

The Cyclical Behavior of Labor Markets

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Outline

- Develop six facts to guide theoretical models.
- Discuss the quantitative failures of existing models.
- Highlight recent research that promises to overcome these failures.

Relevant Papers

- “The Consequences of Rigid Wages in Search Models,” *Journal of the European Economic Association*, 2004.
- “The Cyclical Behavior of Equilibrium Unemployment and Vacancies,” *American Economic Review*, 2005.
- “Reassessing the Ins and Outs of Unemployment,” 2005.
- Work by Robert Hall and many others.

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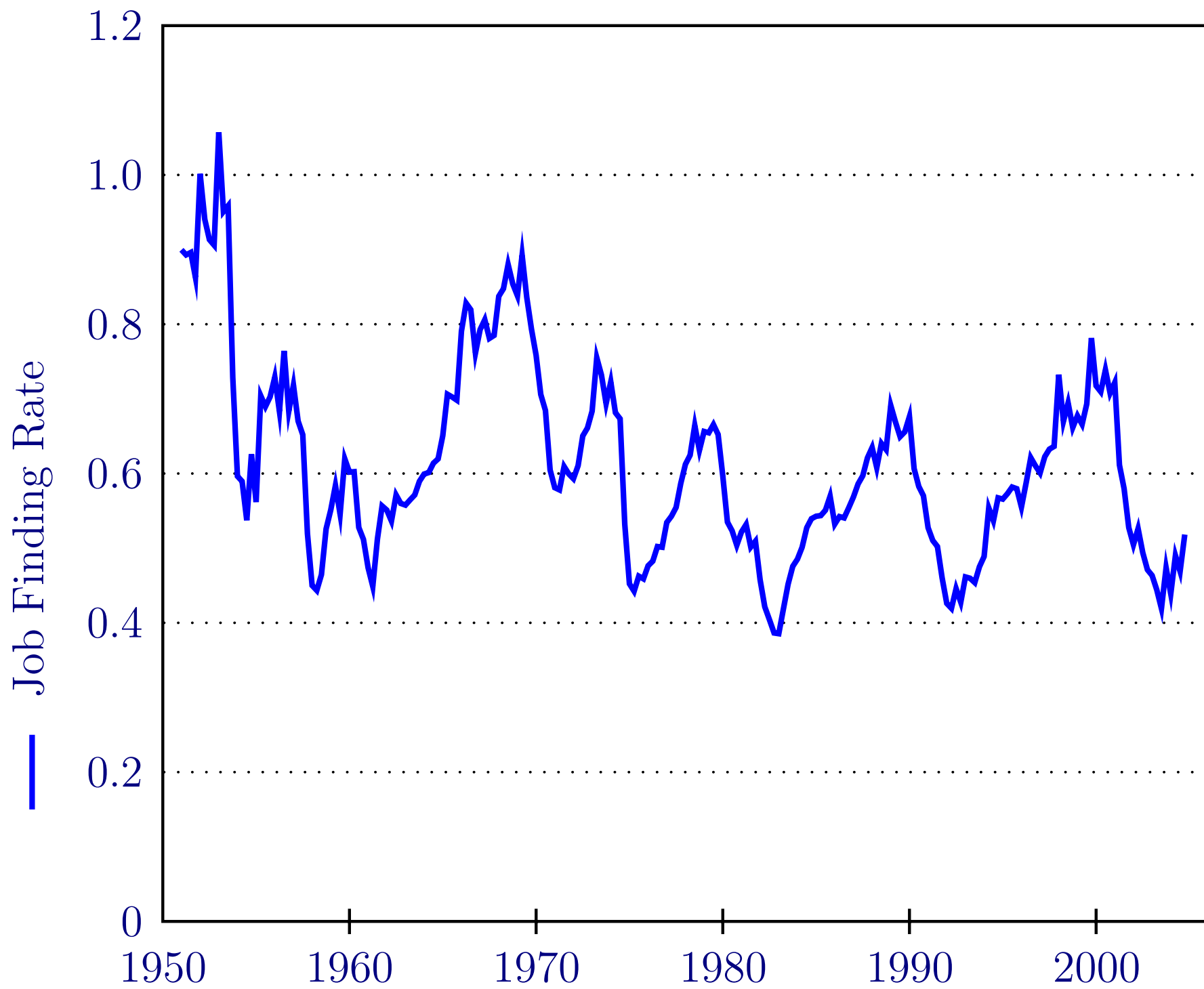
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- Data are available at <http://home.uchicago.edu/~shimer/data/>

