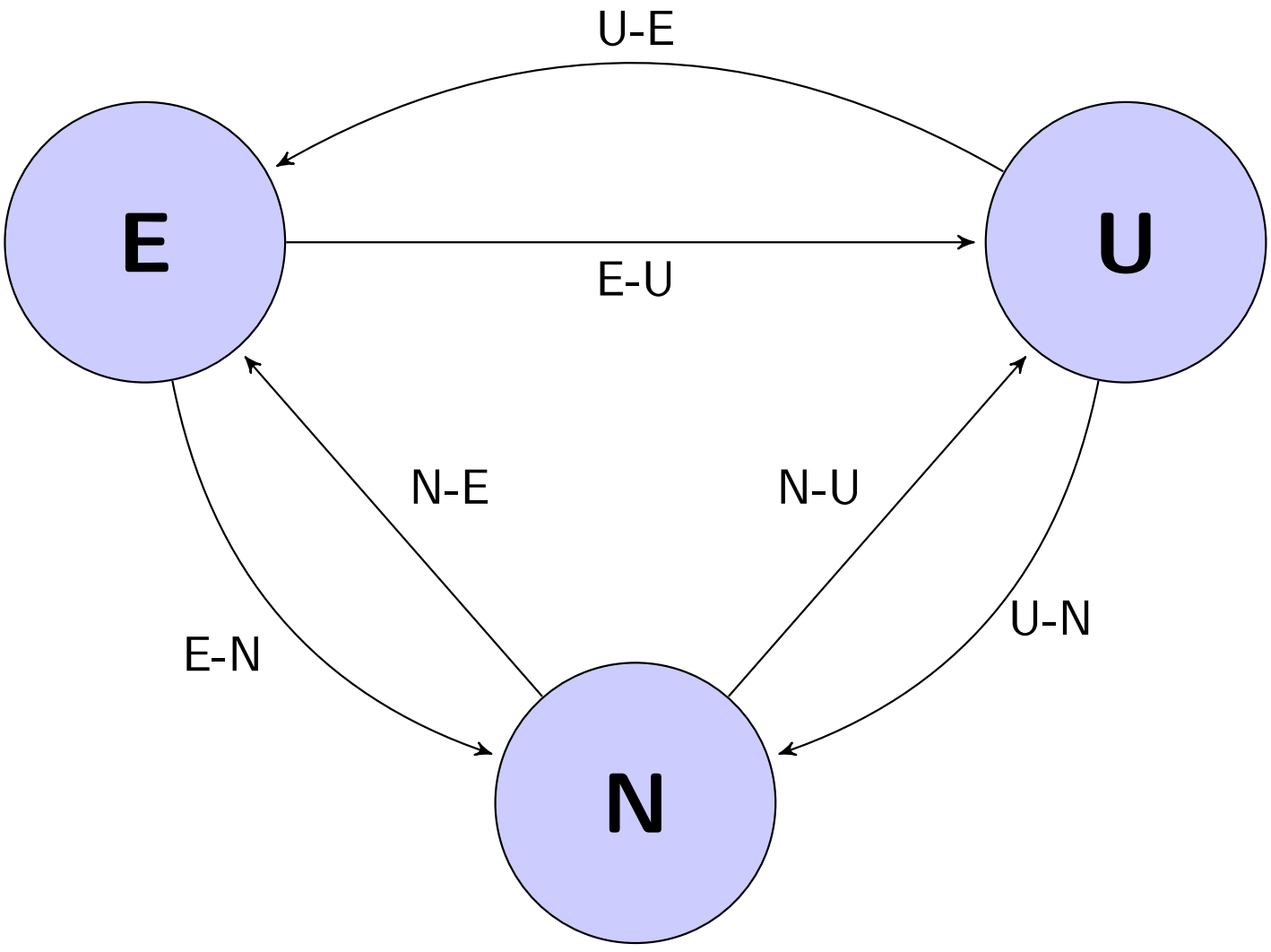
- (Pre-2006) Acyclicality of LFPR was result of offsetting (cyclical) worker flows
- Difficult to draw conclusions from cyclicality of LFP

