# Macroeconomics and Search
# Part I

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# Introduction

- lots of existing surveys of search theory
- our paper is a critical assessment of the role of search in macro
- two big issues
  - business cycles
  - cross-country

# Two Questions

- is search useful for understanding macroeconomic phenomena?
  - label workers as unemployed
  - descriptive model of individual experiences
  - match a variety of labor market facts
  - focuses our attention on firms' recruiting
- does search affect model outcomes?
  - gives rise to match-specific rents (Manning)
  - acts like an adjustment cost on labor
  - sectoral shocks lead to time-consuming reallocation
  - frictions create asymmetries in unemployment rate
  - increasing returns in search create multiple equilibria

# Past *Handbooks*

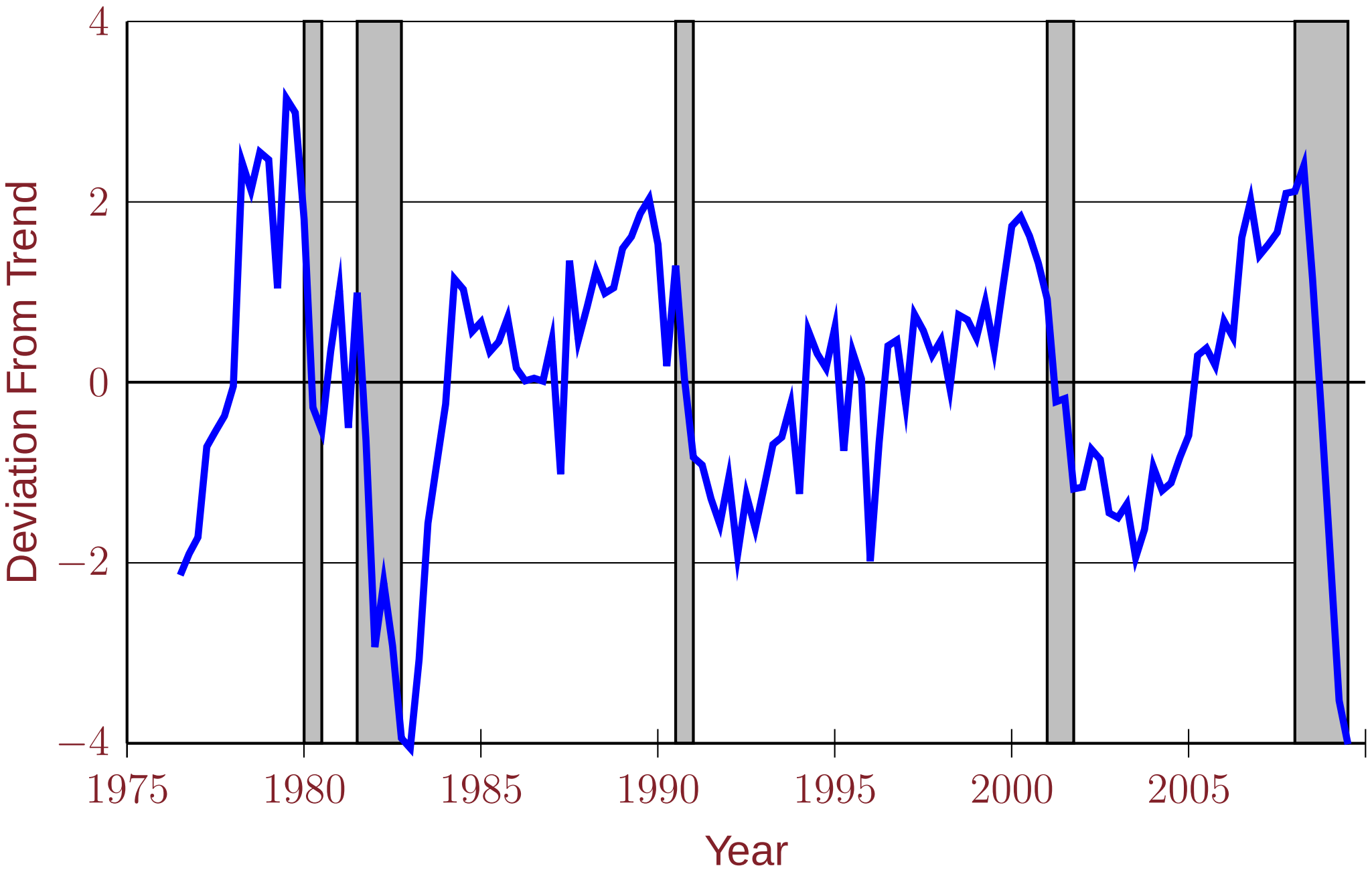
"Though search theory is still an active area of research, as this Handbook shows, few economists still look to its mechanisms for much of the explanation of observed fluctuations."

– Lilien and Hall (1986), *HOLE* vol. 2

# Figures

- little fluctuations in labor force over the business cycle
- regularities in labor market flows
  - much harder to find a job during a recessions
  - unemployment incidence rises, but less
- matching function is a good description of this data
- the “labor wedge” is countercyclical
  - as if there is a countercyclical labor income tax
- possible summary: unemployment is caused by drop in job vacancies

