

Discussion on  
“Mismatch Shocks and Unemployment during the  
Great Recession”  
by Furlanetto and Groshenny

Makoto Nakajima

Federal Reserve Bank of Philadelphia

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# Summary

## Question

What are the effects of the mismatch shocks on business cycles, especially on (actual and natural) rate of unemployment during the Great Recession?

# Methodology

Build and estimate a medium-scale DSGE model, and use the estimated model to answer the question.

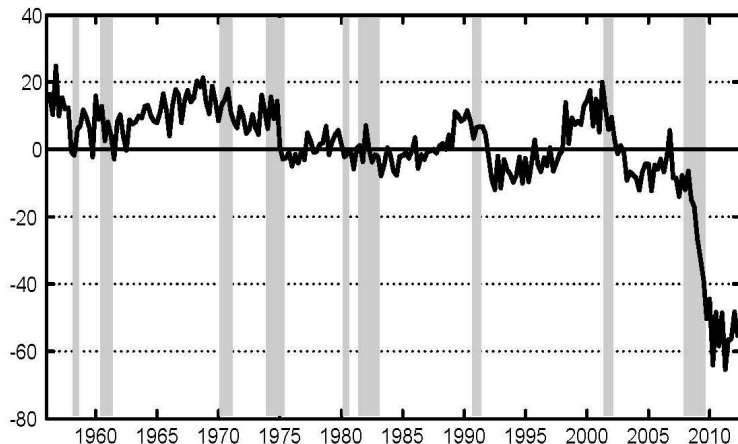
# Key Elements of the Model

- Representative-agent RBC model with labor market frictions (Andolfatto (1996), Merz (1995)).
  - Cobb-Douglas matching function.
  - Constant separation rate.
  - No labor force participation decision.
- Mismatch shocks (shocks to match efficiency).
- pre- and post-match hiring costs.
- New Keynesian features:
  - Quadratic adjustment costs for nominal prices and wages.
  - Monopolistically competitive good-producing firms.
  - Central Bank follows a Taylor rule.

## Estimation

- Model is solved using log-linearization around the steady state.
- 8 shocks (TFP, investment, bargaining, mismatch, MP, FP, mark-up, risk-premium).
- Mismatch shocks are calibrated ( $\rightarrow$  next slide).
- 7 key macro variables ( $y, c, i, w, \pi, R, u$ ).
- 14 parameters are calibrated.
- 26 parameters are estimated using Bayesian method.
- Estimation period: 1957:1-2010:3
- How well does the estimated model match the data?

## Estimation: Backed-out Mismatch Shocks



- Basically capturing shifts of the Beveridge curve.
- Mismatch shocks are small, except for the Great Recession period.

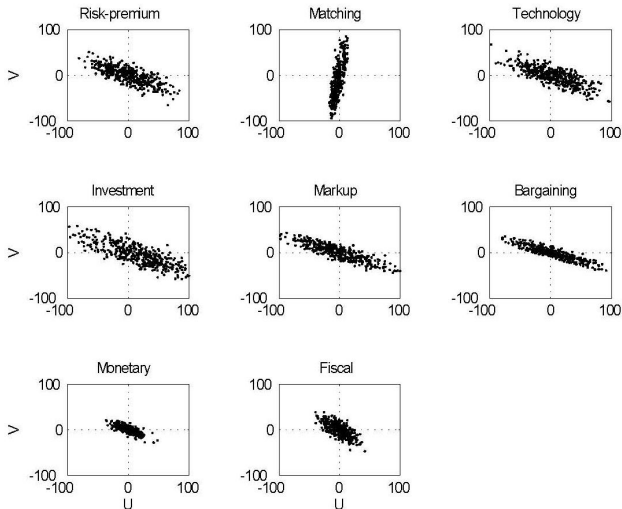
## Result 1: Nature of Matching Costs

Weight of pre-match cost in the total hiring cost is estimated to be 4%.

