Empirical Studies on Mismatch

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Estimating mismatch

Two basic ways

1. Estimate changes in matching efficiency
   Barnichon and Figura (2010)
   What drives movements in the unemployment rate?
   A decomposition of the Beveridge curve
2. Estimate dispersion in vacancies and unemployment
   Sahin, Song, Topa and Violante (2011)
   Measuring Mismatch in the US labor market

Barnichon and Figura (2010)

- Shifts in the Beveridge curve
  - sometimes seen as indicating movements in the level of "equilibrium" or "structural" unemployment
  - difficult to interpret
- Factors that shift the Beveridge curve
  - Changes in intensity of layoffs and quits
  - Changes in labor force participation
  - Changes in the efficiency of matching workers to jobs (mismatch)
- Decompose unemployment movements 1976-2009
  - Firm-induced (labor demand)
    - Movements along the curve
    - Changes in intensity of layoffs
  - Worker-induced (labor supply)
    - Changes in intensity of quits
    - Changes in labor force participation
    - Demographics
  - Changes in the efficiency of matching workers to jobs

Barnichon and Figura (2010): method

- Steady state unemployment

$$u_t^{ss} = \frac{s_t}{s_t + f_t}$$

- Separation and finding rates

$$\begin{aligned} s_t &= \lambda_t^{EU} + \frac{\lambda_t^{EI}\lambda_t^{IU}}{\lambda_t^{II}} \\ f_t &= \lambda_t^{UE} + \frac{\lambda_t^{UI}\lambda_t^{IE}}{\lambda_t^{II}} \end{aligned}$$

- Matching function

$$\lambda_t^{UE} = m_{0t}\theta_t^{1-\sigma}$$

- Log-linearizing

$$\begin{aligned} d\ln u_t^{ss} &= d\ln u_t^{bc} + d\ln u_t^{shifts} + d\ln u_t^{eff} \\ d\ln u_t^{bc} &= -\alpha^{UE}(1-\sigma)\, d\ln\theta_t \\ d\ln u_t^{shifts} &= \alpha^{EU} d\ln\lambda_t^{EU} + \alpha^{EI} d\ln\lambda_t^{EI} + \alpha^{IU} d\ln\lambda_t^{IU} - \alpha^{IE} d\ln\lambda_t^{IE} - \alpha^{UI} d \\ d\ln u_t^{eff} &= -\alpha^{UE} d\ln m_{0t} \end{aligned}$$

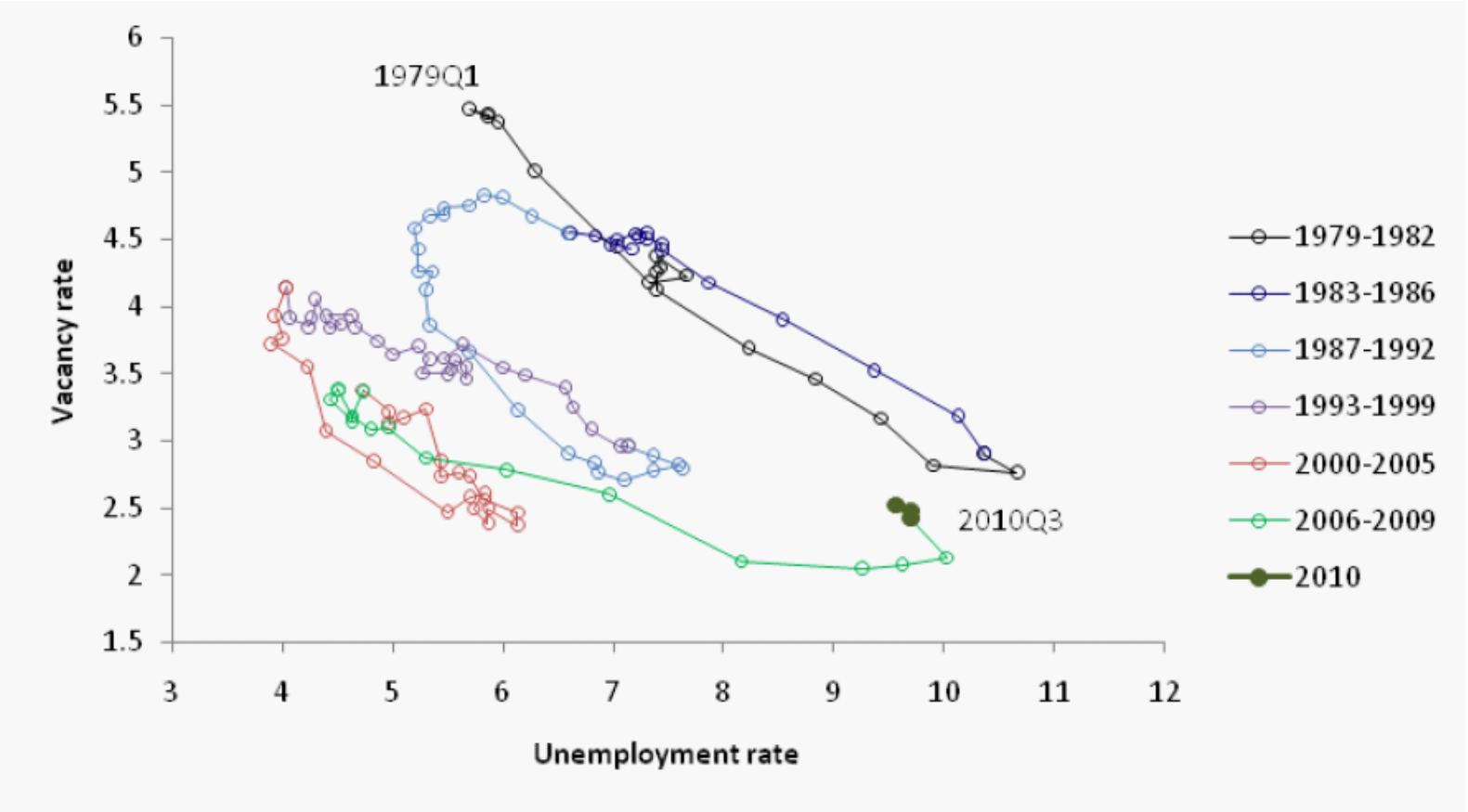


Figure 1: The US Beveridge curve, 1979Q1-2010Q3.

