Discussion of "Debt Constraints and Employment" by Kehoe, Midrigan, and Pastorino

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Backloading of compensation increases the sensitivity of unemployment to discount shocks

Has to be true—this is a numbers-only issue

The paper mostly uses the so-called Nash bargain, which generally leads to the Shimer puzzle—negative shocks lower the wage a lot, so unemployment hardly rises

Interesting to investigate in a simpler plain-vanilla DMP model

Well known that this model has essentially no dynamics, so a static analysis maps driving forces into unemployment, with instant propagation

One modeling challenge

KMP have continuous re-bargaining of the wage

In a standard DMP model, the re-bargained wage for continuing workers is the same as for newly hired ones, but this is not true when personal productivity grows with experience, the source of backloading in the KMP model

Rather than track the way the wage rises with experience, assume a once-and-for-all bargain over the discounted value of the wage at the time of hiring

I use a somewhat different notation: W is the present value over the current job, not the worker's lifetime value, as in KMP; the lifetime value is $W + V$ here

Second modeling challenge

The paper's model has a personal state variable, human capital

The model generates a distribution of human capital within the labor force

There's a separate law of motion for each point on that distribution—the personal law of motion of human capital (the Kolmogorov forward equation in continuous time)

The model is hard to fathom!

Different discounts for firms and workers

If workers have higher discount rates, backloading results in a loss of joint value

Absent considerations not in the model, firms would pay workers up front

So I won't examine that issue

Backloading illustrations

Personal productivity grows with tenure (rather than experience) at rate $g = 0.04$ per year

Employer incurs training cost $T = 3$ months of output at time of hire, recouped from the employer's share of the subsequent surplus

Government pays a newly hired worker an increment $R = 0.02$ per year to a future subsidy flow, worth R/ρ_f—this corresponds to avoiding the 2 percent decline in personal productivity expected by a person who remains unemployed

DMP model with backloading

Value of a worker's productivity:

$$P = \frac{1}{\rho - g + \sigma} - T$$

Unemployment value:

$$U = \frac{b + \lambda_w (W + V + R/\rho)}{\rho + \lambda_w}$$

Value of worker's subsequent career:

$$V = \frac{\sigma}{\sigma + \rho} U$$

DMP model with backloading, continued

Nash wage determination:

$$W = \frac{1}{2}(P - R/\rho + U - V)$$

Job value to employer:

$$J = P - W$$

Zero-profit condition:

$$J = \frac{\kappa}{\mu^2}\lambda_w$$

Standard calibration

Job separation hazard: 3.5 percent per month

Job-finding rate: 57 percent per month; vacancy yield: 1.19 hires per vacancy per month

Flow value of unemployment: 40 percent of initial productivity; normal discount rate 6 percent per year

These determine the other parameters: matching efficiency μ and vacancy cost κ

Effects of discount rise from 6 to 15 percent, no backloading

Effect of discount rise on	*No backloading*	*Growth with tenure*	*Training cost*	*Reemployment subsidy*
Present value of productivity, *P*	-3.95			
Present value of worker's opportunity cost, *U-V-R/* ρ	-3.92			
Surplus	-0.02			
Present value of wage, *W*	-3.94			
Unemployment, percentage points	0.1			

Effect of discount rise: tenure growth

Effect of discount rise on	*No backloading*	*Growth with tenure*	*Training cost*	*Reemploy-ment subsidy*
Present value of productivity, *P*	-3.95	-4.63		
Present value of worker's opportunity cost, *U-V-R/* ρ	-3.92	-4.58		
Surplus	-0.02	-0.05		
Present value of wage, *W*	-3.94	-4.61		
Unemployment, percentage points	0.1	0.1		

Effect of discount rise: training cost

Effect of discount rise on	*No backloading*	*Growth with tenure*	*Training cost*	*Reemployment subsidy*
Present value of productivity, *P*	-3.95	-4.63	-3.95	
Present value of worker's opportunity cost, *U-V-R/* ρ	-3.92	-4.58	-3.89	
Surplus	-0.02	-0.05	-0.06	
Present value of wage, *W*	-3.94	-4.61	-3.92	
Unemployment, percentage points	0.1	0.1	0.2	

Effect of discount rise: reemployment subsidy

Effect of discount rise on	*No backloading*	*Growth with tenure*	*Training cost*	*Reemployment subsidy*
Present value of productivity, *P*	-3.95	-4.63	-3.95	-4.63
Present value of worker's opportunity cost, *U-V-R/* ρ	-3.92	-4.58	-3.89	10.30
Surplus	-0.02	-0.05	-0.06	-14.93
Present value of wage, *W*	-3.94	-4.61	-3.92	-4.26
Unemployment, percentage points	0.1	0.1	0.2	1.4