The three labor market states

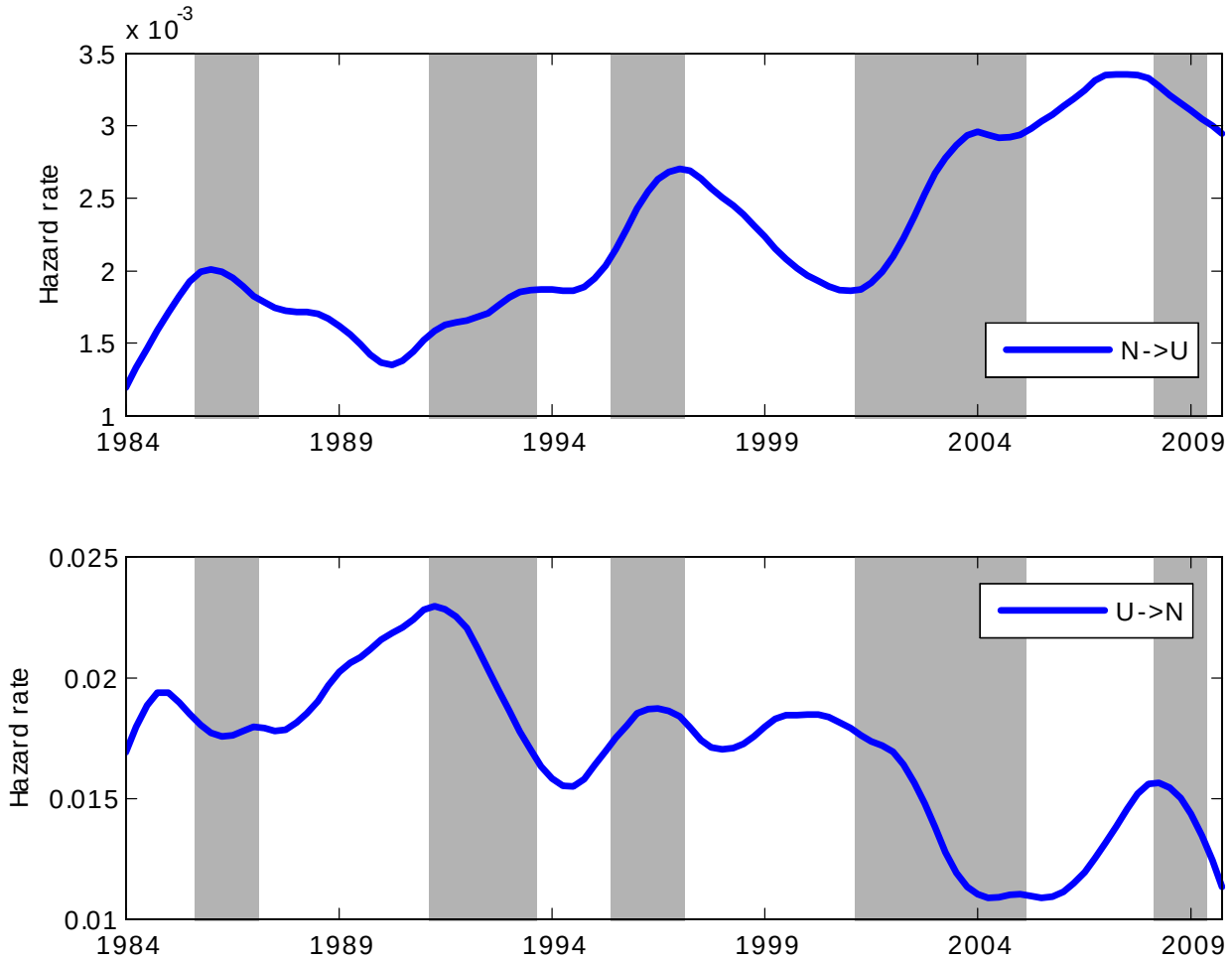


The worker flows

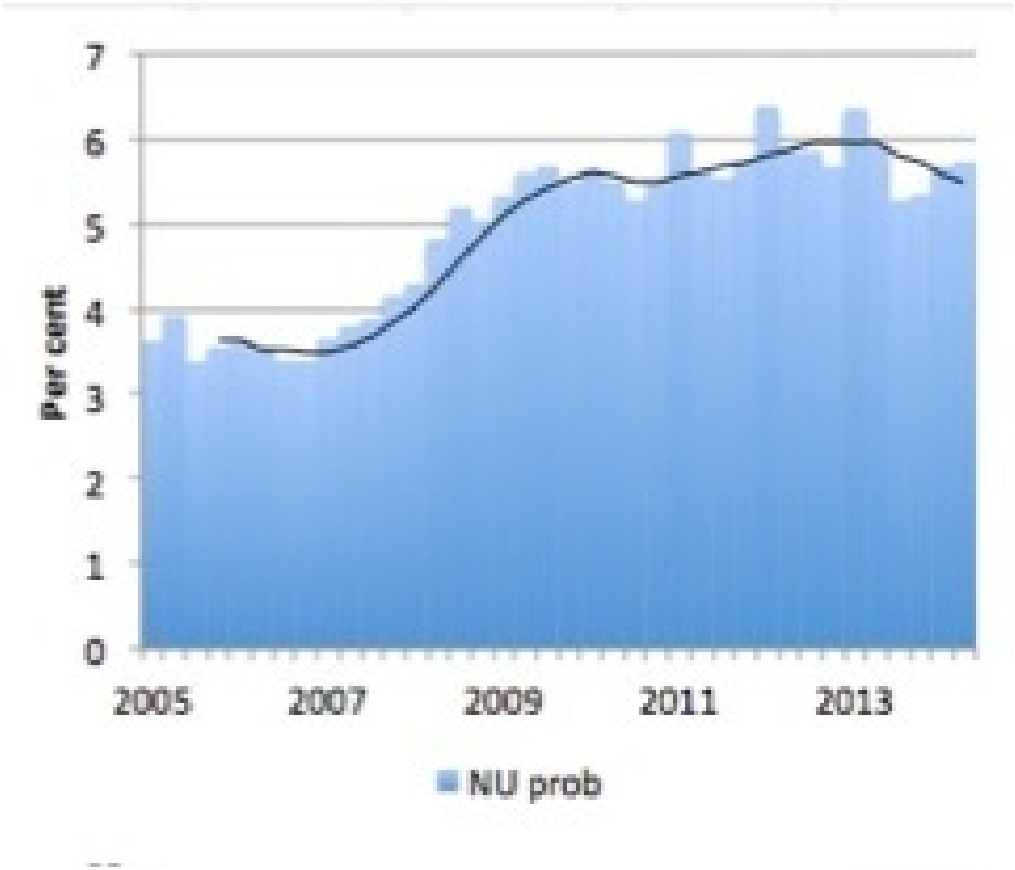


Transition rates (NU and UN) in Germany

Hertweck and Sigrist, 2015



Labor force entry rate (NU) in Spain



Germany and Spain:

- Labor force entry rises in recessions (NU $\uparrow$)
- Labor force attachment rises in recessions (UN $\downarrow$)

What about the US?

- Is it the opposite?....