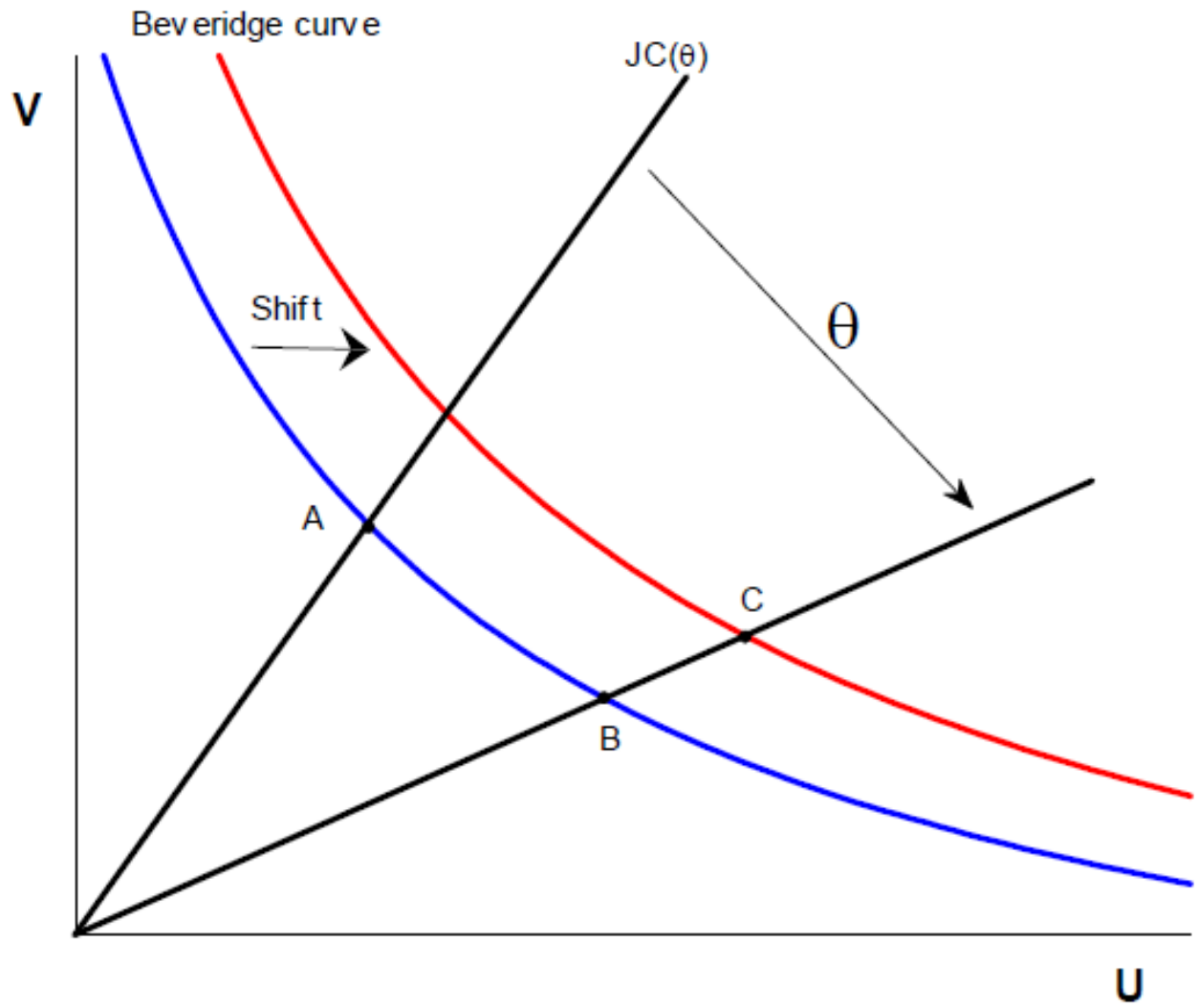
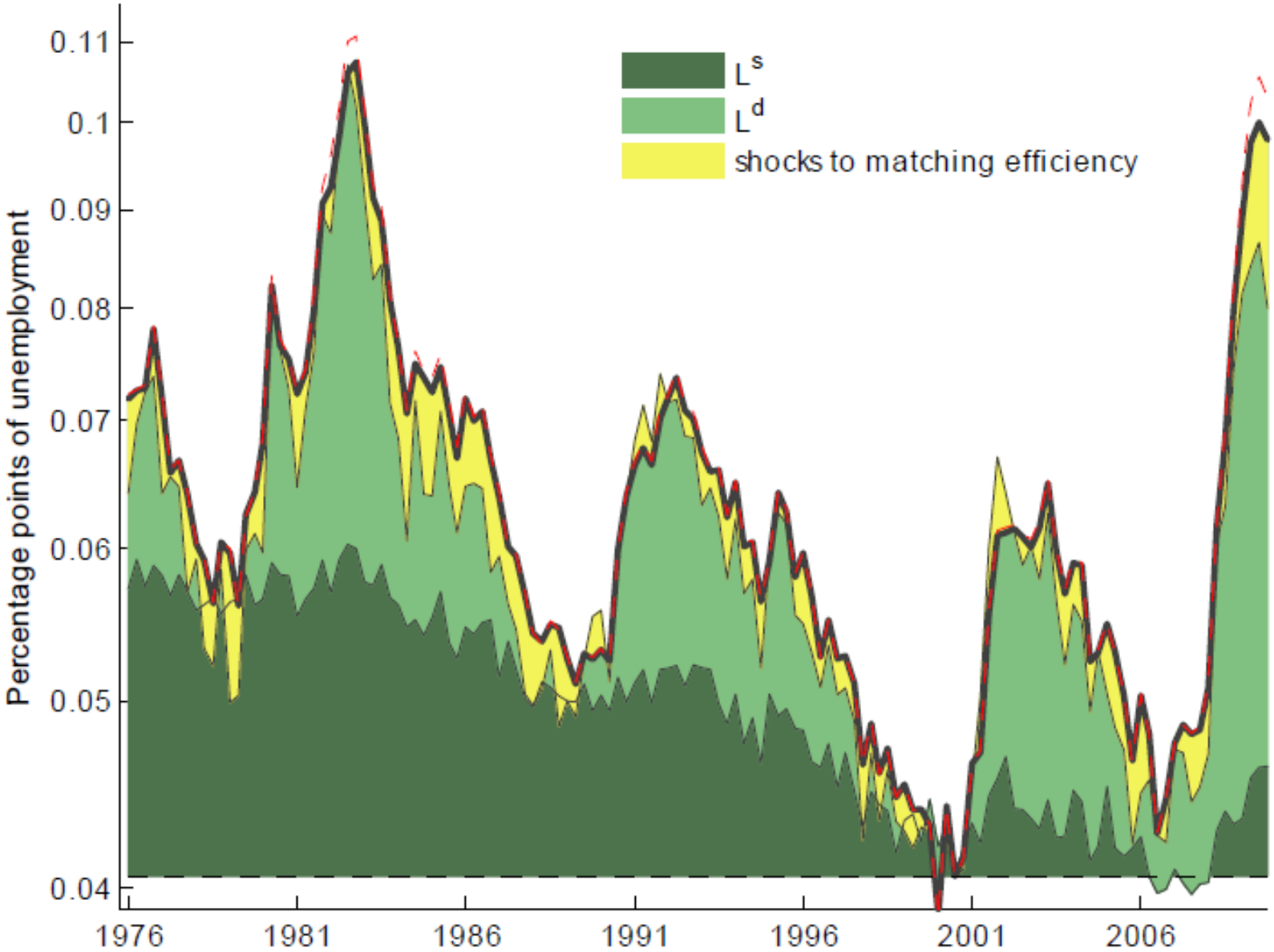