# Hours, Employment, and Labor Force



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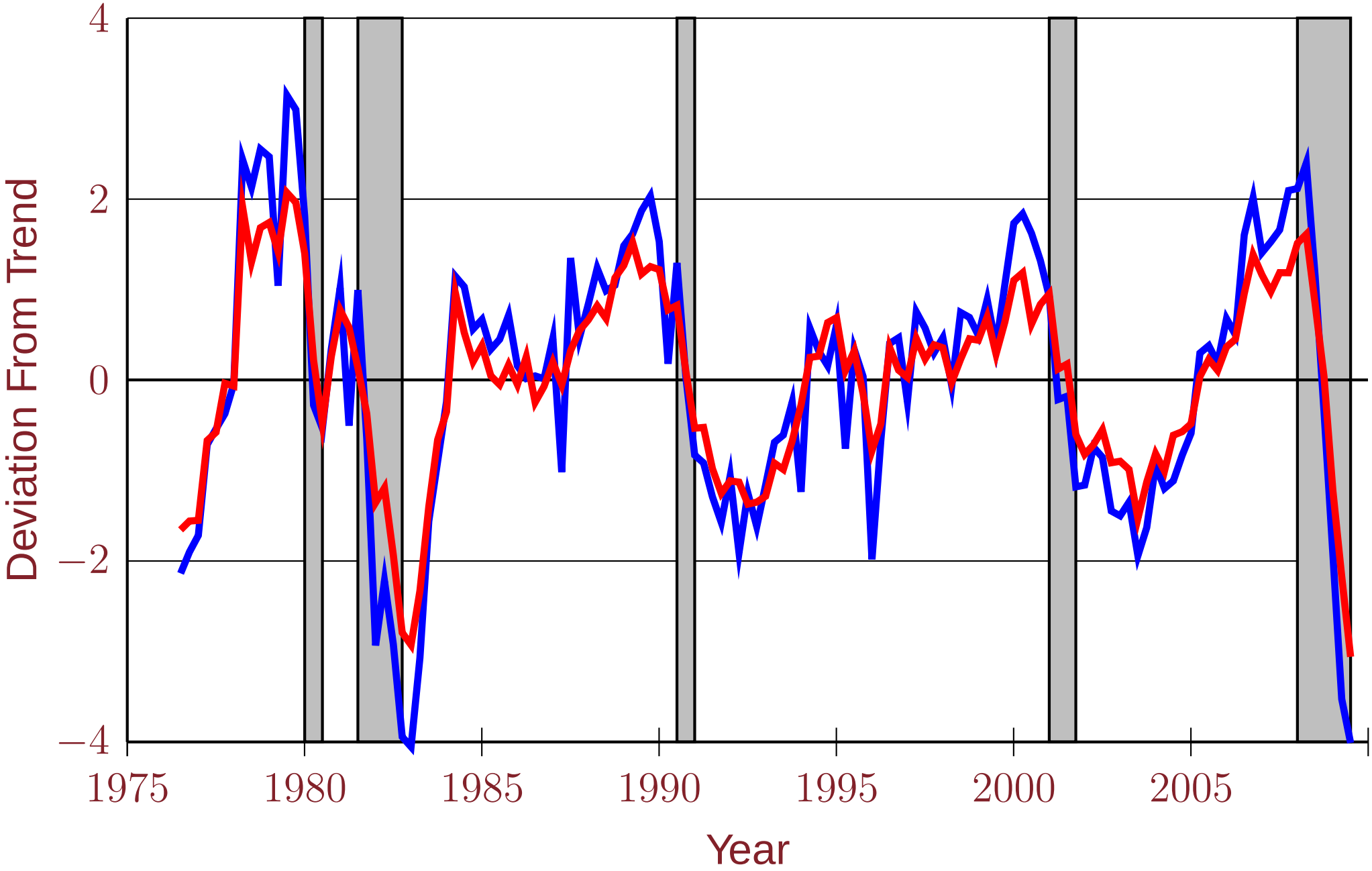

