Labor PS1: unemployment flows

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1 Introduction

I use monthly CPS gross flow data from the BLS for the period 1990–2019, focusing on men and women separately. The sample restriction ensures me the availability of seasonally adjusted employment, unemployment, and transition flow series. While Shimer (2012) begins in 1948 and uses short-term unemployment to approximate flows, I focus on the post-1990 period for simplicity and for direct availability of gross flow data. Despite the shorter sample, the replication exercise should remain conceptually valid[1].

In Section 2, I present and interpret the main results and compare them to Shimer (2012). Section 3 reports the corresponding tables and figures.

2 Results

Table 1 reports summary statistics for monthly job-finding (F) and separation probabilities (S) and their continuous-time hazard counterparts (f, s). Job-finding rates are substantially larger and more volatile than separation rates for both men and women. For example, the standard deviation of the job-finding hazard is around 0.06, while the separation hazard exhibits a standard deviation close to 0.002. This large difference indicates that hiring flows dominate separations in magnitude and variability.

Men exhibit higher average job-finding rates (0.311 vs 0.273 in hazard terms), whereas women display higher separation rates (0.033 vs 0.022). This suggests that male workers experience stronger hiring dynamics, while female workers exhibit slightly higher job separation intensity. These differences may reflect heterogeneity in sectoral composition, labor market attachment, or job stability across genders. Nevertheless, the qualitative ranking of flows is consistent with Shimer (2012), who documents that job-finding probabilities are much larger and more volatile than separation probabilities in aggregate U.S. data.

Figure 1 shows the evolution of job-finding hazards over time, while Figure 2 reports separation hazards. Job-finding rates display strong cyclical fluctuations, particularly during the Great recession (2007–2009), where a sharp collapse is visible for both genders. In contrast, separation rates remain comparatively smooth and exhibit much smaller cyclical movements.

Figures 3 and 4 present the Shimer decomposition for women and men. Table 2 reports the standard deviation of three steady-state unemployment measures: (i) u^{ss}, the steady-state unemployment rate implied by the observed hazards; (ii) u^f, the counterfactual unemployment rate when separations are fixed at their sample mean and only job-finding varies; and (iii) u^s, the counterfactual unemployment rate when job-finding is fixed and only separations vary.

[1] Although Shimer (2012) constructs transition rates using short-term unemployment and other adjustments to extend the sample back to 1948, I instead use CPS gross flows directly. Let UE_t denote the number of unemployed workers in $t-1$ who transition to employment in t, and EU_t the number of employed workers who transition to unemployment. Let U_{t-1} and E_{t-1} denote the stocks of unemployed and employed workers at $t-1$. The discrete-time job-finding and separation probabilities are computed as

$$F_t = \frac{UE_t}{U_{t-1}}, \qquad S_t = \frac{EU_t}{E_{t-1}}.$$

I convert these into continuous-time hazards assuming Poisson arrival rates:

$$f_t = -\log(1 - F_t), \qquad s_t = -\log(1 - S_t).$$

Shimer (2012) notes that alternative constructions of transition rates differ mainly in levels but yield highly correlated cyclical fluctuations. This supports the use of CPS gross flows and continuous-time transformation in this exercise, as also discussed in the lecture notes.

For women, the standard deviation of steady-state unemployment, $SD(u^{ss})$, is 0.021. When separations are held fixed and only job-finding varies, volatility remains high at 0.024. In contrast, when job-finding is held fixed and only separations vary, volatility drops to 0.007. A similar pattern emerges for men. These results indicate that cyclical unemployment fluctuations are primarily driven by movements in job-finding rates rather than separations, which is one of the main conclusions of Shimer (2012).

Interestingly, the relative contribution of job-finding appears slightly stronger for women in this sample, as the gap between $SD(u_f)$ and $SD(u_s)$ is larger for women than for men. This suggests that female unemployment may be even more sensitive to hiring conditions.