Figure 2: The Beveridge curve: shifts and movement along the curve.


0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
Percentage points of unemployment
1976
1981
1986
1991
1996
2001
2006
L^s
L^d
shocks to matching efficiency

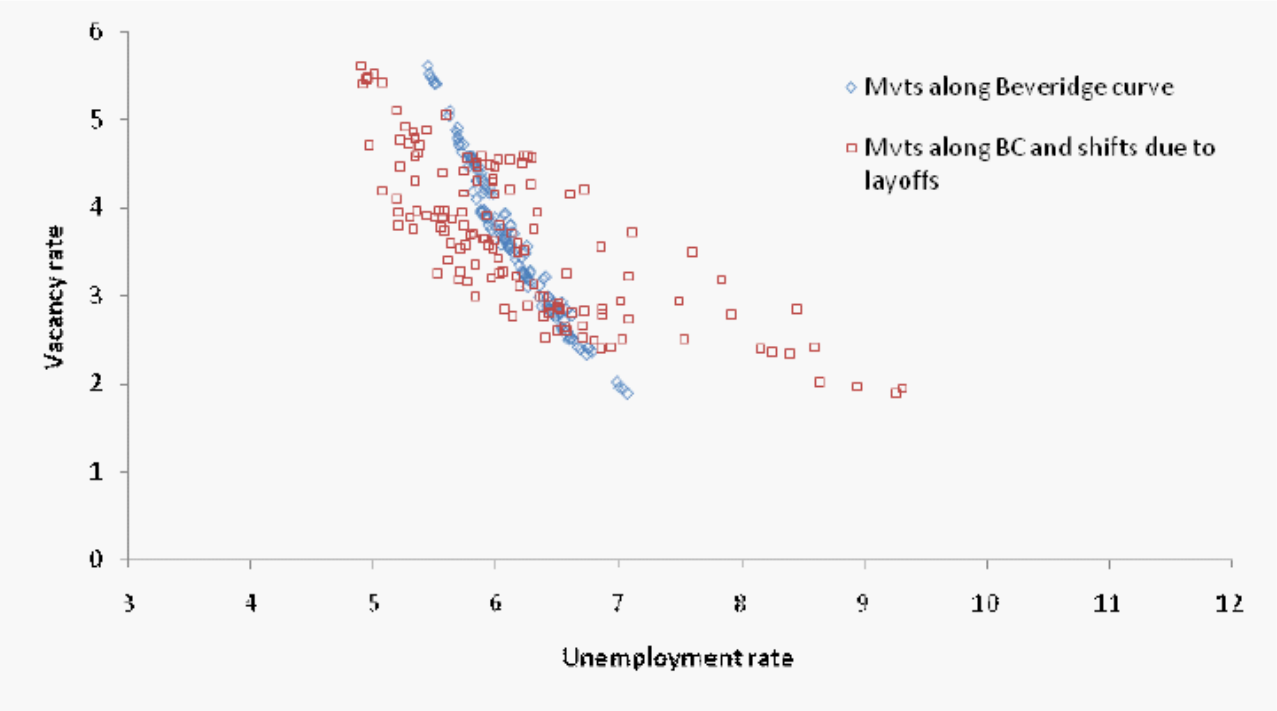


Figure 13: Counterfactual Beveridge curves, 1976-2009. Blue circles: counterfactual Beveridge curve using the unemployment rate implied by movements in labor market tightness. Red squares: counterfactual Beveridge curve using the unemployment rate implied by movements in labor market tightness and shifts due to layoffs.

