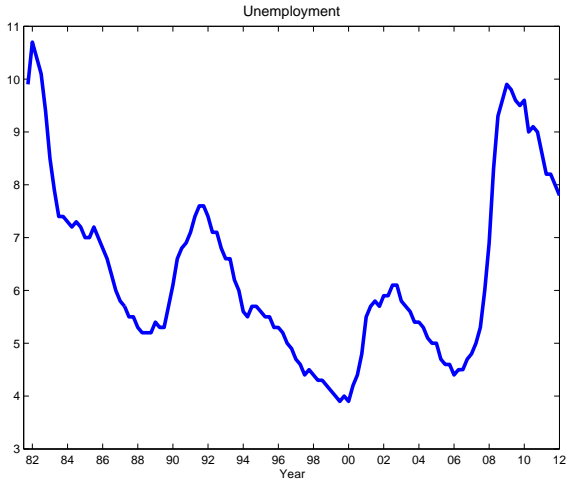


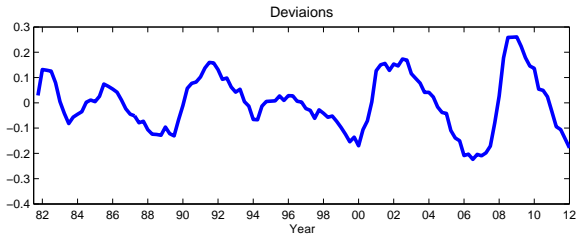
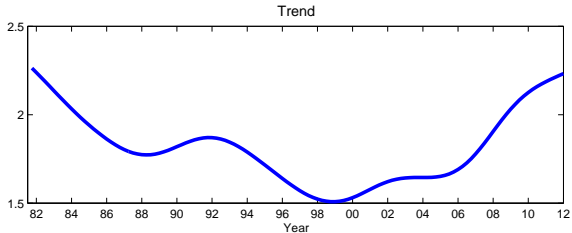
THE SEARCH AND MATCHING MODEL  
SHIMER'S PUZZLE AND POSSIBLE SOLUTIONS

June 2016

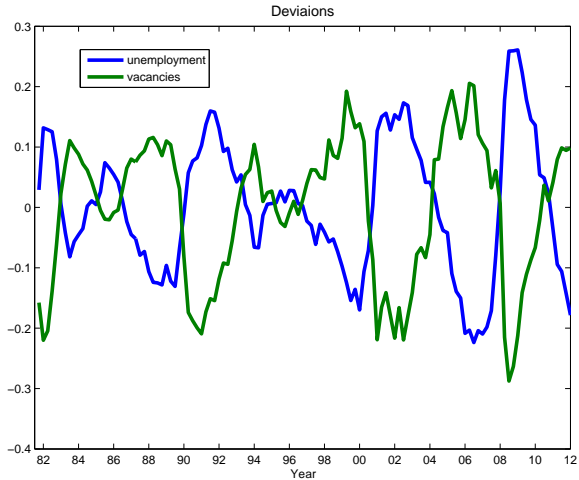
# UNEMPLOYMENT



# UNEMPLOYMENT - TREND AND DEVIATIONS



# UNEMPLOYMENT AND VACANCIES



## SHIMER'S PUZZLE

- ▶ Can the model explain business cycles  $(v, u, \theta)$ ?
- ▶ The exercise goes as follows:
  - ▶ Given shocks to the model and parameters...
  - ▶ What's the volatility of  $u$  and  $v$  in the model?
  - ▶ How does this volatility compares with the data?
- ▶ Shocks to:
  - ▶ labor productivity (BLS)
  - ▶ Separations (CPS, time aggregation)
- ▶ Value of leisure = 0.4
- ▶ Matches elasticity = 0.72
- ▶ Bargaining power = Matches elasticity (Hosios)

# SHIMER'S PUZZLE

## RESULTS

### QUARTERLY SUMMARY STATISTICS FROM U.S. DATA, 1951:1 TO 2003:4

	$u$	$v$	$v/u$	$p$
Std Dev	0.190	0.202	0.382	0.020
Quarterly Autocorrelation	0.936	0.940	0.941	0.878
Correlation $u$	1.000	-0.894	-0.971	-0.408
Correlation $v$	-	1.000	0.975	0.364
Correlation $\frac{v}{u}$	-	-	1.000	0.396
Correlation $p$	-	-	-	1.000