Using both HP filtering and linear detrending of log series, I analyze the cyclical components of job-finding rates, separation rates, and unemployment. Tables 3 and 4 report cyclical volatility and correlations. Under both detrending methods, job-finding rates are substantially more volatile than separation rates for both men and women. Moreover, job-finding is strongly negatively correlated with unemployment (between -0.87 and -0.95), while separation exhibits weaker and less stable correlations, even changing the sign depending on the detrending method.

The qualitative conclusions are robust across detrending methods and are similar Shimer (2012): unemployment fluctuations are primarily driven by movements in job-finding rates rather than separations. Although the exact magnitudes differ—partly due to the shorter sample period (1990–2019), different computation of f, s and the focus on gender subgroups—the central mechanism remains the same. Cyclical labor market adjustment work mainly through hiring dynamics, even within demographic groups.

3 Appendix

Exercise 2

Table 1: Job Finding and Separation Rates (Monthly, 1990–2019)

Statistic	Women	Men
Mean F	0.237	0.265
SD F	0.044	0.046
Mean S	0.032	0.021
SD S	0.002	0.002
Mean f	0.273	0.310
SD f	0.057	0.062
Mean s	0.033	0.022
SD s	0.002	0.002

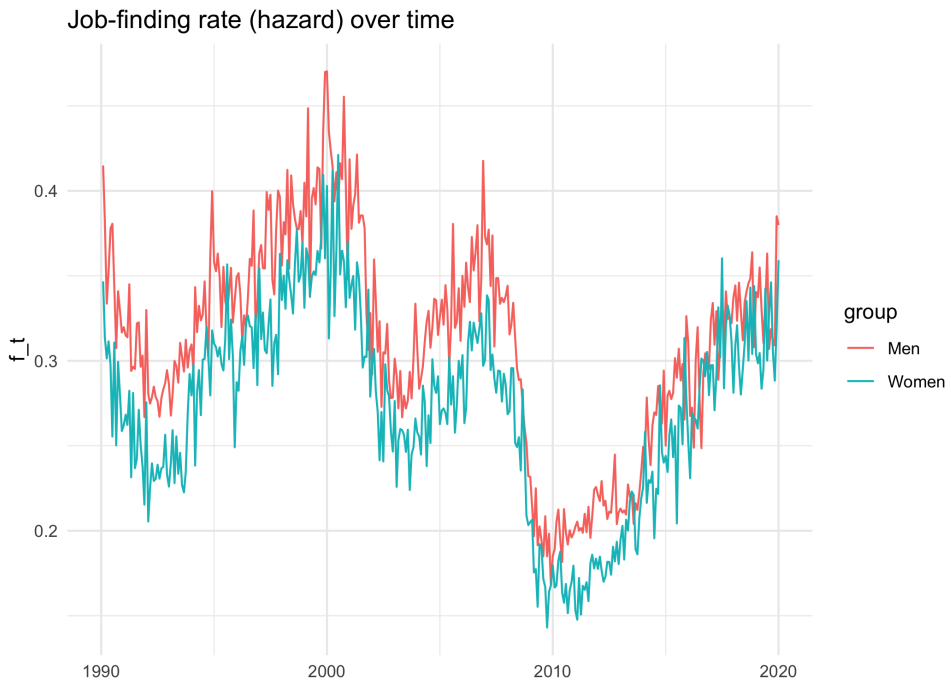

Figure 1: Job-finding hazard over time

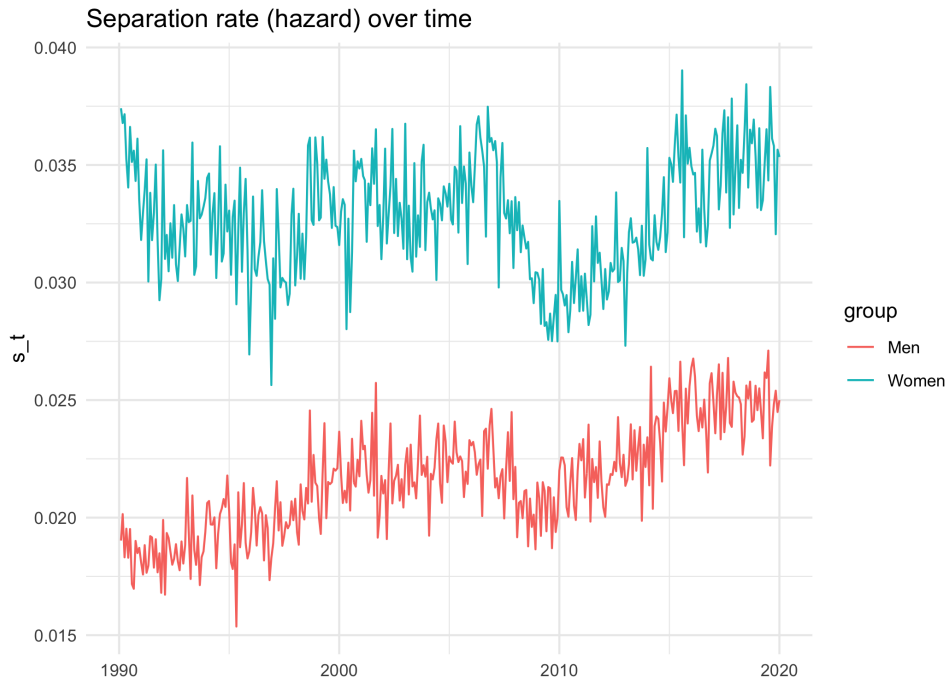

Figure 2: Job-separation hazard over time

Exercise 3

Note: $u_t^{ss} = s_t/(s_t + f_t)$. u_t^f fixes separations; u_t^s fixes job-finding.

Table 2: Shimer Decomposition: Volatility of Steady-State Unemployment

Group	SD_u_ss	SD_u_f	SD_u_s
Women	0.02	0.024	0.007
Men	0.016	0.014	0.006

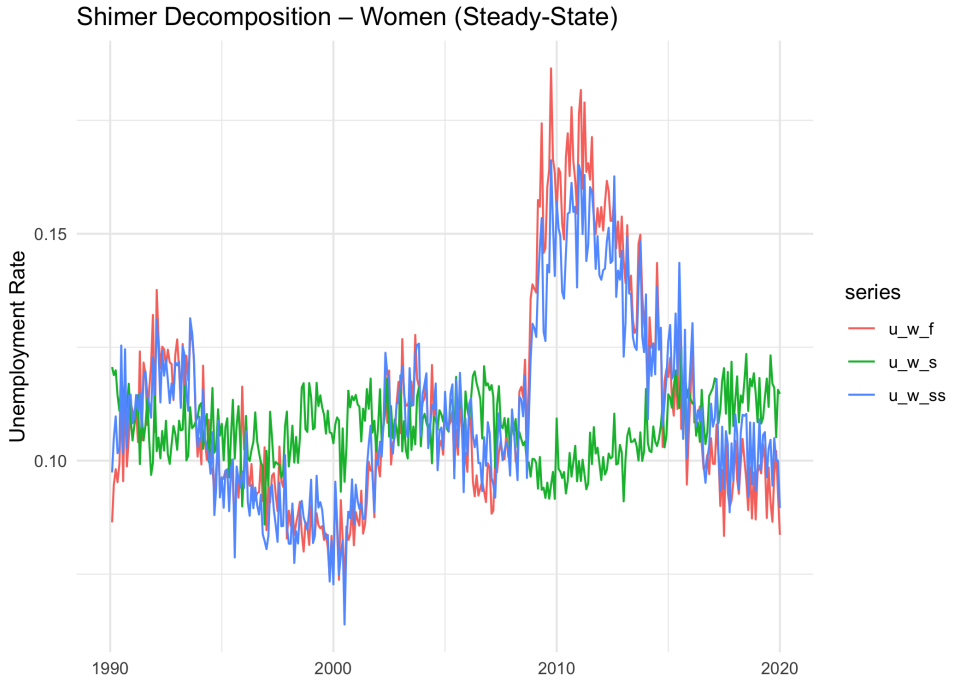

Figure 3: Shimer decomposition (women). The steady-state unemployment rate is $u_t^{ss} = \frac{s_t}{s_t + f_t}$. u_t^f holds separations fixed at their sample mean, while u_t^s holds job-finding fixed.