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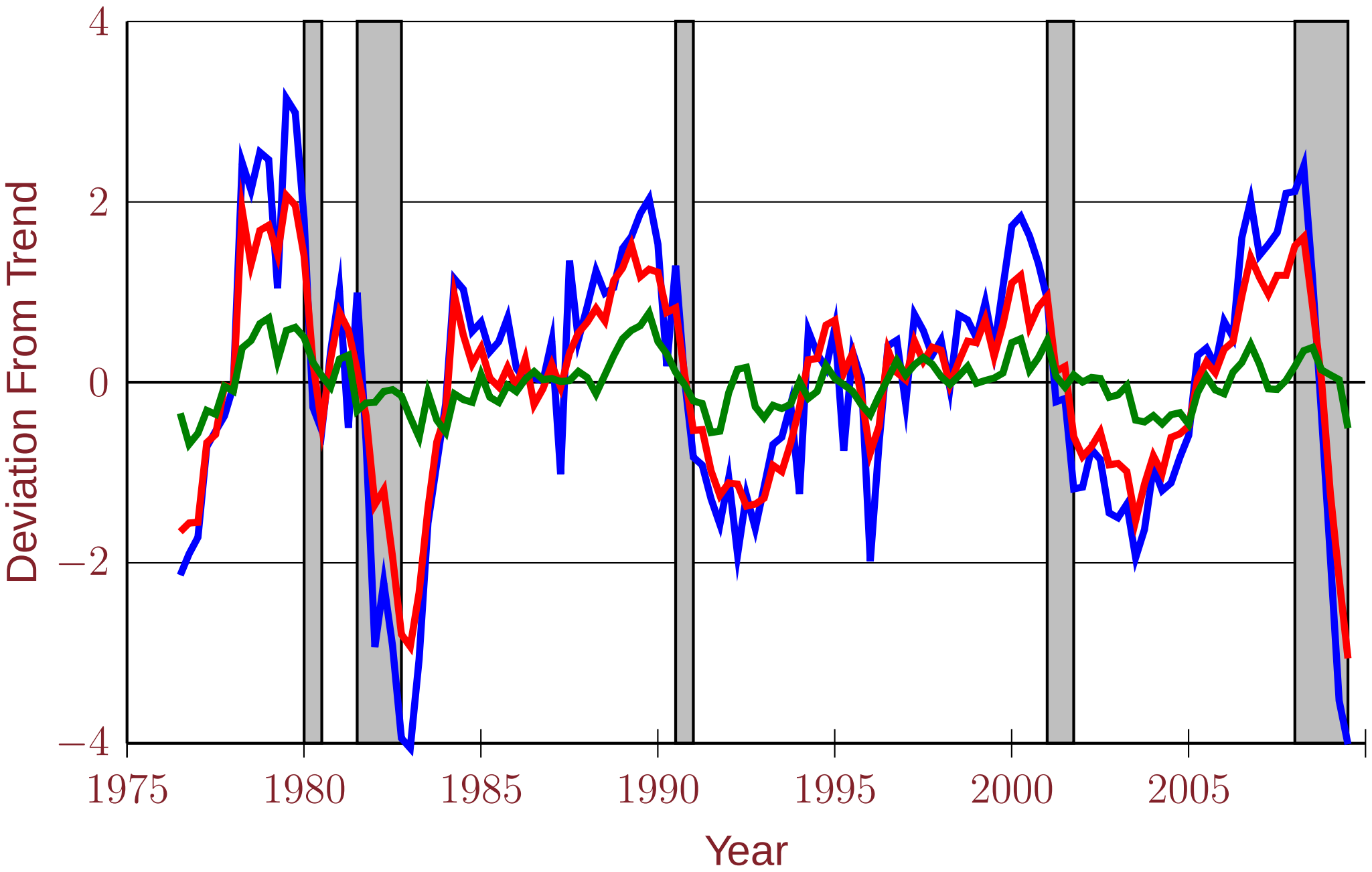
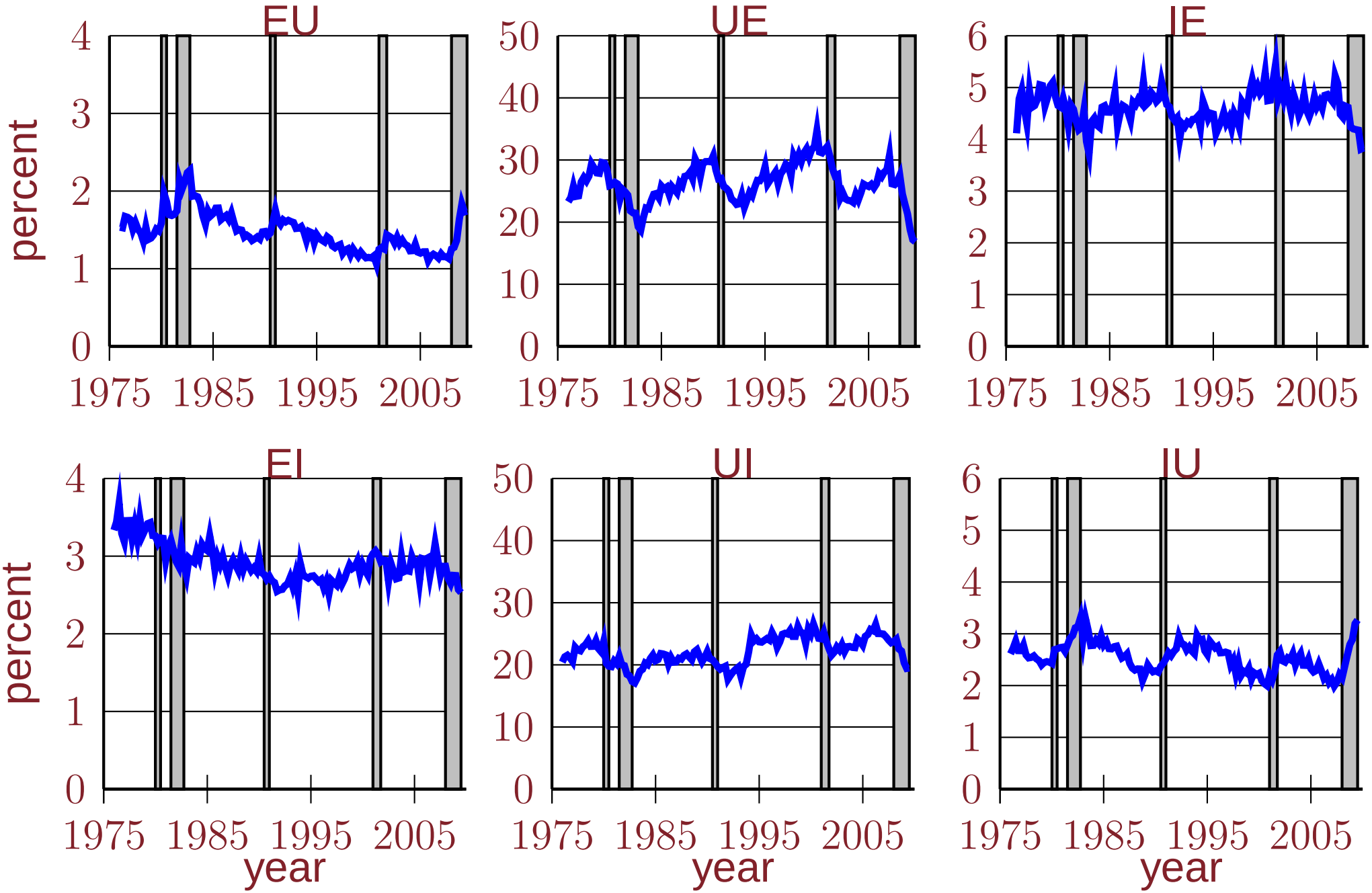