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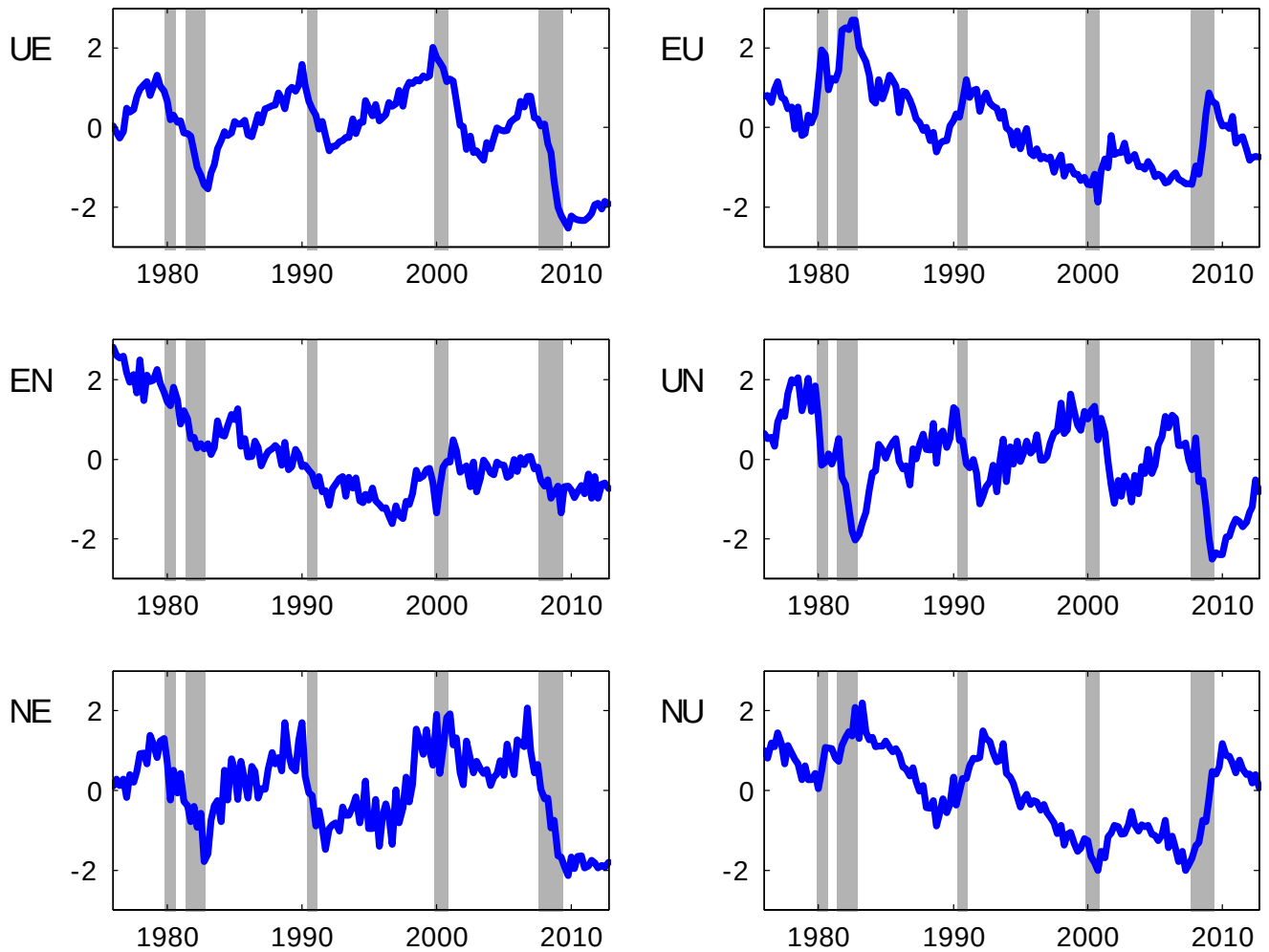
What about the US?

- Is it the opposite?....