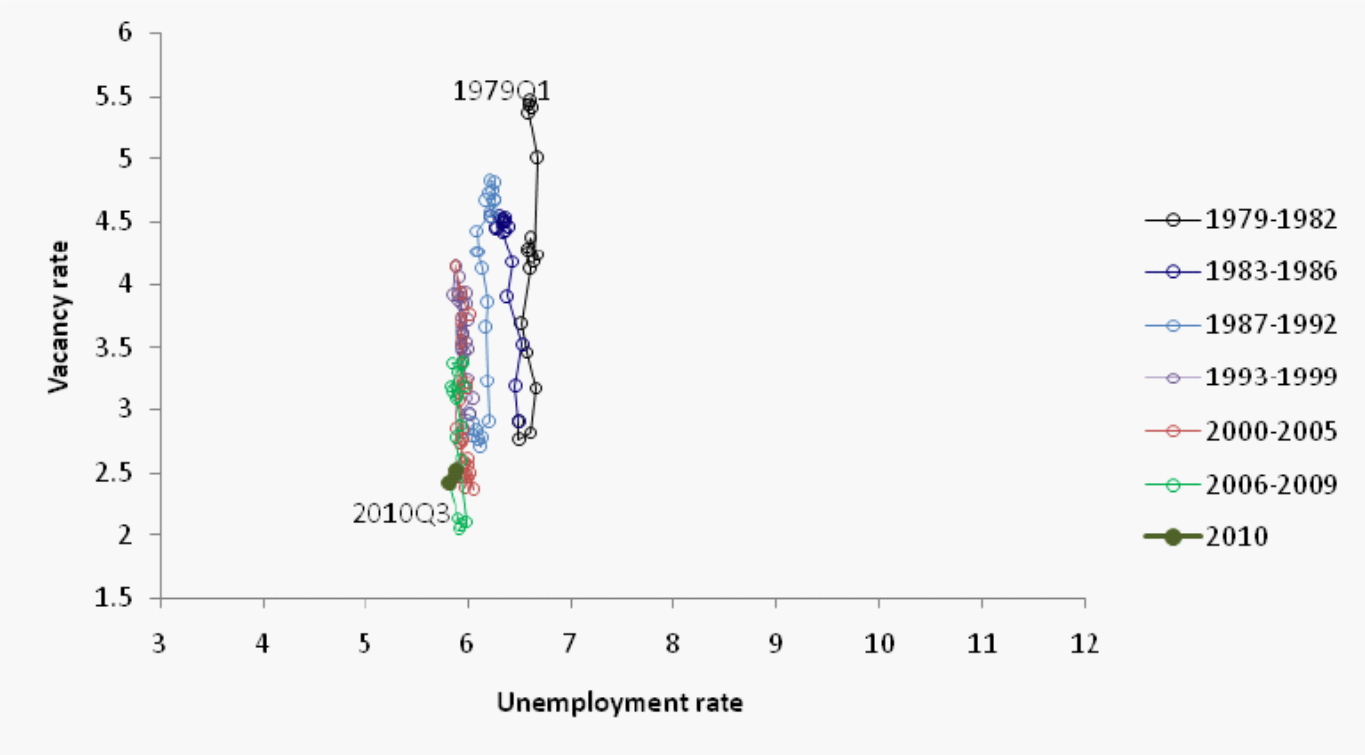


Figure 14: Counterfactual Beveridge curve using the unemployment rate generated by changes in demographics.

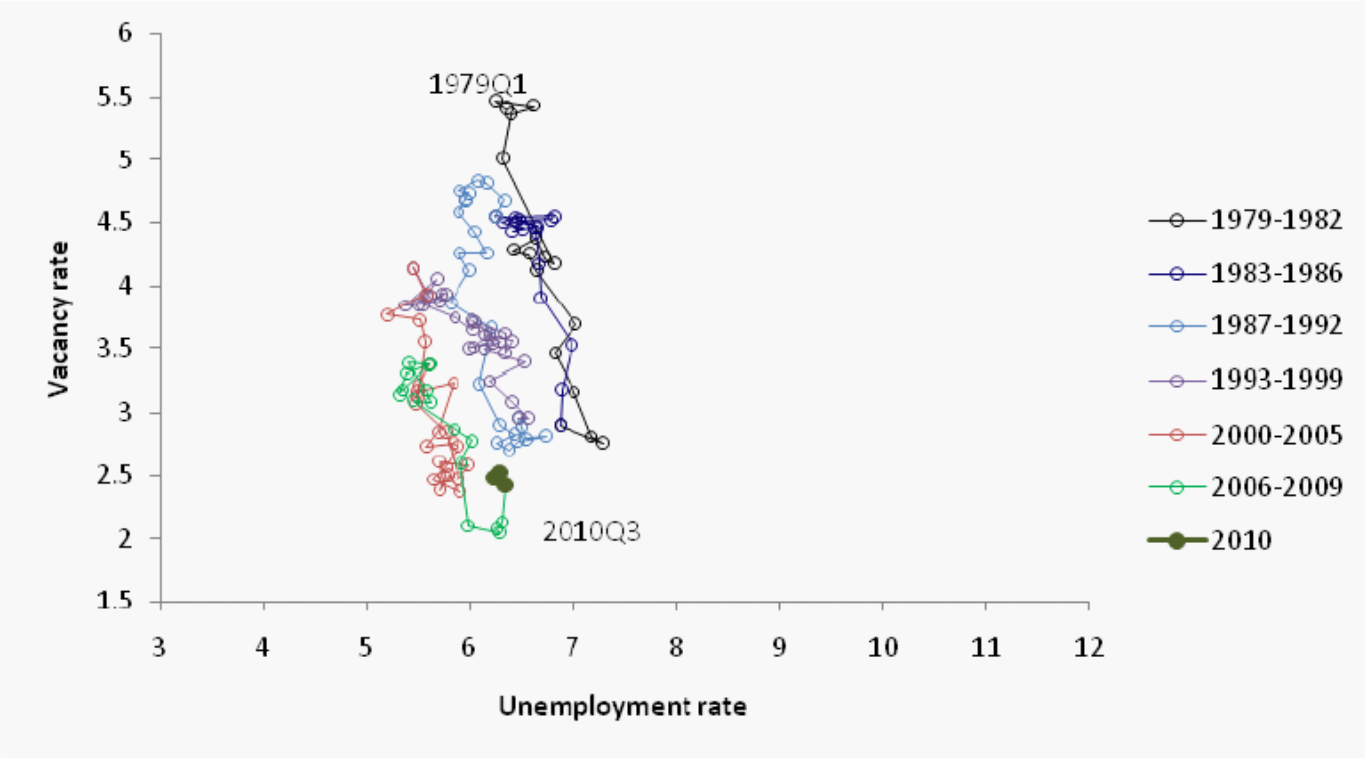


Figure 15: Counterfactual Beveridge curve using the unemployment rate generated by movements in and out of the labor force.

