

The Labor Wedge as a Matching Friction

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Motivation

- There are large cyclical variations in the ratio of the MP and MRS of labor
- This "labor wedge" accounts for a significant part of business cycle fluctuations (Chari, Kehoe, McGrattan (2007))
- It has been attributed to time-varying imperfections in the labor market
- Search frictions haven't been considered as a potential explanation

Objective

- Provide a theory of the labor wedge in the spirit of the Mortensen-Pissarides search model
- Understand how the labor wedge is affected by job creation and job destruction shocks
- Assess their importance for business cycles

Strategy

- Take a BC model with search and matching in the labor market
- Add wedges in the spirit of CKM (2007)
- Decompose the labor wedge into:
 - Separation shocks (job destruction)
 - Matching and bargaining shocks (job creation)
- Measure their contributions to unemployment and output

Model Economy

Based on Farmer and Hollenhorst (2006)

- A continuum of families operates a backyard technology
- Members cannot work in their own backyard
- There are two market activities:
 - Head-hunting - competitive
 - Productive - wage-setting rule
- Exogenous shocks: total factor productivity (A_t), separation (δ_{Lt}), matching (B_t) and bargaining (ϕ_t)

Representative Family

Family's problem:

$$E_t \sum_{t=0}^{\infty} \beta^t \left[\log C_t - \chi \frac{(L_t^s + V_t^s + U_t)^{1+\gamma}}{1+\gamma} \right] \rightarrow \max_{\{C_t, L_t^s, L_t^d, V_t^s, V_t^d, U_t, K_{t+1}\}}$$

subject to:

$$C_t + K_{t+1} - (1 - \delta_K)K_t = A_t K_t^\alpha (L_t^d)^{1-\alpha} + w_t(L_t^s - L_t^d) + q_t(V_t^s - V_t^d)$$

as a household she faces a labor accumulation constraint:

$$L_t^s = (1 - \delta_{L_t})L_{t-1}^s + U_t \frac{\bar{M}_t}{\bar{U}_t}$$

as a firm she faces a labor accumulation constraint:

$$L_t^d = (1 - \delta_{L_t})L_{t-1}^d + V_t^d \frac{\bar{M}_t}{\bar{V}_t}$$

matching function: $M_t = B_t U_t^\theta V_t^{1-\theta}$

Calibration and Estimation

- We calibrate:

$$\alpha = 0.34, \quad \delta_K = 0.025, \quad \beta = 0.99, \quad \theta = 0.7$$

- Data: real output, investment and consumption per capita, index of hours per capita, unemployment rate, index of vacancies, quarterly seasonally adjusted for 1964:I-2007:III
- We estimate:

$$\delta_{LSS} = 0.038 \quad \frac{M_{SS}}{U_{SS}} = 0.65 \quad \phi_{SS} = 0.58 \quad \gamma = 3.54$$

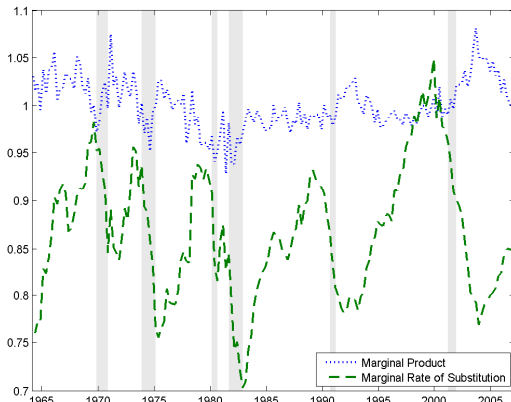
autoregressive processes for the shocks

Impact of Separation, Bargaining and Matching Shocks

- Positive shocks to the separation rate decrease hours and increase unemployment:
 - Decreases in hours lower the marginal rate of substitution (outside option of workers)
- Increases in the bargaining power keep wages fairly constant, increase unemployment and decrease vacancies
- Decreases in the matching efficiency decrease the number of new matches

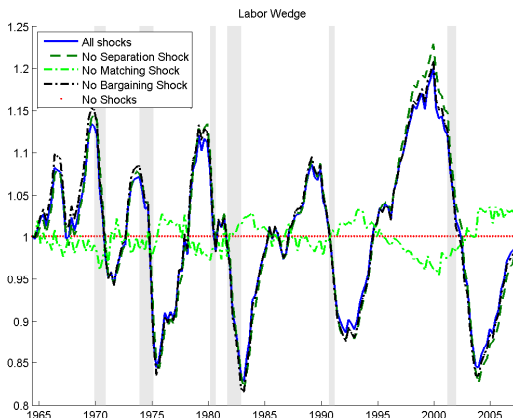
Interpretation of the Labor Wedge

- The labor wedge is the instantaneous welfare gain of a match
- It narrows in good times and widens in recessions