New source of wage stickiness

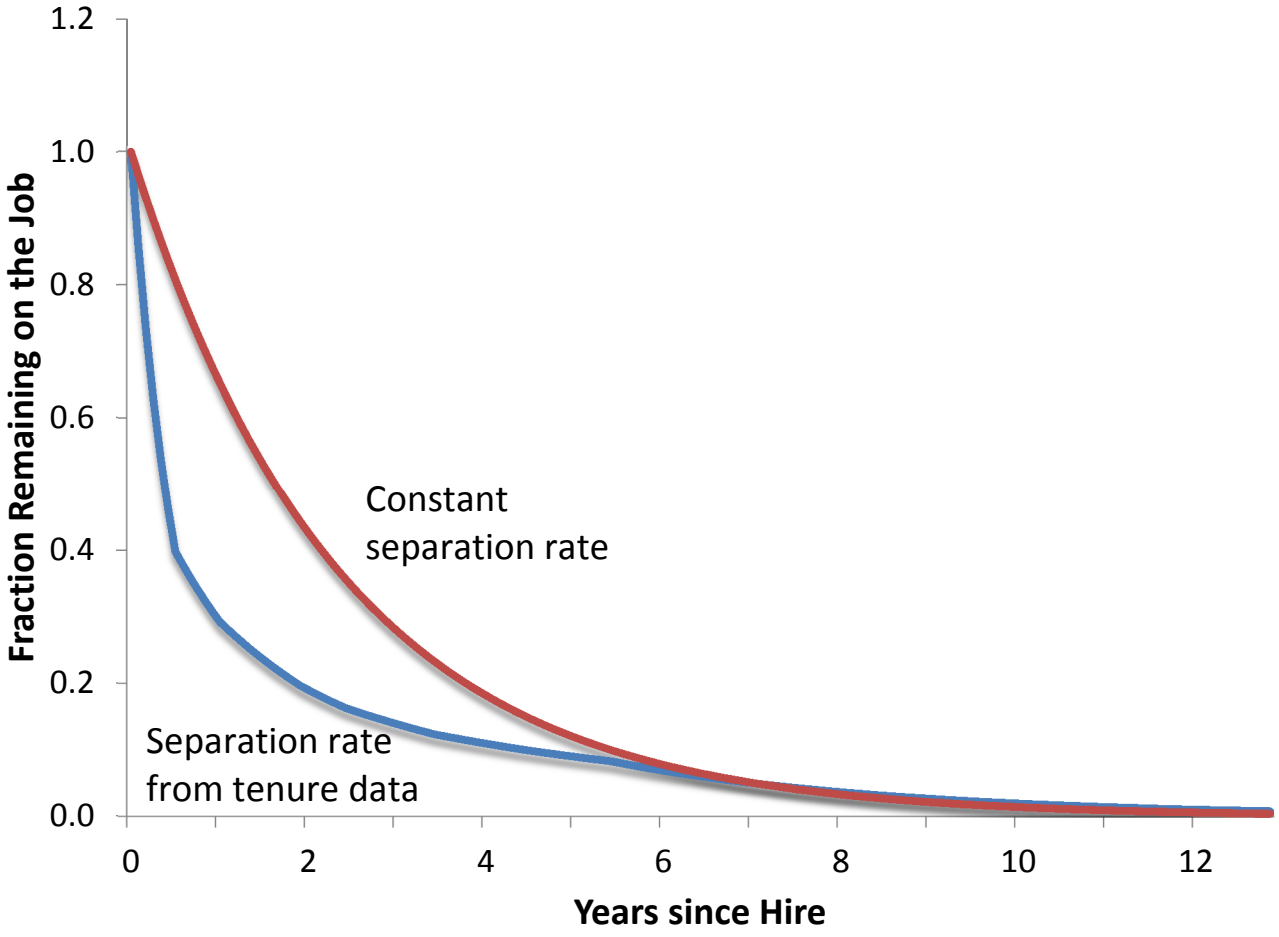
Nash wage determination:

$$W = \frac{1}{2}(P - R/\rho + U - V)$$

The extra value of taking a job and terminating unemployment, R/ρ, depresses the wage by lowering the worker's reservation wage

That extra value is *smaller* for a higher discount

Job Survival Probability Estimated from CPS Tenure Data Compared to Constant Separation Rate



Unresolved issues

KMP find no important difference between alternating-offer and so-called Nash bargaining, contrary to a number of recent studies that do not include backloading

Differences between discount rates of employers and workers seem plausible, but not yet modeled in a satisfactory way

Conclusions

With so-called Nash bargaining, the Shimer puzzle limits driving forces of unemployment fluctuations—here, it takes a lot of backloading of compensation to get much volatility from realistic discount fluctuations

With a more realistic bargaining protocol, discount variations are plausible channels of unemployment fluctuations

There's a lot of interesting things going on in the model and I look forward to a fuller exposition of its innovations