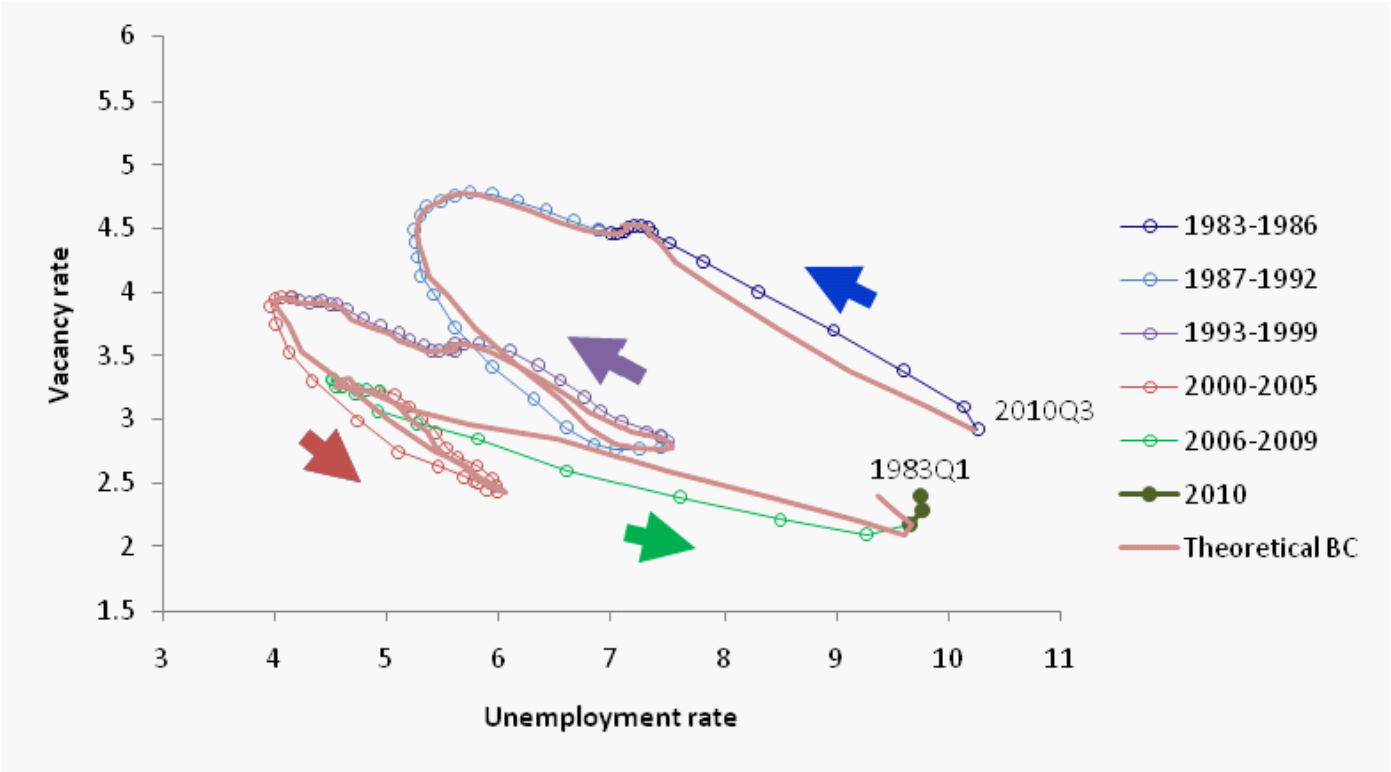


Figure 16: Empirical and theoretical Beveridge curve (thick plain red). For clarity of exposition, the curves plot the 4-quarter moving averages of unemployment and vacancies, and the data start in 1983Q1, the begininng of the labor market recovery in the early 80s recession.

Barnichon and Figura (2010)

- Decompose unemployment movements 1976-2009
  - Firm-induced (labor demand)
    - Movements along the curve
    - Changes in intensity of layoffs
  - Worker-induced (labor supply)
    - Changes in intensity of quits
    - Changes in labor force participation
    - Demographics
  - Changes in the efficiency of matching workers to jobs
- Data on worker transitions from CPS
- Conclusions about mismatch
  - Changes in matching efficiency play on average a smaller role than changes in labor demand or supply
  - Matching efficiency can decline substantially in recessions
  - In GR, lower matching efficiency added about 1.5%-point to the unemployment rate

Şahin, Song, Topa and Violante (2011)

- Economy consists of large number of distinct labor markets
  - Frictional unemployment in each labor market
  - Distribution of vacancies over labor markets exogenously given
  - Can unemployed workers be reallocated in a way that reduces aggregate unemployment?
- Mismatch indices
  - $\mathcal{M}^u$ = fraction of unemployed in the 'wrong' labor market
  - $\mathcal{M}^h$ = fraction of hires lost because of misallocation
  - Can use $\mathcal{M}^h$ to calculate counterfactual unemployment rate
- Data
  - Unemployment from CPS
  - Vacancies from JOLTS, 2000-2010