- NO!

Transition rates in US

CPS, BLS



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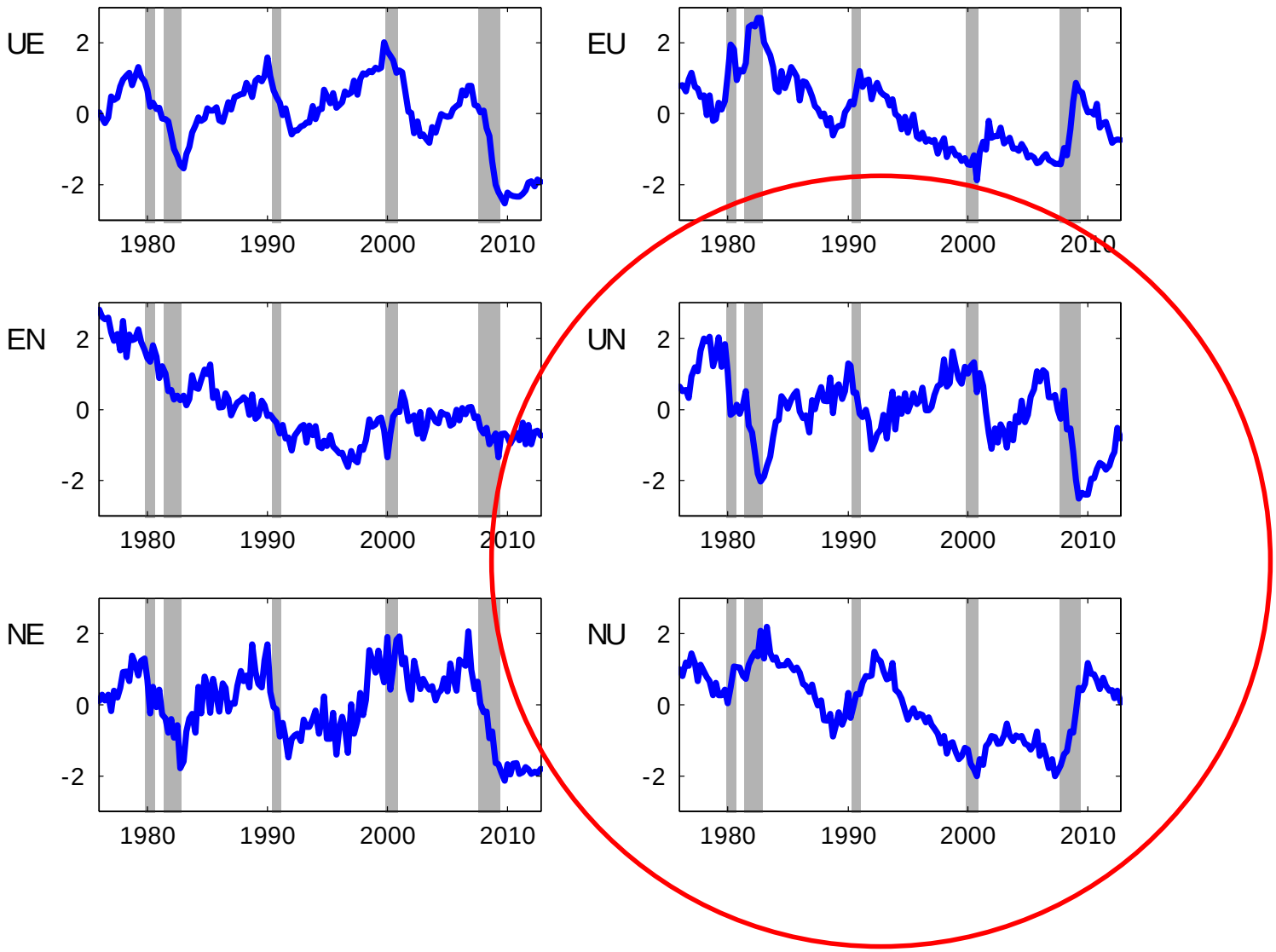