# Transition Probabilities



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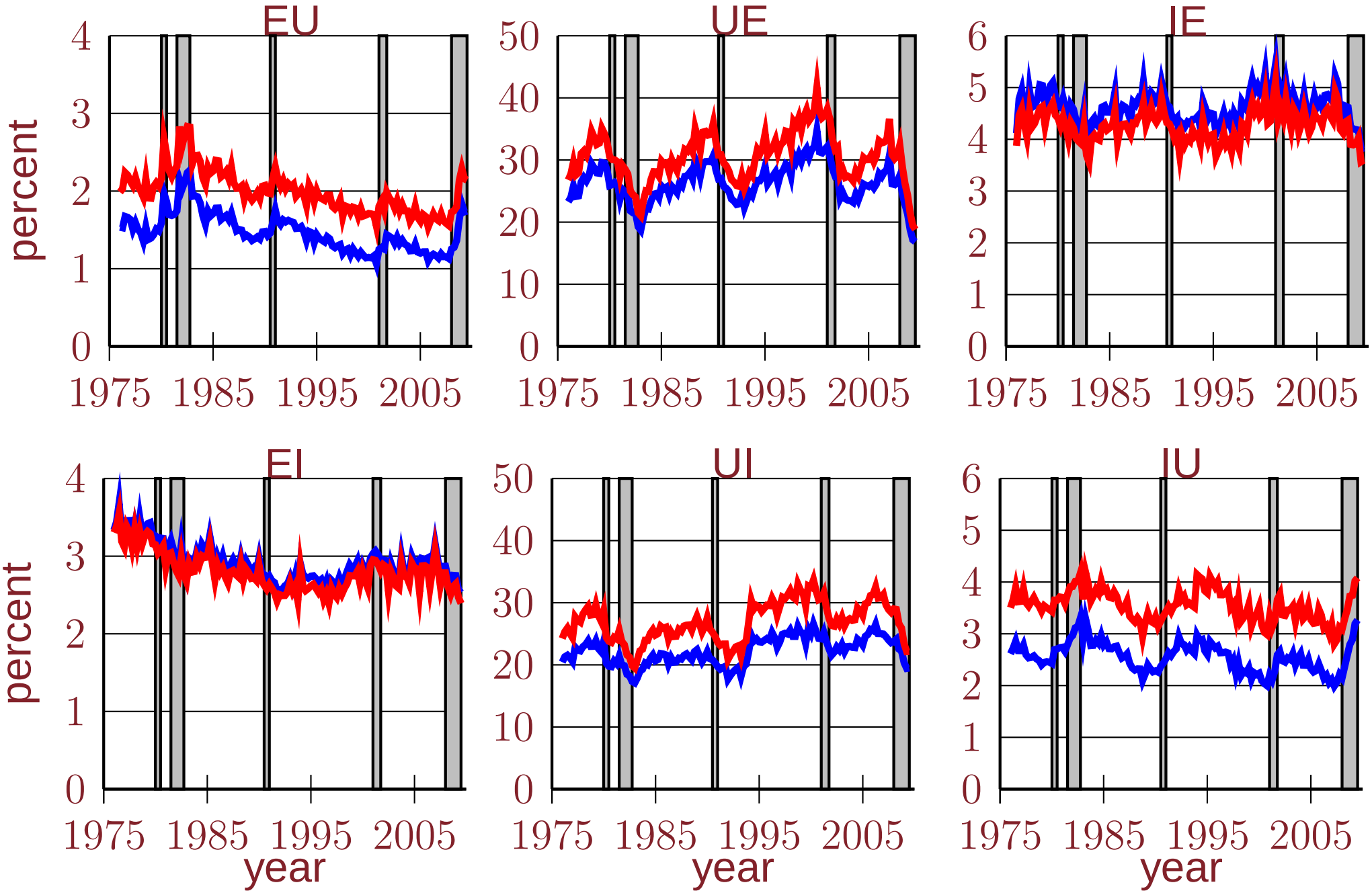
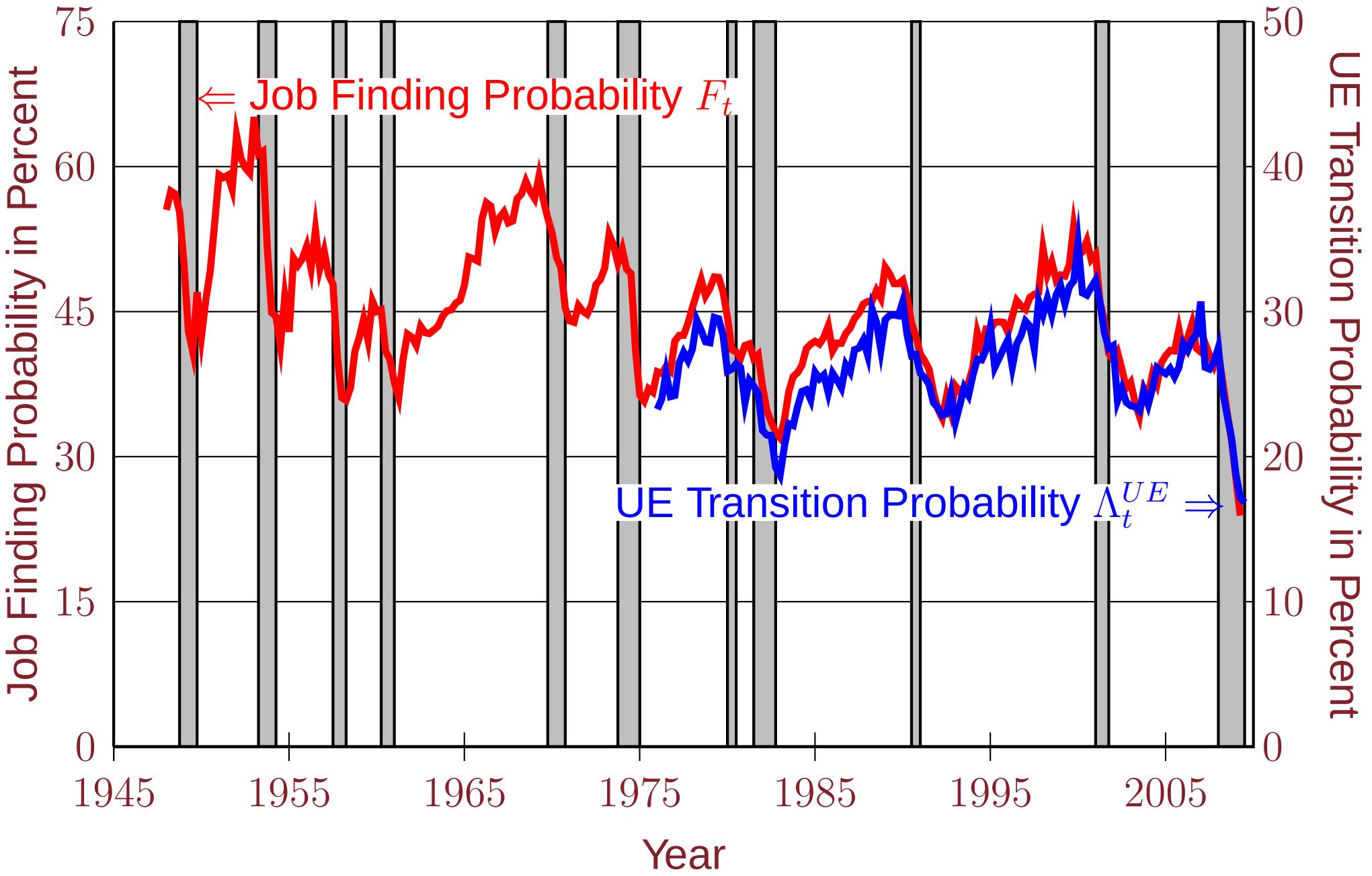
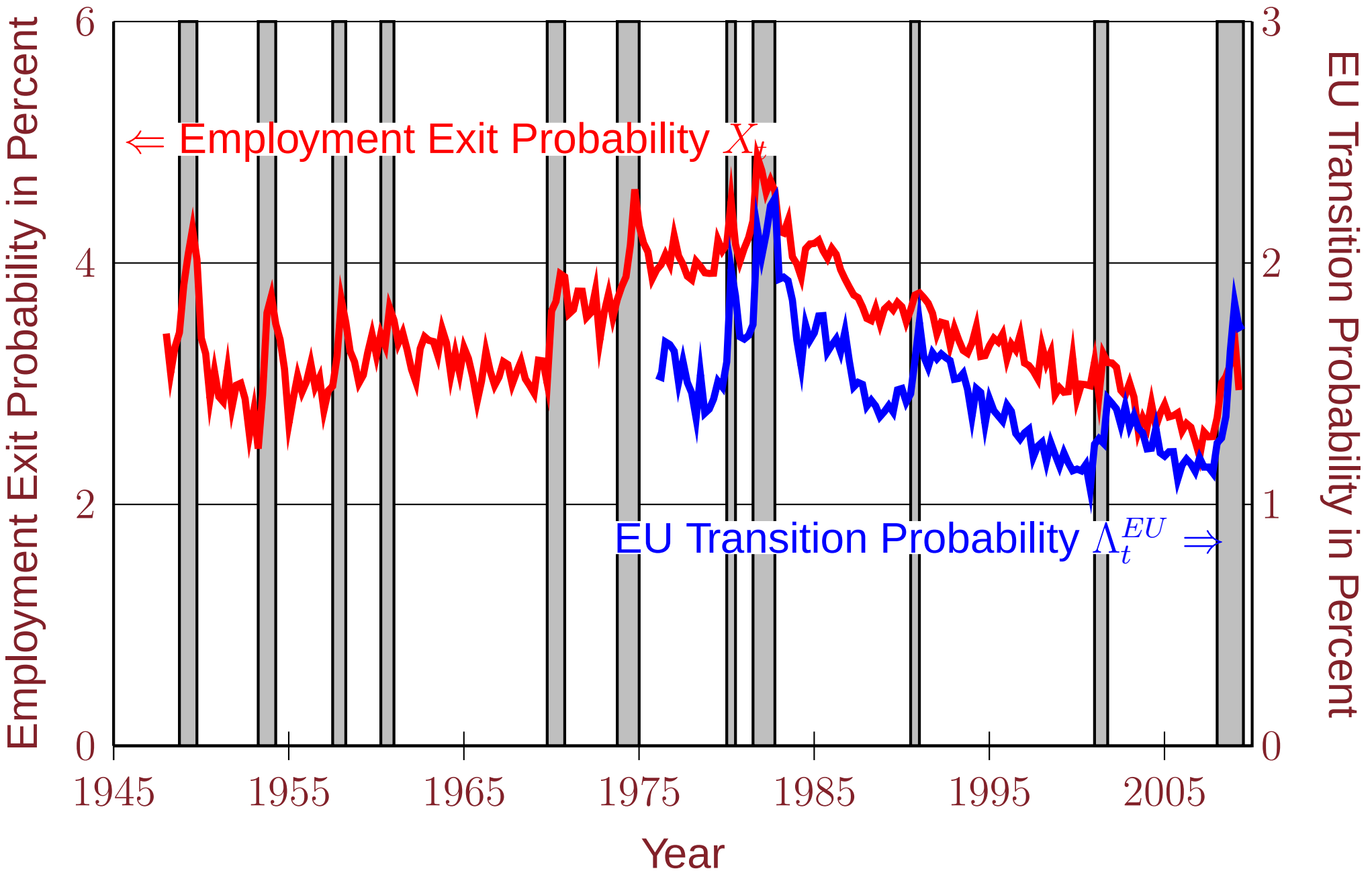