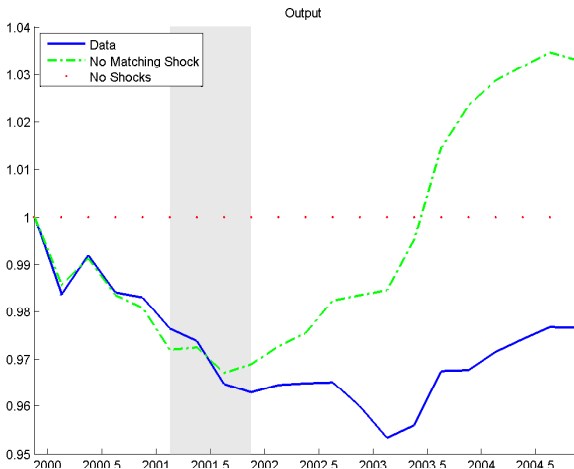
Decomposition of the Labor Wedge

- Matching shocks account for most of the changes in the labor wedge



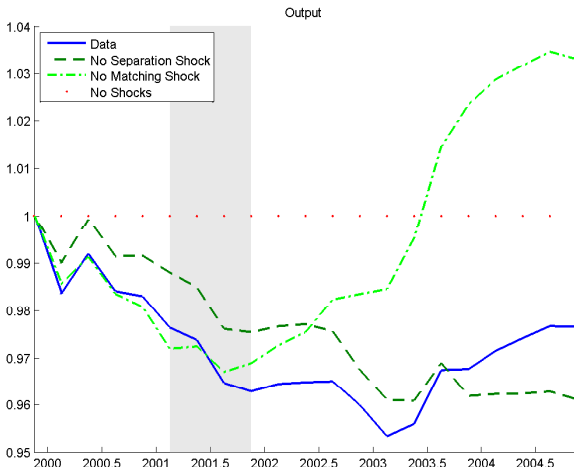
Decomposition of Output

- Matching shocks explain the slow recoveries from recessions



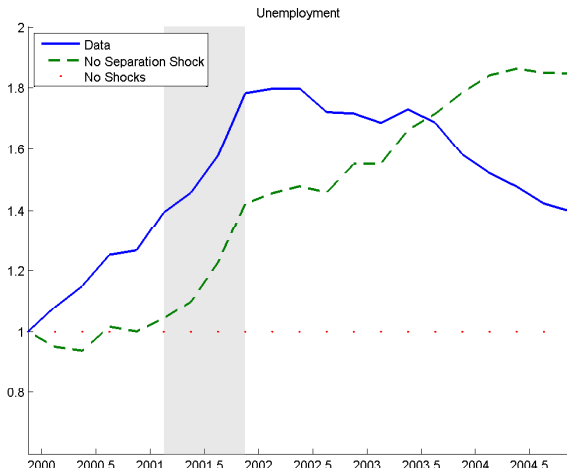
Decomposition of Output

- Separation shocks are important at early stages



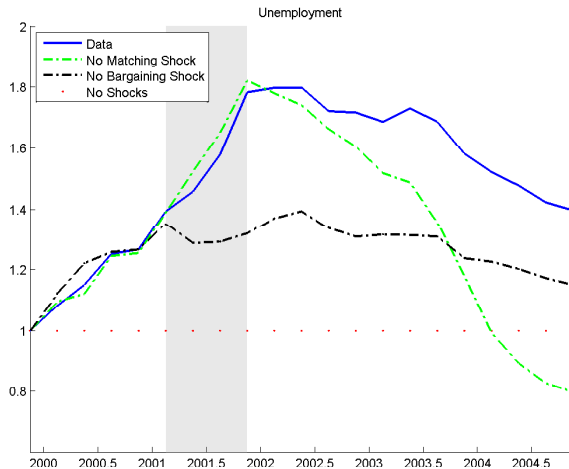
Decomposition of Unemployment

- Job destruction shocks start recessions



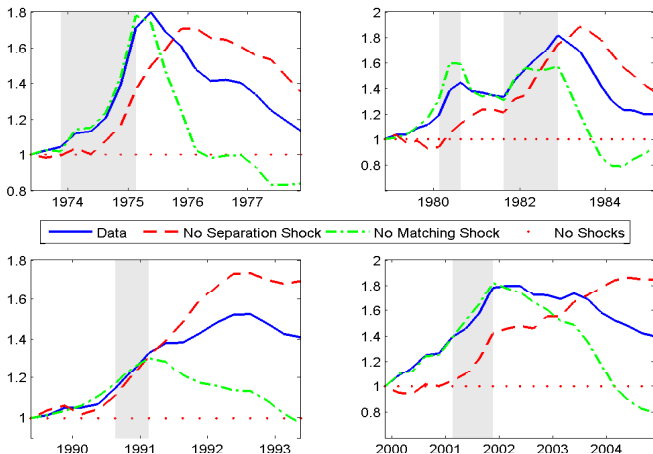
Decomposition of Unemployment

- Shocks to job creation cause jobless recoveries

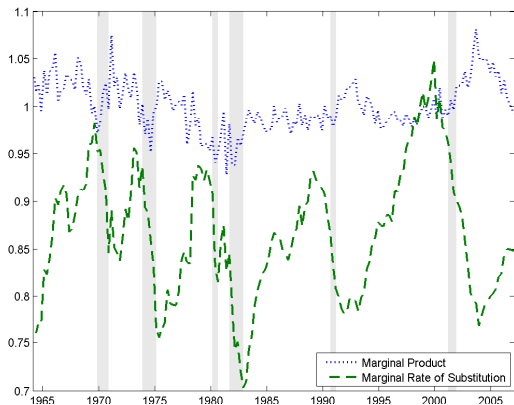


Unemployment in Different Recession Episodes

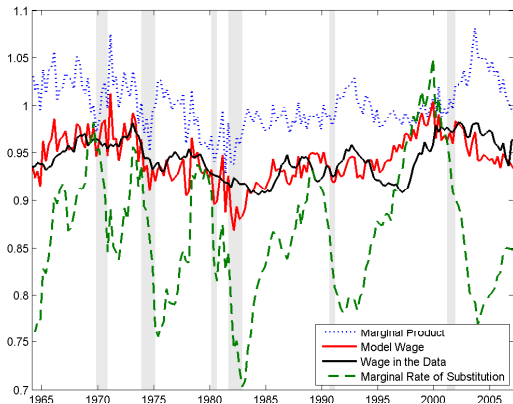
- The finding that job destruction starts recessions and job creation deepens them is robust across recessions



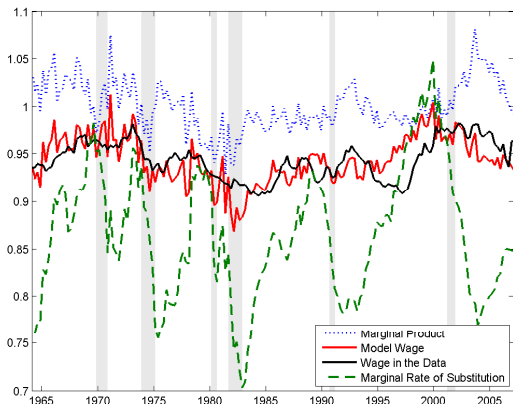
Potential Solution to Shimer's Puzzle



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Potential Solution to Shimer's Puzzle



- Volatility of wages produced by the model is close to that in the data
- The bargaining power of the workers increases because of changes in the MRS

Why are the MRS and the Shocks So Volatile?

- FOC for job search implies volatile MRS and $\rho \left(MRS, \frac{M}{U} \right) > 0$:

$$MRS_t = PV \left(W_t - MRS_t \right) \frac{M_t}{U_t}$$

Data: $\frac{M_t}{U_t}$ volatile, W_t fairly constant

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- FOC for vacancies implies volatile matching shocks and $\rho(MRS, B) > 0$:

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- The two FOCs imply volatile bargaining power and $\rho(\frac{U}{V}, \phi) > 0$:

$$\frac{\phi_t}{1-\phi_t} = \frac{U_t}{V_t}$$

Data: $\frac{U_t}{V_t}$ volatile, $\rho(V_t, U_t) < 0$

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- Labor accumulation pins down separation probability

Conclusion

- The labor wedge is mainly driven by matching shocks
- Implications for current views on the relative importance of job creation and job destruction:
 - Both job creation (Shimer (2005)) and job destruction shocks (Fujita and Ramey (2006)) are important
 - Job destruction starts recessions and negative job creation shocks deepen them
- Allowing for changes in the reservation value of workers can solve Shimer's puzzle:
 - Generate volatile unemployment and vacancies
 - Match volatility of wages