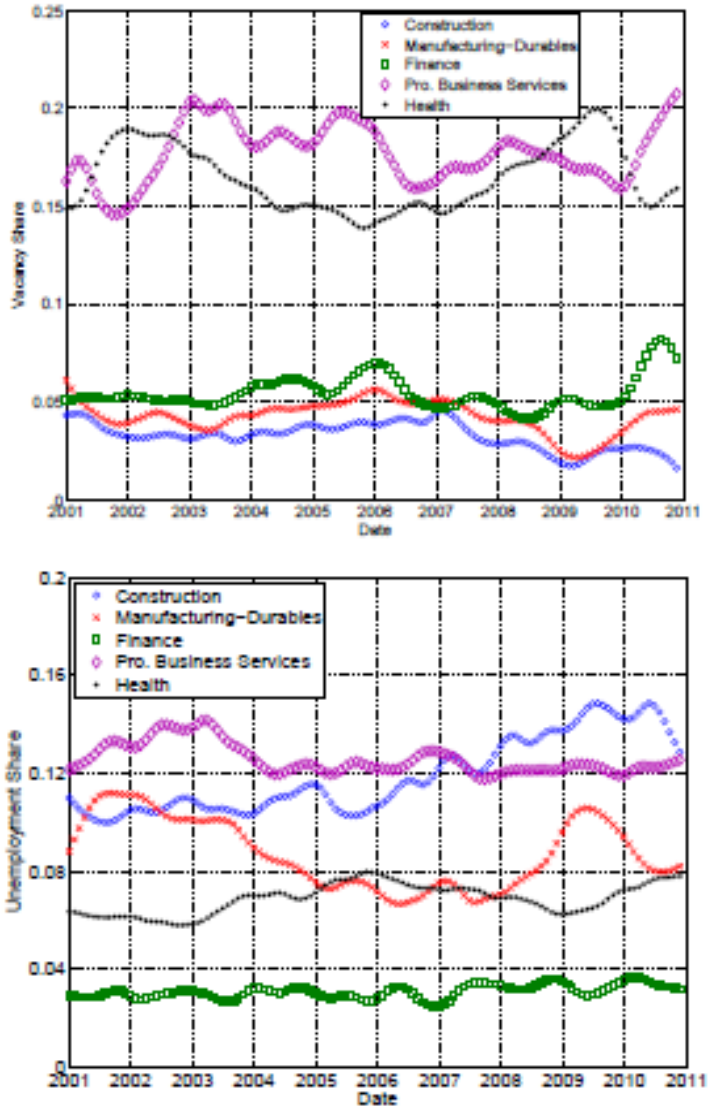


Figure 2: Vacancy and Unemployment Share by Sector

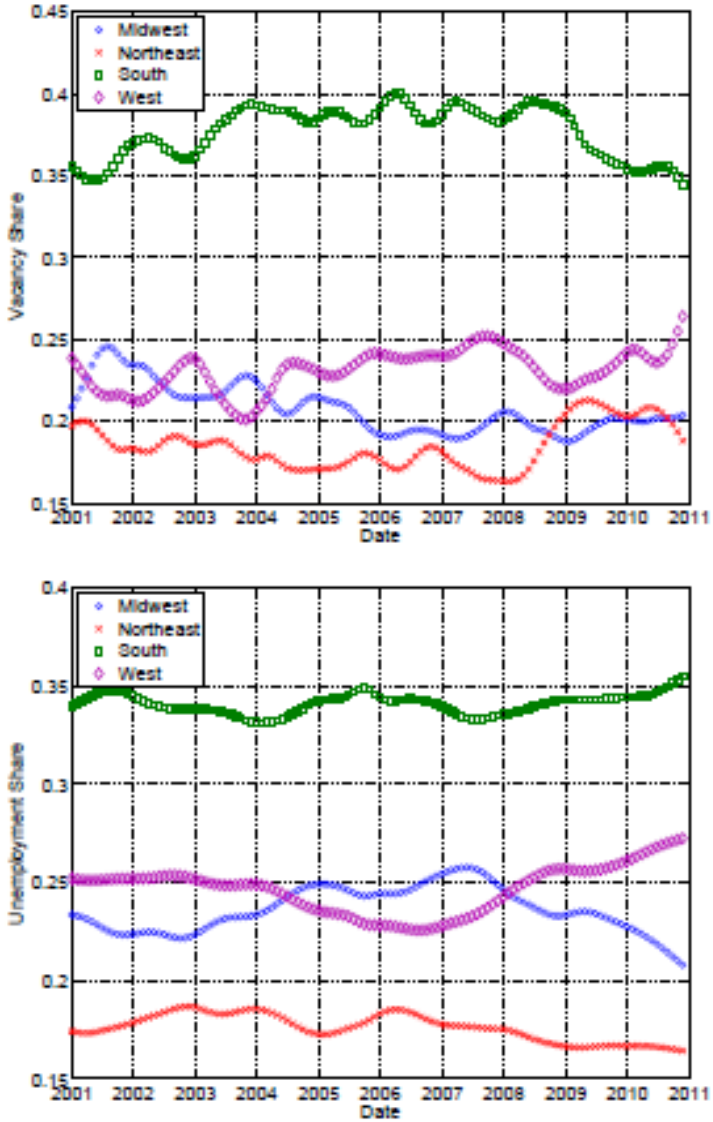
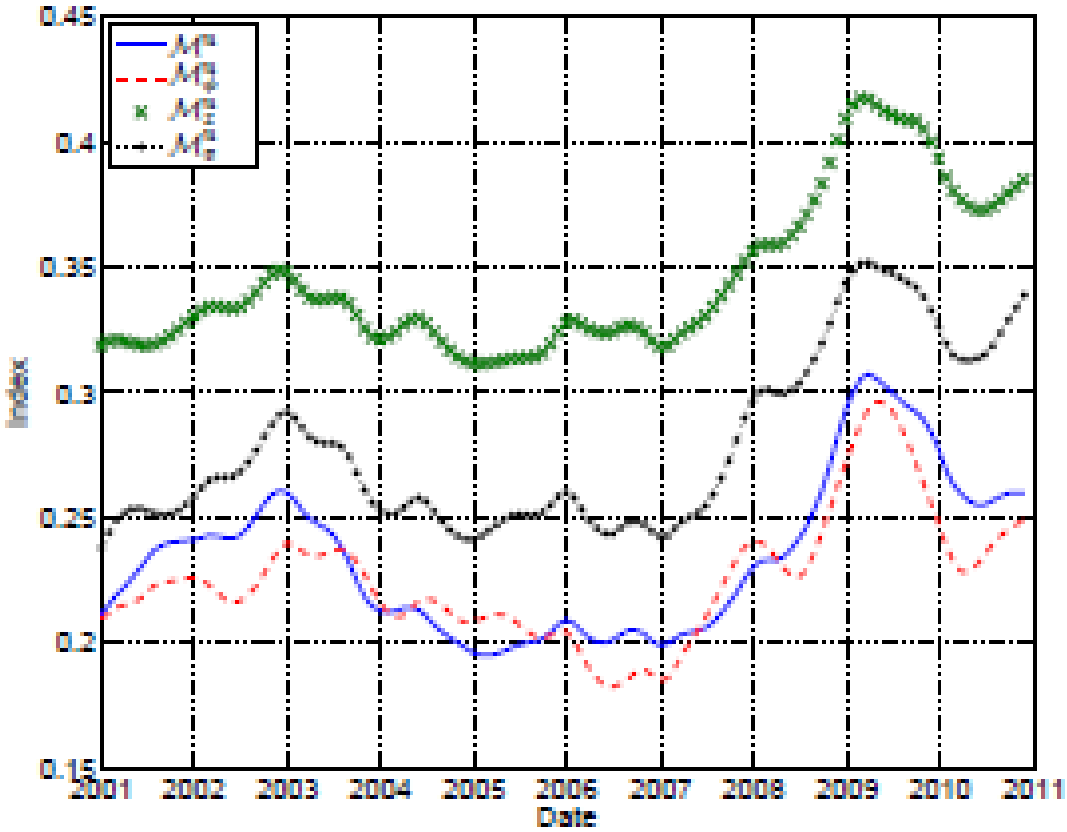
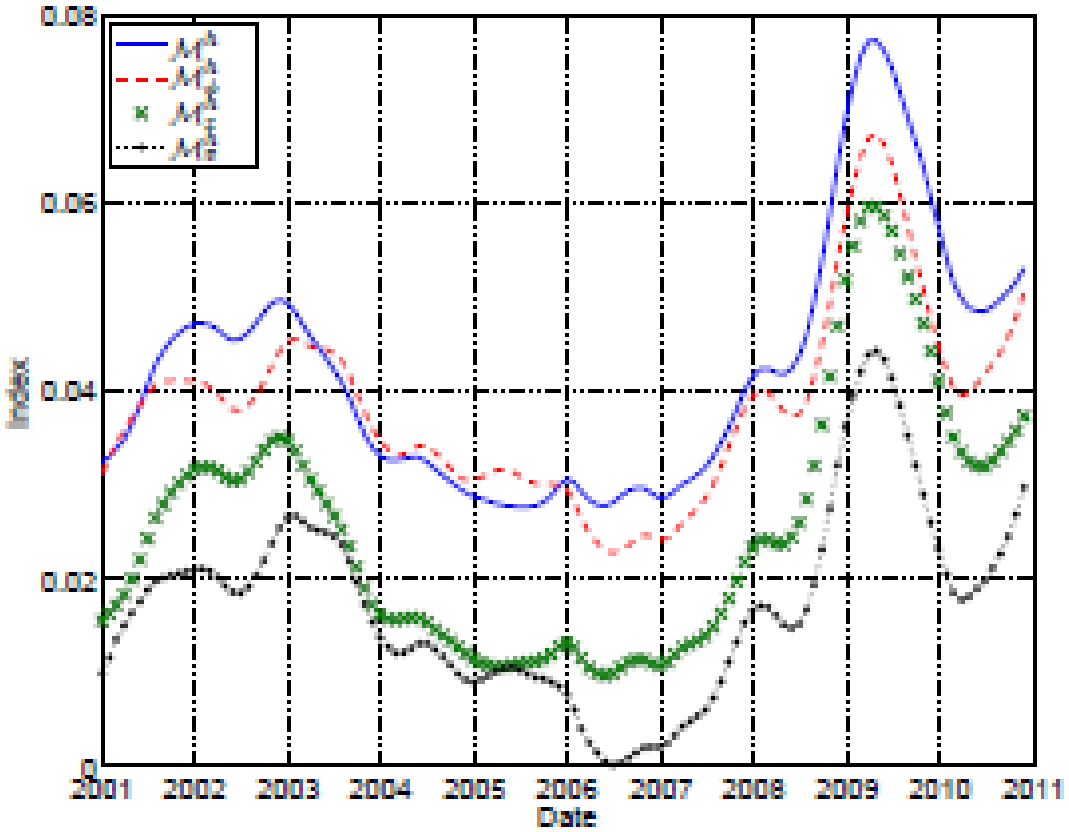