- Consistent with literature (Silva and Toledo (2009), Yashiv (2000))
- Silva and Toledo (2009): 0.70 or above, instead of 0.94.



# Result 1: Response of $V$ and $U$ to Various Shocks



- Only mismatch shocks raise  $U$  and  $V$  simultaneously.
- Post-match hiring costs make vacancies volatile.

## Result 2: Mismatch Shocks and Business Cycles

Mismatch shocks are irrelevant for business cycles, except for vacancies.

- Due to post-match hiring cost (Furlanetto and Groshenny (2012)).

## Result 2: Variance Decomposition

Table 5: Variance decomposition (in %)

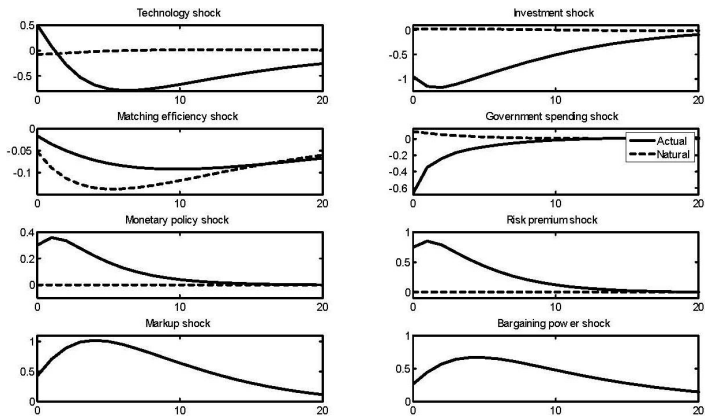
	Output	Unemp.	Vacancy	Inflation
Technology	30	18	11	16
Monetary	3	2	2	2
Investment	27	31	20	57
Matching	0	0.2	38	0
Risk-premium	14	9	8	15
Markup	9	26	12	6
Bargaining	3	12	5	2
Fiscal	14	2	5	2

## Result 3: Natural Rate of Unemployment

A negative mismatch shock raises natural rate of unemployment significantly.

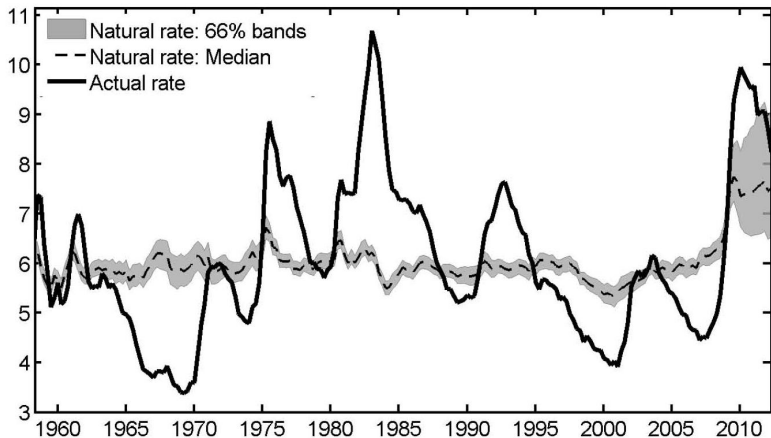
- Consistent with popular interpretation of mismatch shocks:
  - Sectoral reallocation.
  - Skill mismatch.
  - Geographical mismatch.
  - Extended UI benefits.
  - Rise in long-term unemployment or non-participation.

## Result 3: Estimated Impulse Responses



- A negative mismatch shock raises natural rate of unemployment significantly.
- Intuition? Why not other shocks?

## Result 3: Actual and Natural Unemployment Rate



- During the Great Recession, mismatch shocks raised the natural rate and the actual rate by 2.0 p.p. and 1.25 p.p., respectively.

# Comments

## Comment 1: Identification?

How is the dominance of the post-match hiring costs identified?