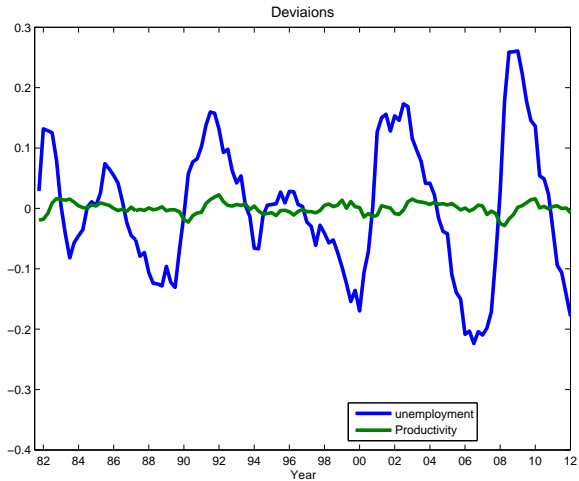
# SHIMER'S PUZZLE

## RESULTS

### QUARTERLY SUMMARY STATISTICS FROM MODEL SIMULATIONS

	$u$	$v$	$v/u$	$p$
Std Dev	0.009	0.027	0.035	0.020
Quarterly Autocorrelation	0.939	0.835	0.878	0.878
Correlation $u$	1.000	-0.927	-0.958	-0.958
Correlation $v$	-	1.000	0.996	0.995
Correlation $\frac{v}{u}$	-	-	1.000	0.999
Correlation $p$	-	-	-	1.000

# UNEMPLOYMENT AND PRODUCTIVITY

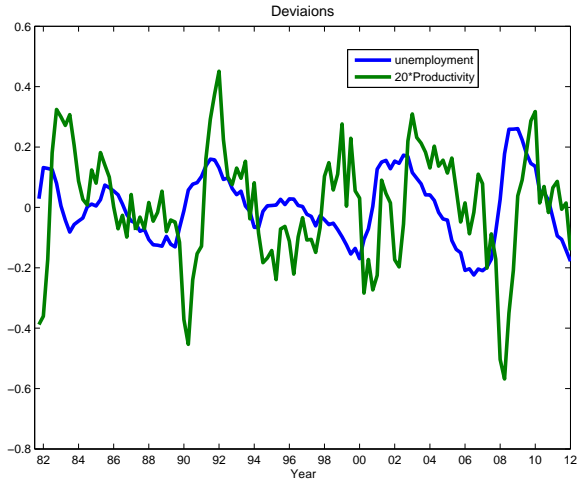




## MECHANISMS

- ▶ If productivity falls or separations increase then:
  - ▶ Value of a filled job goes down
  - ▶ Vacancies go down
- ▶ BUT!
  - ▶ Wage goes down
  - ▶ Unemployment goes up
- ▶ These feedback effects increase vacancies back

# WHAT IF PRODUCTIVITY WAS VERY VOLATILE?



## THREE TYPES OF SOLUTIONS

- ▶ Robert Hall (2005) - **Fine tune the model**
  - ▶ Hall, R.E., 2005. Employment Fluctuations with Equilibrium Wage Stickiness. American Economic Review 95, 50-65.
- ▶ Marcus Hagedorn and Iourii Manoskii (2008) - **Change the calibration**
  - ▶ Hagedorn, M., Manovskii, I., 2008. The Cyclical Behavior of Equilibrium Unemployment and Vacancies Revisited. American Economic Review 98(4), 1692-1706.
- ▶ Zvi Eckstein, et al (2015) - **Change the shock**
  - ▶ Eckstein, Z., et al., 2015. Financial Risk and Unemployment. Unpublished.

## THREE TYPES OF SOLUTIONS

- ▶ Hall (2005) Introduces *Sticky wages*
  - ▶ Strengthens shock b/c firms need to pay the previous wage
- ▶ Hagedorn and Manovskii (2008) change the *calibration* as follows:
  - ▶ a very high leisure value (0.955)
  - ▶ a low bargaining power for workers (0.05)
  - ▶ Wages do not change very much (i.e., sticky)
- ▶ Eckstein, et al (2015) use different shocks:
  - ▶ Interest rate: cost of capital and cost of vacancy fluctuate
  - ▶ Financial spread: implies a high probability of default and separation
  - ▶ Model's volatility of both  $v$  and  $u$  is same magnitude of data

# ECKSTEIN-ET AL

## RESULTS

### QUARTERLY SUMMARY STATISTICS FROM THE CALIBRATED MODEL

	$u$	$v$	$v/u$	$r$
Std Dev	0.09	0.11	0.19	0.14
Quarterly Autocorrelation	0.86	0.61	0.78	0.80
Correlation with $u$	1.00	-0.71	-0.91	0.64
Correlation with $v$	-	1.00	0.94	-0.26
Correlation with $\theta$	-	-	1.00	-0.47
Correlation $r$	-	-	-	1.000

# UNEMPLOYMENT AND INTEREST RATE