A problem?

During recessions:

- Labor force entry rises
  (NU $\uparrow$ and very high in 2011)
- Labor force exit decreases (UN $\downarrow$)
- Goes in opposite direction as model implies...

- So, what happened in the US?
- Why did LFPR decline? US seems to be the odd-ball
- Can use stock-flow model to dig a bit deeper into flows behind LFPR mvts

A stock-flow model of the labor market

- Describe labor market with Markov chain
- $$\begin{pmatrix} \dot{E} \\ U \\ N \end{pmatrix}_t = \Lambda_t \begin{pmatrix} E \\ U \\ N \end{pmatrix}_t$$

  with $\{E_t, U_t, N_t\}$ number of workers in each state, Λ_t transition matrix
- λ^{AB} the transition rate from A to B

A stock-flow model of the labor market (2)

From flows, can build any stock of interest:

- Unemployment rate

$$u_t = \frac{U_t}{E_t + U_t}$$

- Labor force participation rate

$$l_t = \frac{E_t + U_t}{E_t + U_t + N_t}$$

A stock-flow model of the labor market (3)

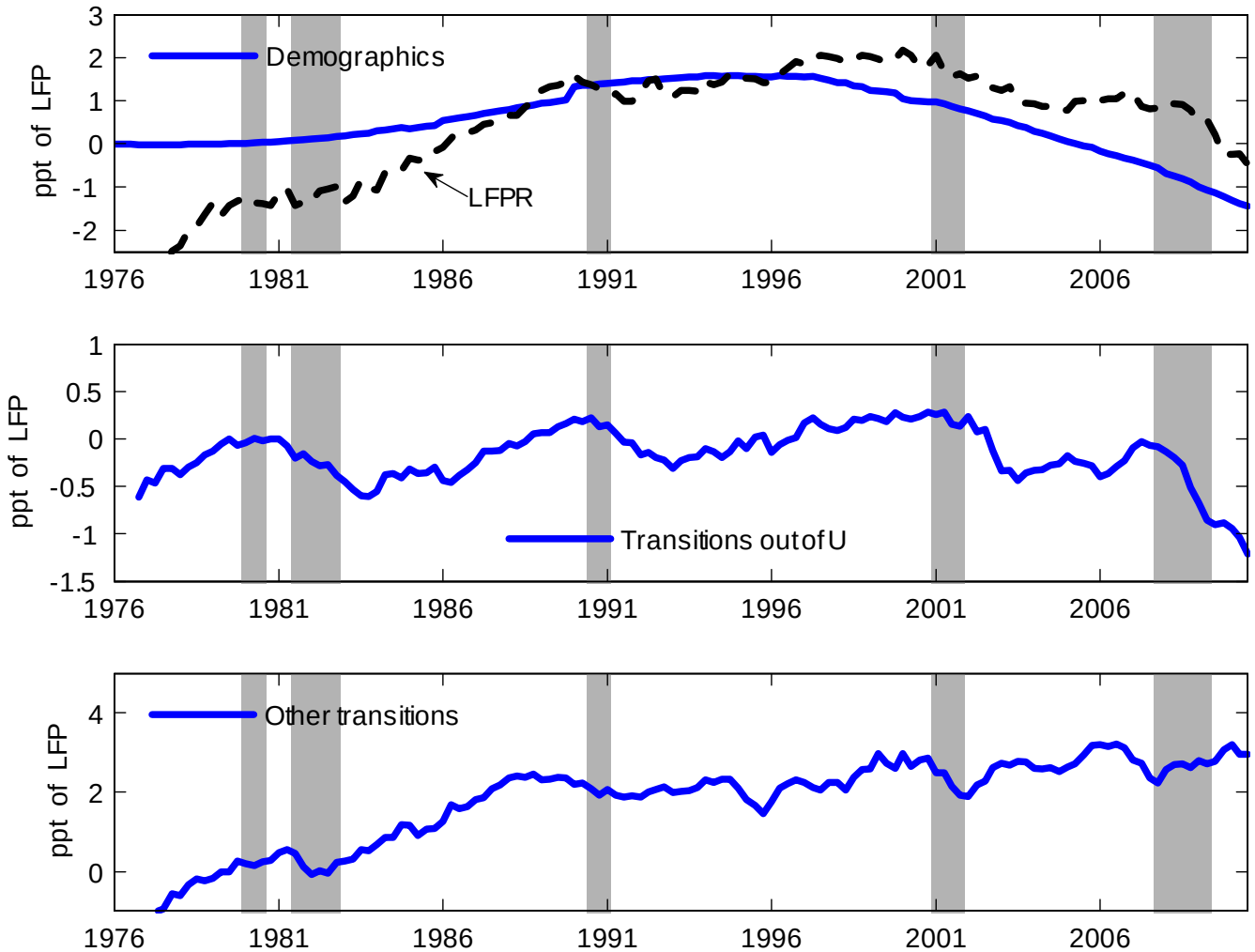
- From steady-state approximation (Shimer, 2012) get