Figure 3: Vacancy and Unemployment Share by Census Region


0.45
0.4
0.35
0.3
0.25
0.2
0.15
Index
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date


0.08
0.06
0.04
0.02
0
Index
2001
2002
2003
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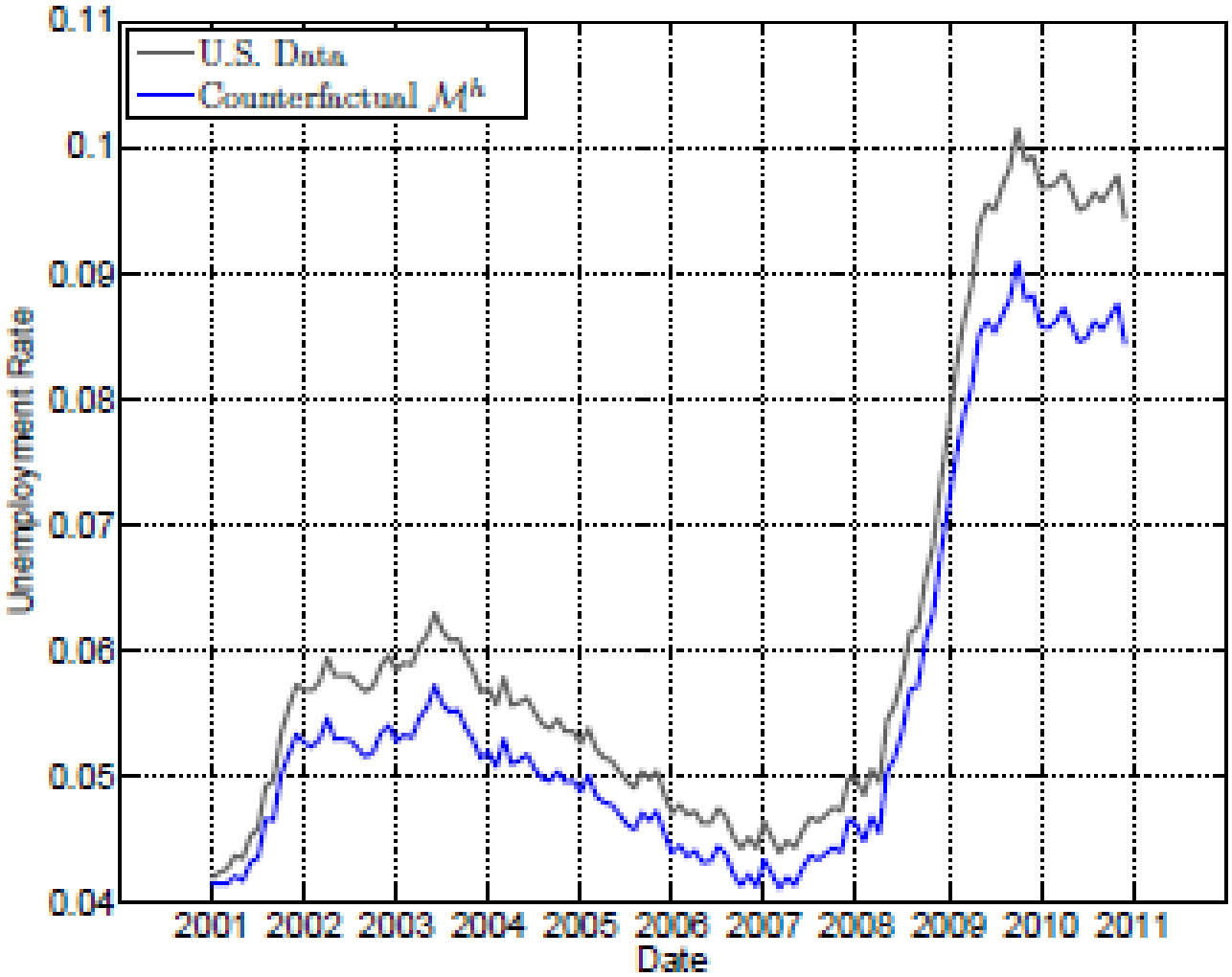