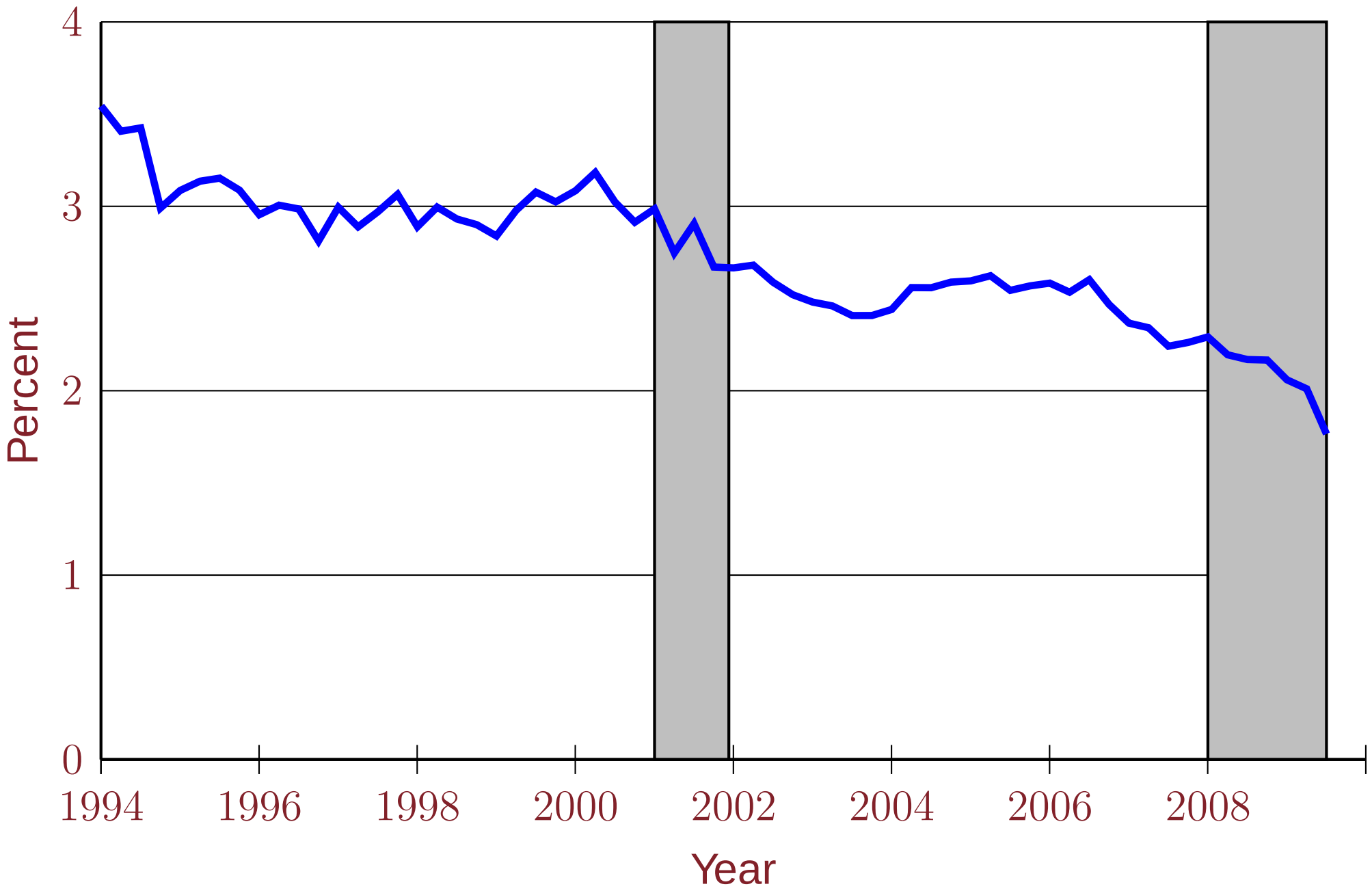
# Job Finding Probability



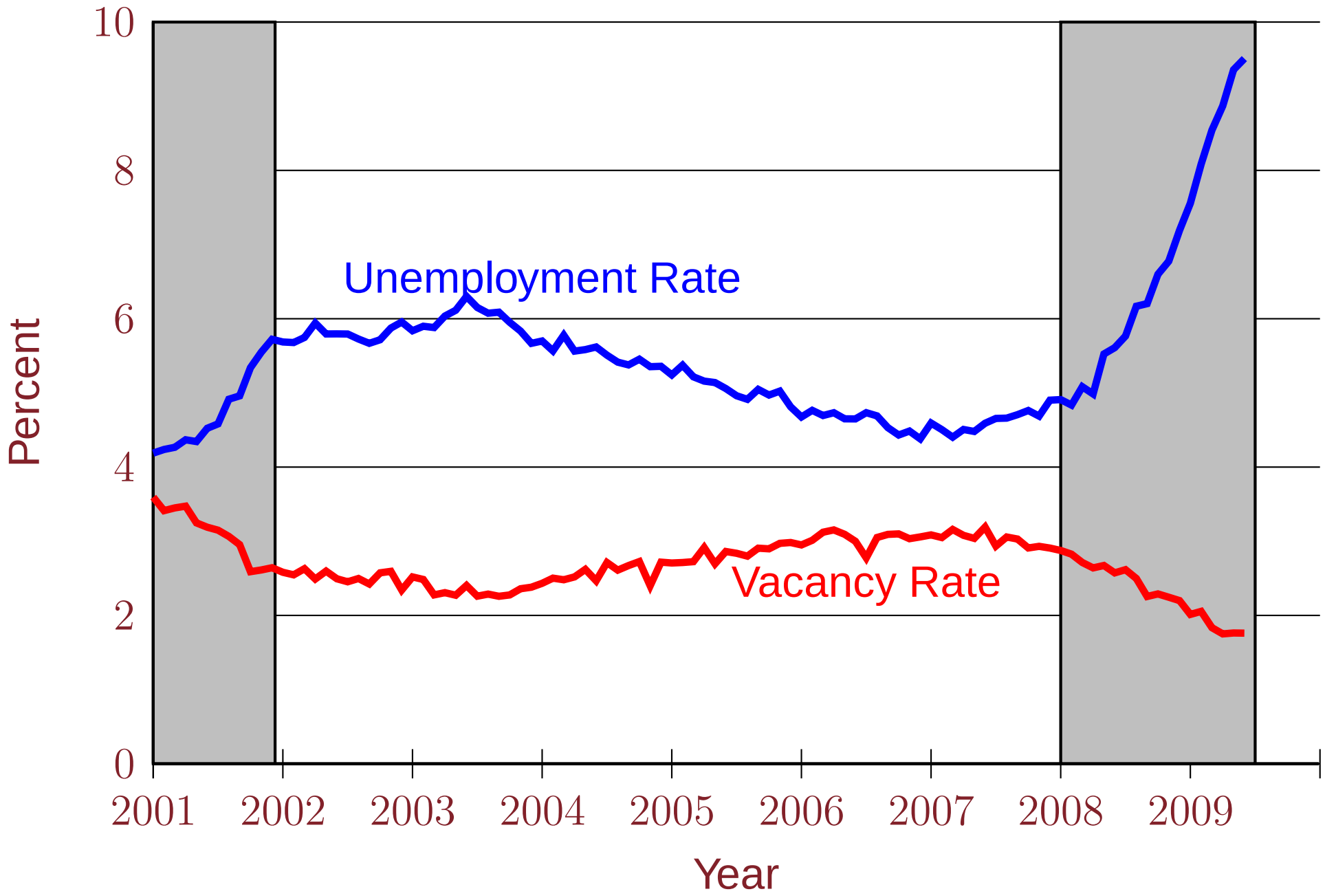
# Employment Exit Probability



# Employer-to-Employer Transition Probability



# Unemployment and Vacancies



# Matching