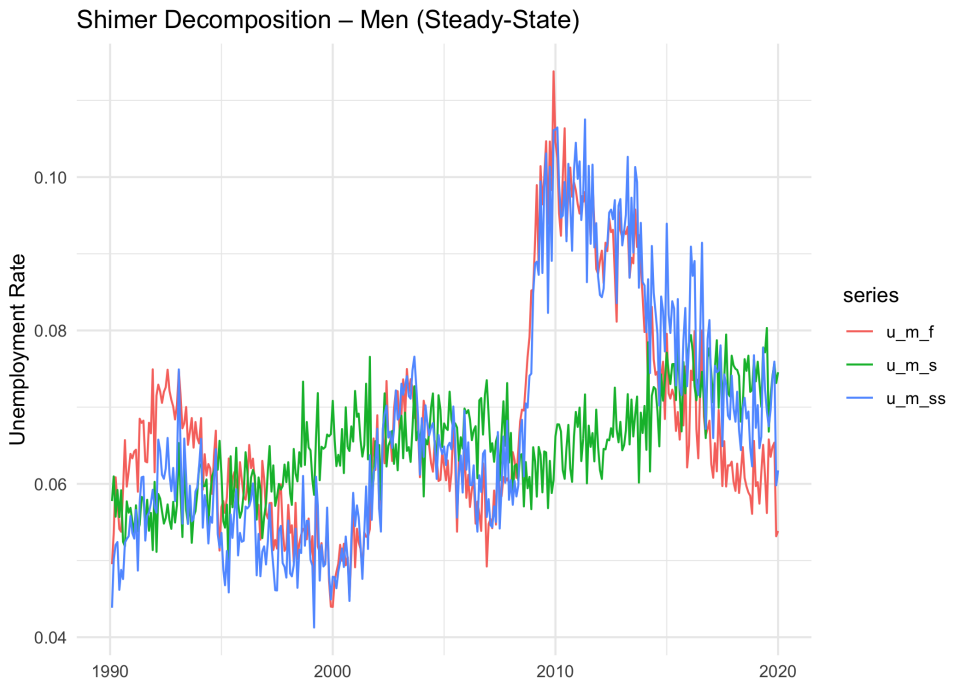

Figure 4: Shimer decomposition (men). Counterfactual series are constructed analogously to the women sample.

Exercise 4

Table 3: Cyclical Volatility (SD of Detrended Log Series)

Method	Group	SD_f	SD_s	SD_u	SD_u_actual
HP	Women	0.106	0.057	0.088	0.091
HP	Men	0.101	0.058	0.097	0.121
Linear	Women	0.218	0.074	0.166	0.230
Linear	Men	0.196	0.069	0.162	0.282

Note: SD_f, SD_s, and SD_u denote the standard deviation of detrended log job-finding hazards (f_t), separation hazards (s_t), and steady-state unemployment (u_t^{ss}), respectively.

Table 4: Cyclical Co-movement (Correlations with Unemployment Cycle)

Method	Group	Corr_f_u	Corr_s_u	Corr_f_u_actual	Corr_s_u_actual
HP	Women	-0.849	0.162	-0.746	-0.358
HP	Men	-0.839	0.339	-0.826	-0.177
Linear	Women	-0.941	-0.245	-0.935	-0.575
Linear	Men	-0.937	-0.123	-0.954	-0.449

Note: $\text{Corr}_{f,u}$ and $\text{Corr}_{s,u}$ denote correlations between detrended log job-finding or separation hazards and detrended log steady-state unemployment.