$$l_t = l(\left\{\lambda_t^{AB}\right\}), \quad A, B \in \{E, U, N\}$$

- Linearize
- Isolate contribution of each flow to movements in LFPR

A stock-flow decomposition of LFPR

Barnichon and Figura, NBER-MA 2015



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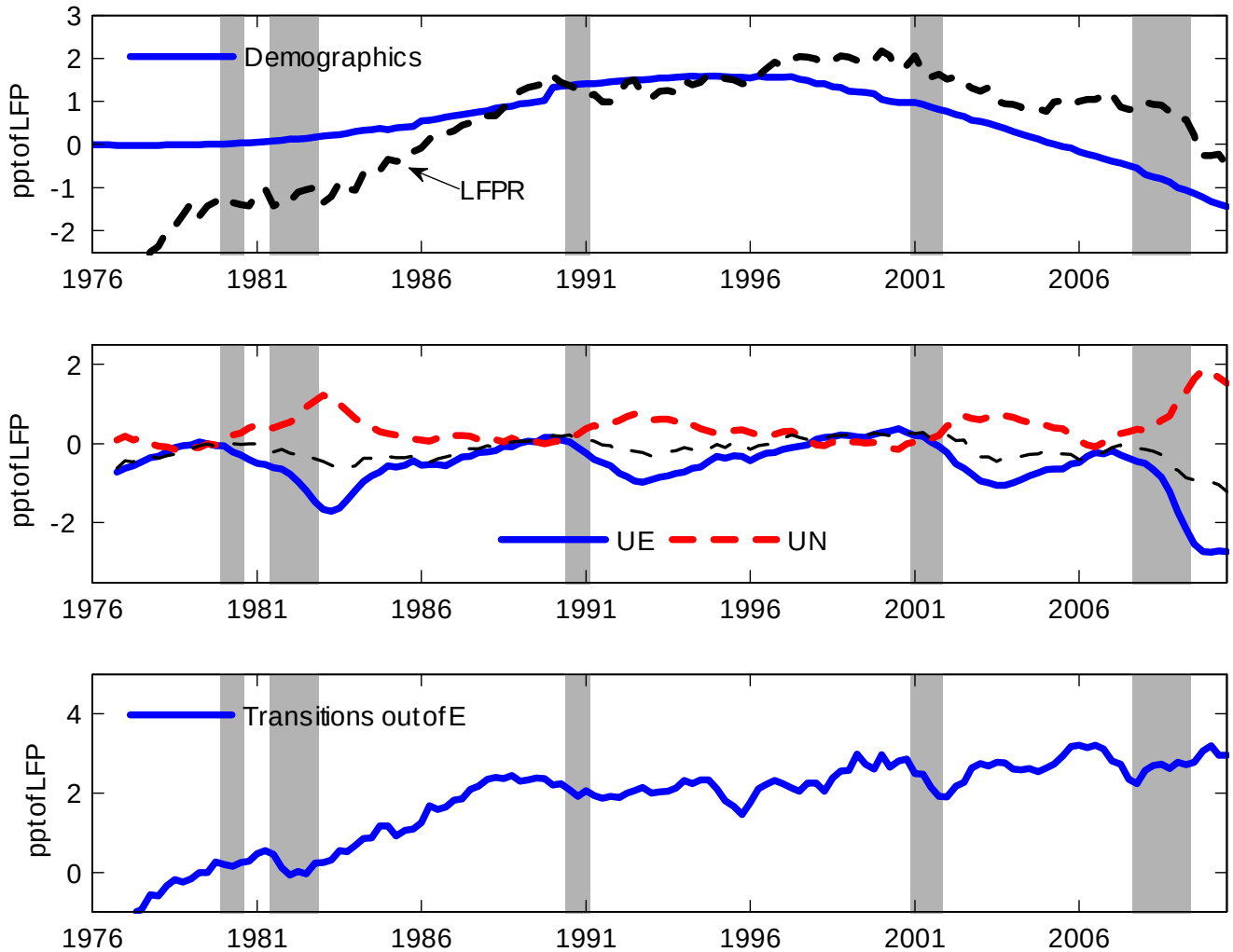