- This is the most important part of the paper!
- Once the prevalence of the post-match hiring costs is established, most results are found in Furlanetto and Groshenny (2012).
- Under the sticky prices, both pre- and post-match hiring costs can generate a positive correlation between  $V$  and  $U$ .
- Possibly, the volatility of  $V$  requires the post-match hiring costs.



## Comment 2: UI Replacement Rate

UI replacement rate is calibrated at 0.25, which is very low.

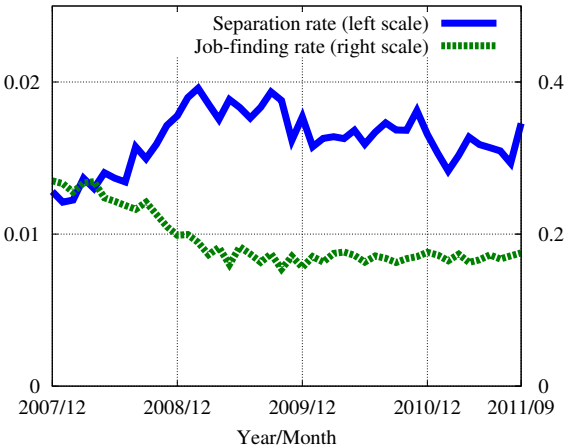
- Shimer (2005): 0.4, DOL: 0.431, Anderson and Meyer (1997): 0.4-0.5, Chang and Kim (2012): 0.82, Hagedorn and Manovskii (2008): 0.96.
- Not innocuous, because a higher UI replacement rate with pre-match hiring costs implies a higher volatility of  $V$  and  $U$ .
- Possibly, with a higher UI replacement rate, the estimated weight of pre-match hiring costs goes up.

## Comment 3: Constant Separation Rate

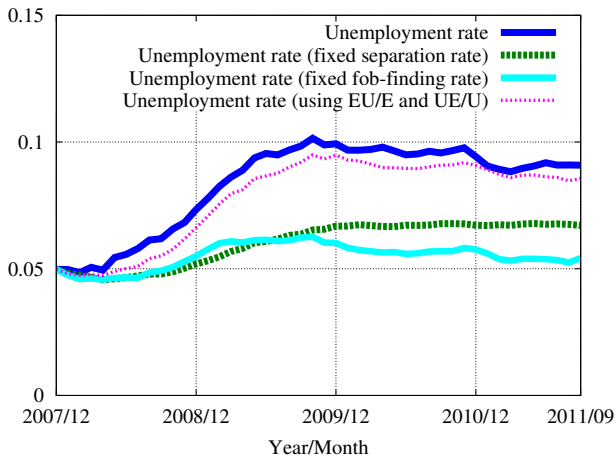
Separation rate is fixed.

- In the data, separation rate (from E to U) went up sharply at the beginning of the Great Recession.
- Partly due to time aggregation, as the authors claim.
- Over-emphasis of the mismatch shock?

# Comment 3: Monthly Separation and Job-Finding Rates



## Comment 3: Unemployment Rates



- Observed decline in job-finding rate can account for only a part of the increase in the UR (up to 45%).
- Labor force participation matters, to some extent, as well.

## Comment 4: Big Picture

- The focus is the Great Recession period.
  - Mismatch shocks do not play a big role outside the period.
- The model is of the Great Moderation period.
  - Locally linearized.
  - No ZLB.
- Can we trust the estimated natural rate of unemployment during the Great Recession?
  - Motivation: natural rate as providing a guidance for the MP.

Conclusion

## Concluding Remarks

- Address a timely and important issue about the cause of the slow recovery of the unemployment rate.
- Building and estimating a rich DSGE model with labor market frictions, show that the mismatch shock helps replicating the business cycles, especially the shifts in the Beveridge curve.
- The paper plays a role in stimulating further research on mismatch shocks.
  - Similar to the TFP shock.
  - Quest for deeper structural elements.