Function

$m_t = m(u_t, v_t)$, constant returns

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$$\Rightarrow F_t = m_t/u_t = \mu(v_t/u_t)$$

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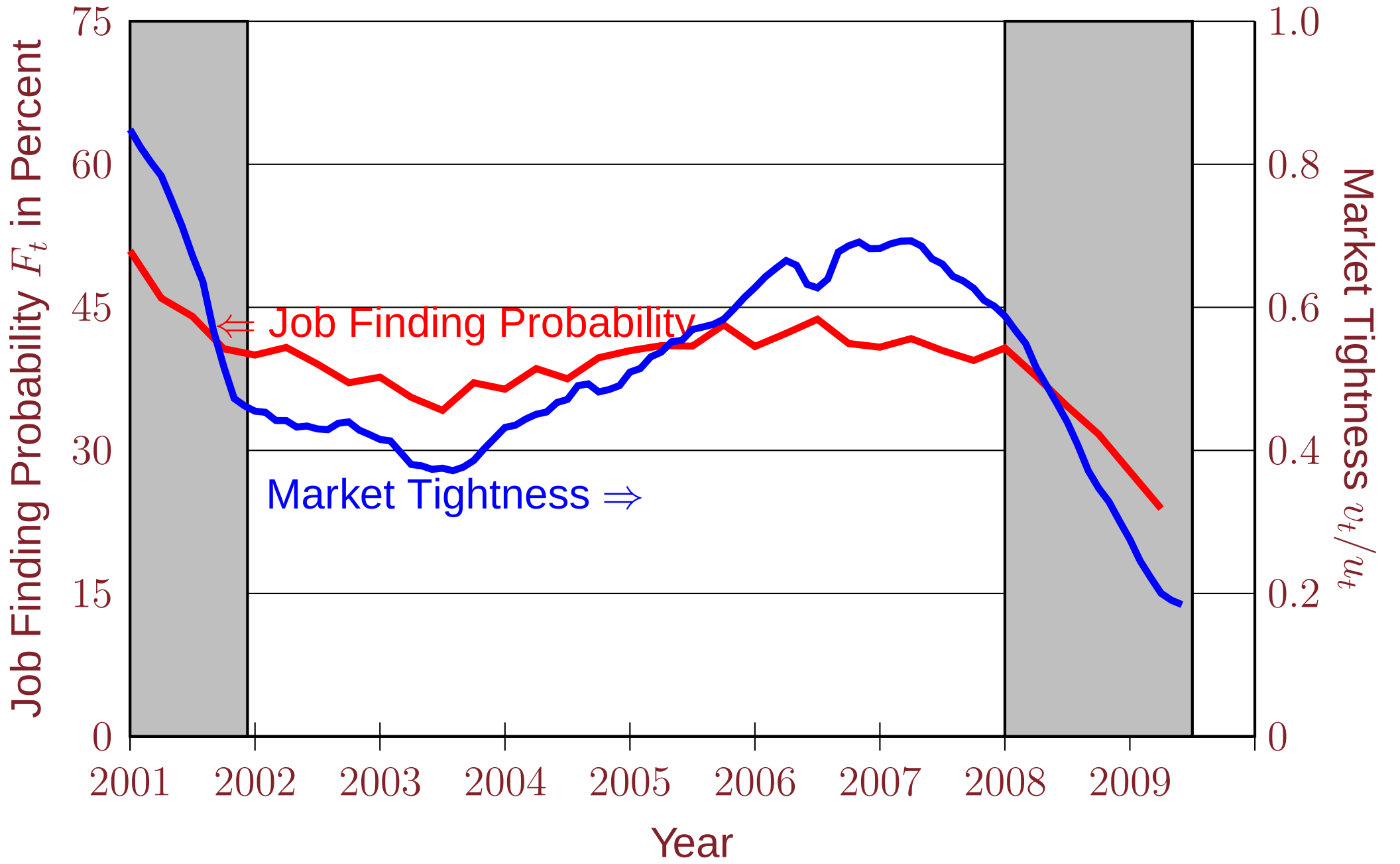