Effects of UN and UE on LFPR

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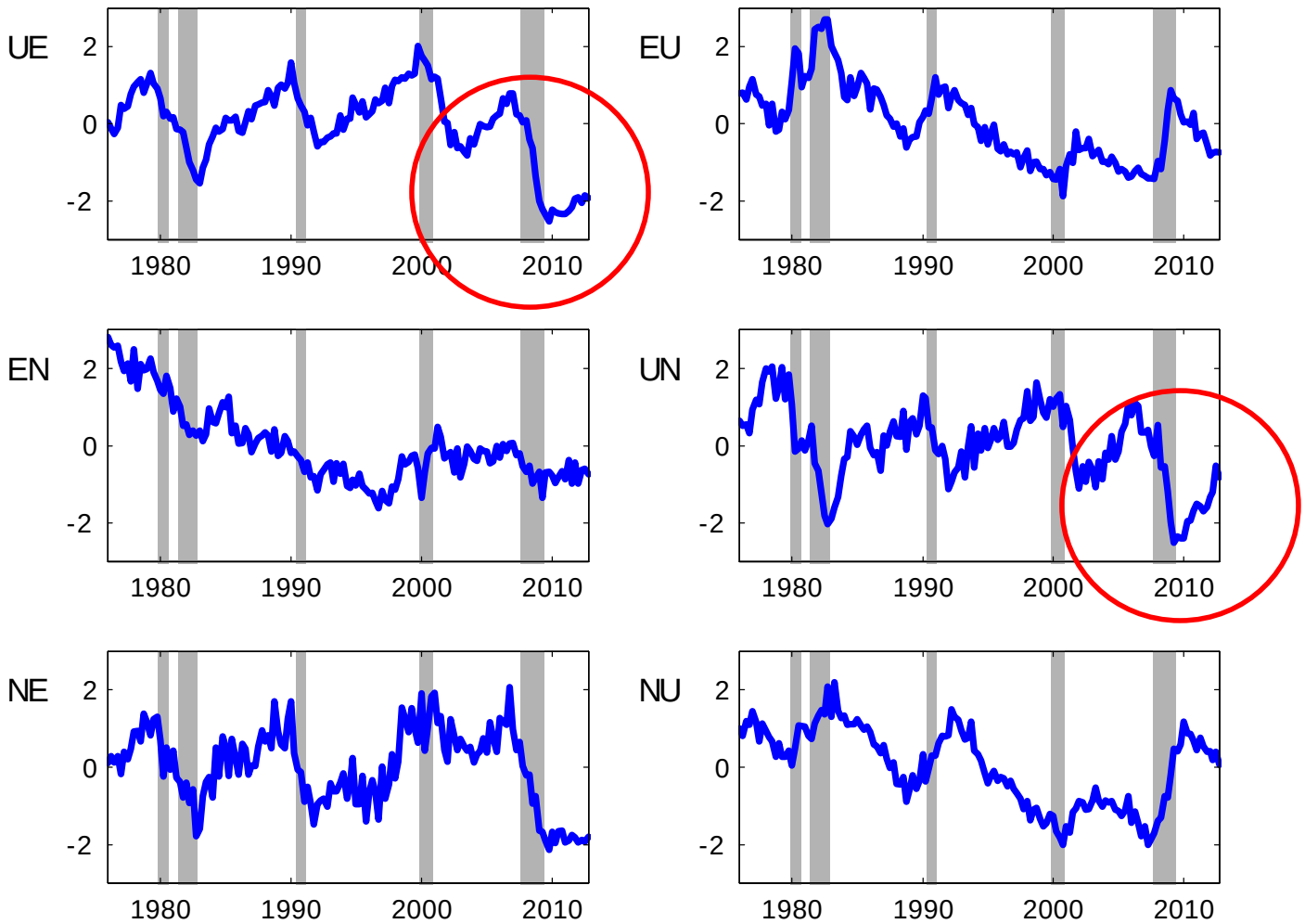
2. UE $\downarrow$ => LFPR $\downarrow$ because an Unemployed is more likely to leave LF than an Employed