U.S. Data
Counterfactual $\mathcal{M}^h$
Unemployment Rate
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date

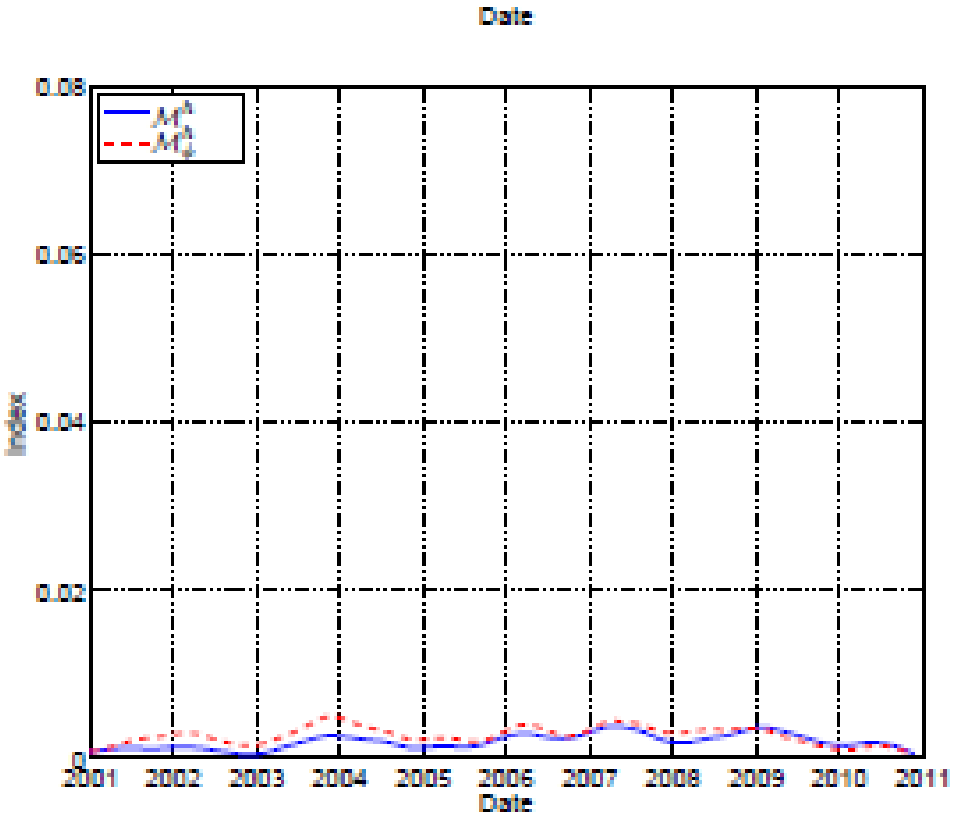
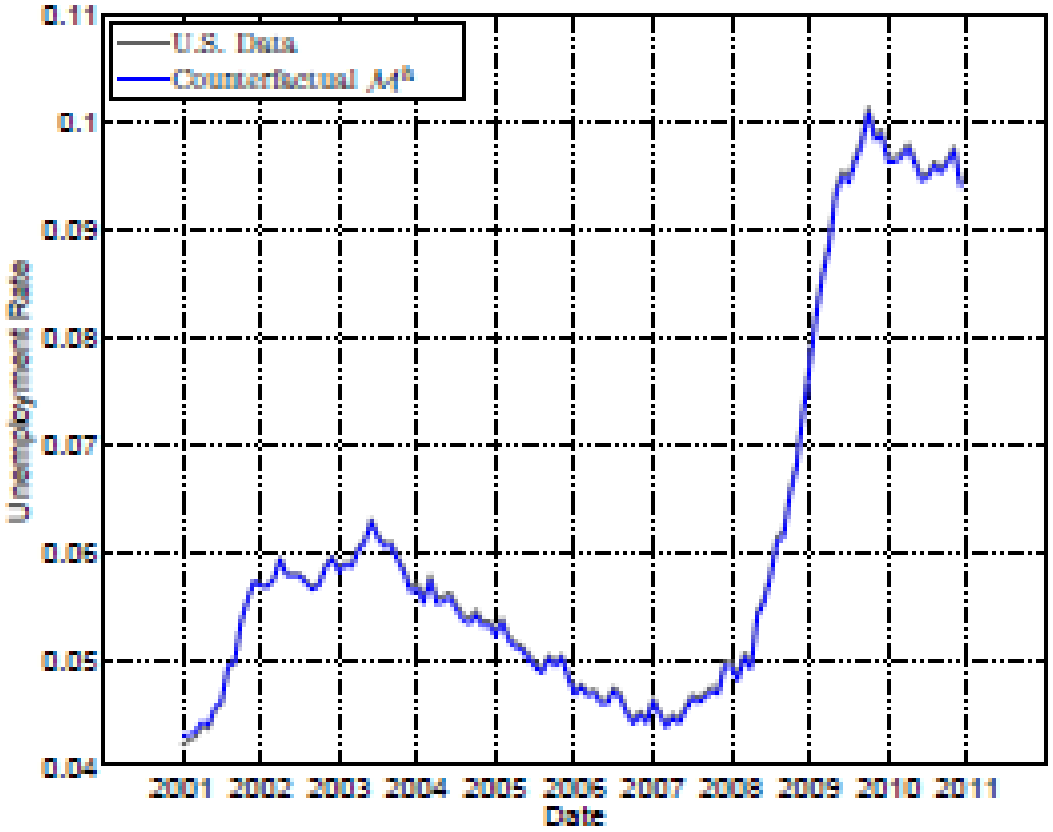


Figure 9: Mismatch Index $\mathcal{M}_t^u$ (left panel) and $\mathcal{M}_t^h$ (right panel) by Census Region


U.S. Data
Counterfactual M^h
Unemployment Rate
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Date

Şahin, Song, Topa and Violante (2011)

- Mismatch at the sectoral level
  - Increased during GR
  - Started to come down in 2010 $\Rightarrow$ cyclical?
  - Accounts for at most 0.7%-point of unemployment
- Geographic mismatch
  - Little role
  - Consistent with earlier studies on house-lock mechanism
- Previous literature
  - Lilien (1982), Abraham and Katz (1984)
  - Barnichon and Figura (2011)
    What Drives Matching Efficiency? A Tale of Composition and Dispersion
    Relate dispersion in labor market tightness to matching efficiency

Herz and van Rens (2011)