# Labor Wedge

- marginal rate of substitution equals after-tax wage
- marginal product of labor equals wage
- labor market clearing

$$\tau = 1 - \frac{\text{MRS}}{\text{MPL}}$$

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- long-run restrictions pin down MRS and MPL
  - Cobb-Douglas production function
  - balanced growth preferences
  - Frisch labor supply elasticity $\varepsilon$
  - consumption-labor complementarity is unimportant
- requires only data on hours and consumption/output ratio

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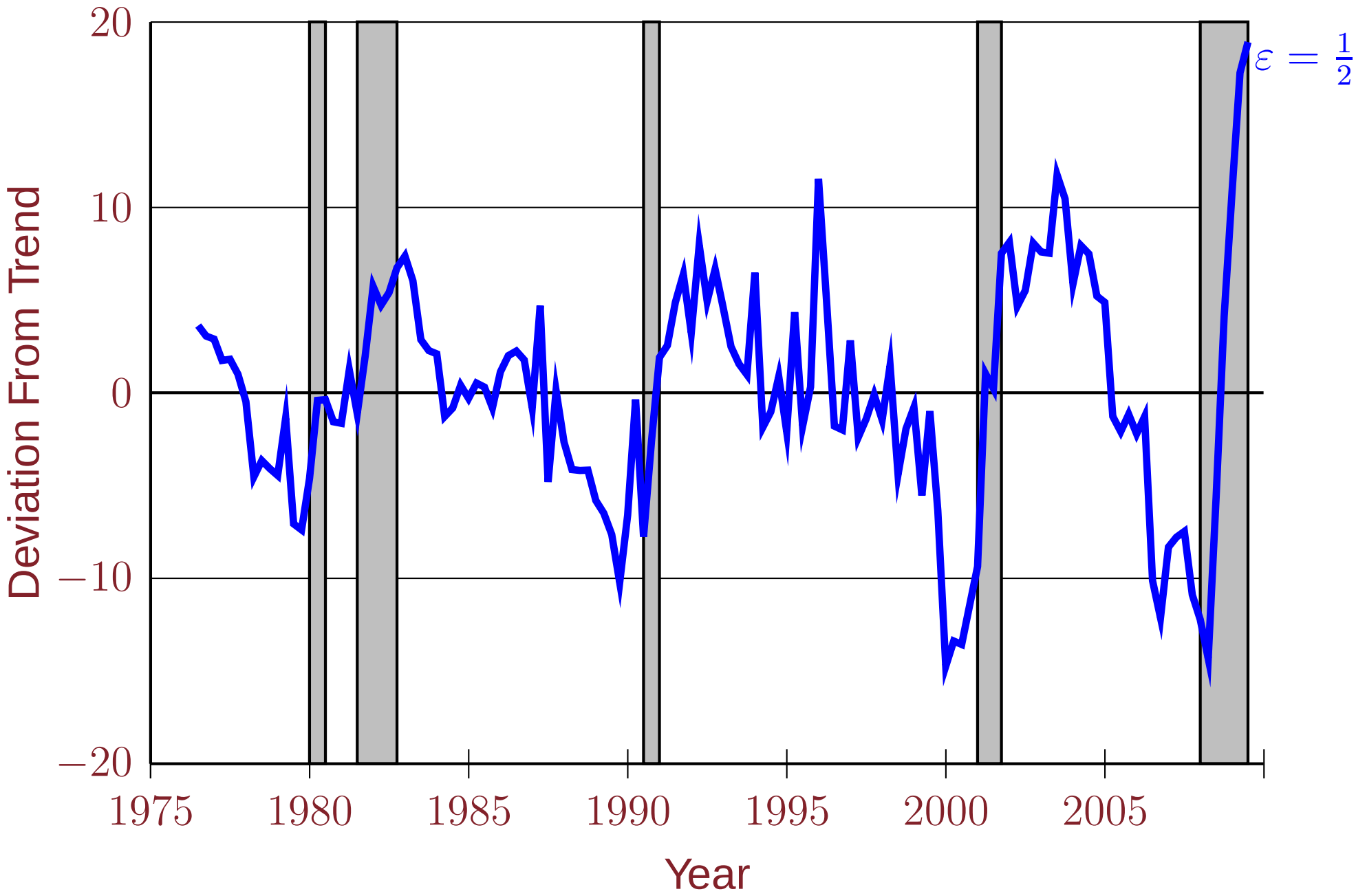
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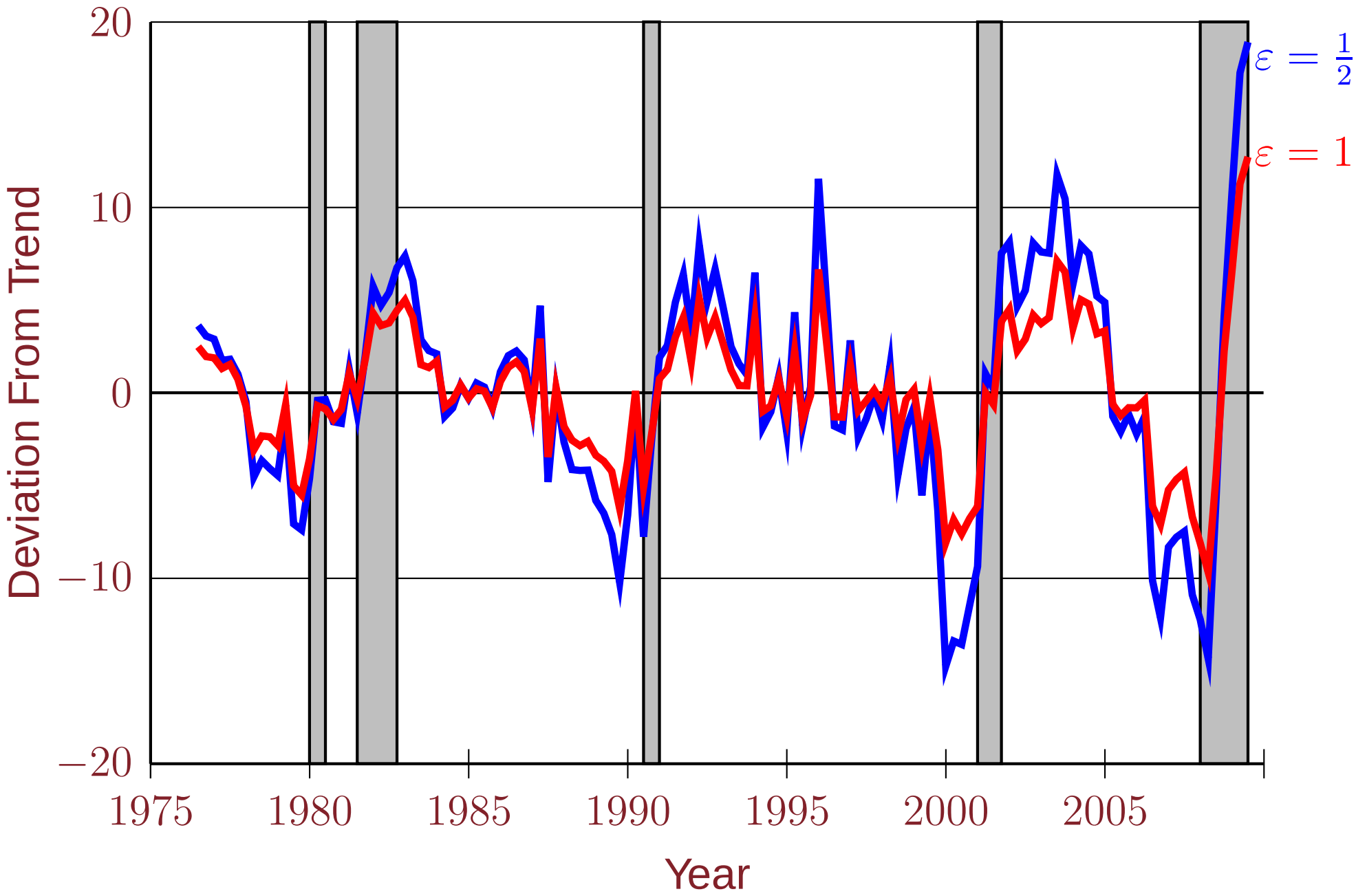
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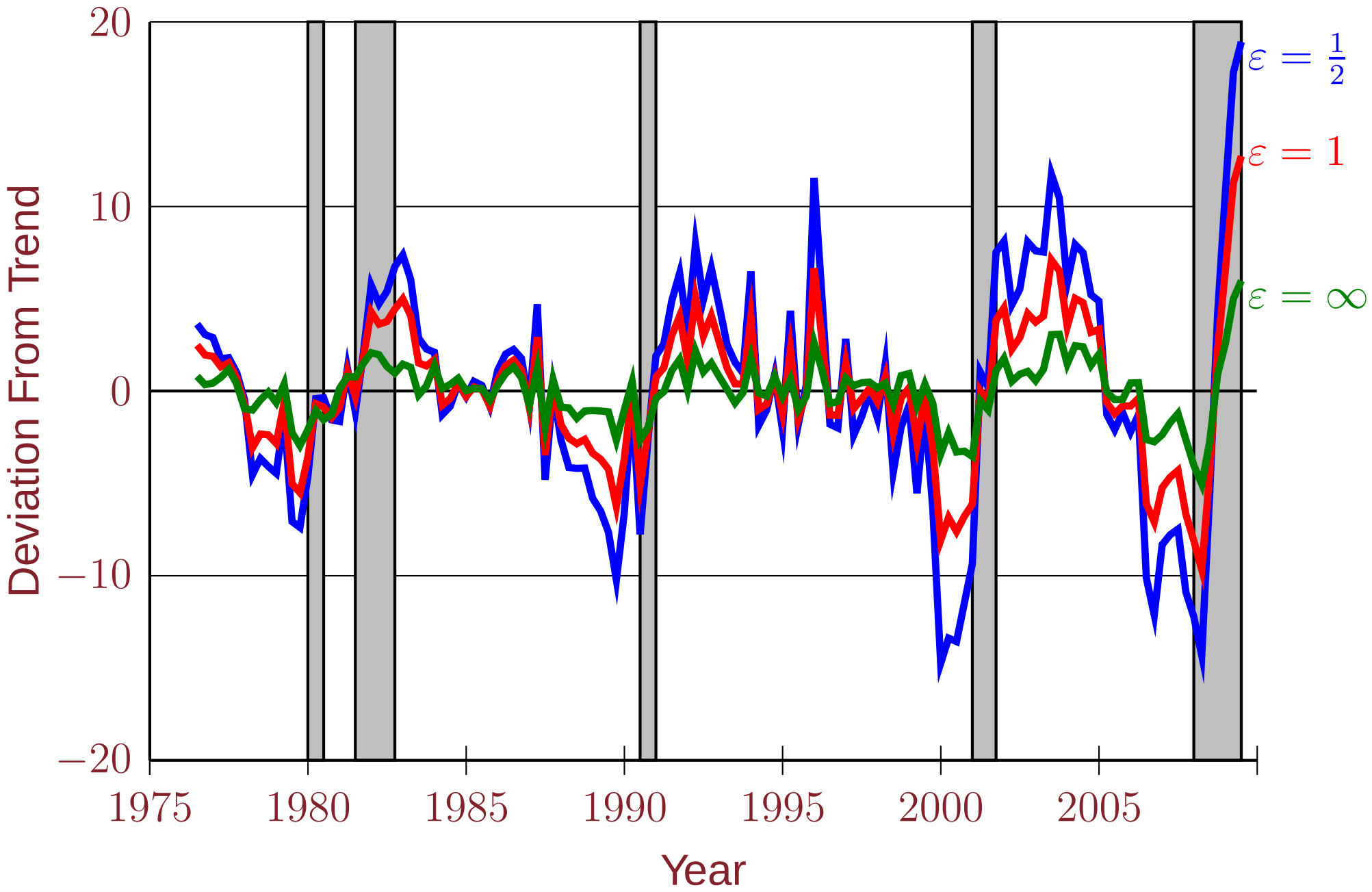
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# Theory

- no unemployment in standard market clearing model
  - workers choose how much to work
- in a search model, the unemployed cannot find jobs
  - inelastic labor supply
  - labor wedge? countercyclical?
- unemployment rises when firms do not create many vacancies
  - leads to a decrease in the job finding probability
- but why don't firms create vacancies?
  - requires writing down the model

# Sketch of Model

- "standard" neoclassical growth model, except:
- existing workforce is divided between recruiting and production
- recruiters attract new workers, constant returns at firm level
- wages are negotiated via Nash bargaining (match-specific rents)

- details in Shimer, *Labor Markets and Business Cycles* (PUP, 2010)

# Resolution of Macro Puzzles?

- impulses
  - literature focuses on productivity, monetary policy shocks
  - search does not help here at all
- adjustment cost creates minimal propagation
- amplification
  - adjustment cost dampens employment fluctuations
  - large fluctuations in calibrations that would deliver really large fluctuations without search costs (Hagedorn and Manovskii 2008)
- theoretical labor wedge is procyclical

# “Backward-Looking” Wages

- does not really help with impulse mechanisms
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- but did we need search frictions to do this?
  - anything that creates match-specific rents frees up wage setting
  - could even do it without match-specific rents