3. UN did not decline as strongly as UE (cyclical)
   => UN high relative to UE
   => Weaker attachment to LF than "normal"

Transition rates in US

CPS, BLS



Bottomline

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- Could w be responsible through discouraged worker effect?
- Did w fall more than usual in last recession? (ie, less rigid)
- A comparison of LFPR (and real wage) cyclicality across time (rather than across countries)

US real wage, men

Elsby, Shin, Solon, JOLE 2014

Figure 1. U.S. Men's Mean Log Real Wages (PCE Deflator) over the Business Cycle

US real wage, women

Elsby, Shin, Solon, JOLE 2014

Figure 2. U.S. Women's Mean Log Real Wages (PCE Deflator) over the Business Cycle

- US real wage pro-cyclical, but less so in 08-09 recession
- Except for women
- $=>$ pro-cyclical LFPR^{women}

Comments

More generally, would be nice to explore:

- Cyclicality of LFPR^{US} across time
  $=>$ Why the paper's mechanism did not operate before?
- Behavior of real wage in US and EU

Theoretical point

- Irrelevance of real wage ridigity for inflation dynamics

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- Irrelevance of real wage ridigity for inflation dynamics
- Without search frictions

$$P_t = \mu \frac{w_t}{A_t}$$

so

$$A \downarrow \Rightarrow w_t \downarrow \Rightarrow P_t \text{ unchgd if } w_t \text{ flexible}$$
$$A \downarrow \Rightarrow P_t \uparrow \text{ if } w_t \text{ fixed}$$

Theoretical point

- But with search frictions, wage loses some of its allocative role

$$P_t = \mu \left[\frac{w_t}{A_t} + f(\theta_t) \right]$$

- $f(\theta_t)$: hiring cost
- Results similar to Krause and Lubik (2007)
- Real marginal cost relevant for P_t is not only real wage but also cost of hiring a worker

- In Krause and Lubik, this hiring cost can vary because of endog. separation
- In this paper, the hiring cost can vary because of endog. LFP
- In both papers, P_t response is similar with or without wage rigidity, because either w_t or θ_t adjust
- $A \downarrow$ with w_t fixed $=>$ # searchers $\uparrow$ $=>$ hiring cost $\downarrow$ which compensates $\frac{\bar{w}_t}{A_t} \uparrow$

Other question

Implications of model for behavior of UR?

- In Mortensen-Pissarides model, LFPR has no effect on UR because firms compensate for increase in #searchers by posting more vacancy
- Something similar here?

Conclusion

- Very interesting question
- Why different cyclicaly of LFPR in US and Euro
- New mechanism based on more real wage rigidity in Euro
- What about cyclical of LFPR^{US} over time?