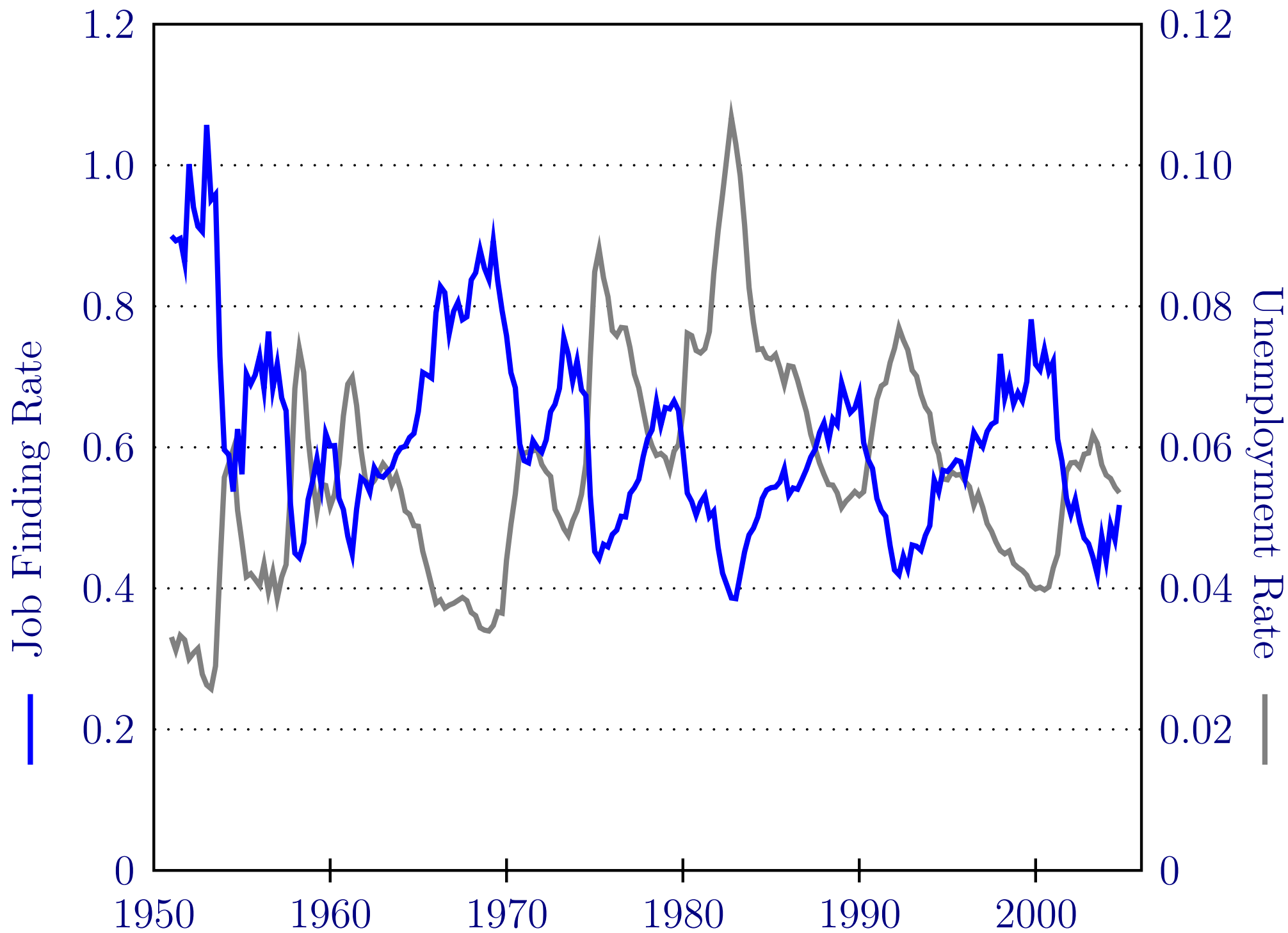
The Job Finding Rate

- Goal: Measure the job finding rate using readily available data.
- U_t is the number of unemployed workers in month t .
- E_t is the number of employed workers in month t .
- U_t^s is the number unemployed for less than one month in month t .

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- I use these to construct two variables:
 - ◇ The unemployment rate in month t is $\frac{U_t}{U_t + E_t}$.
 - ◇ The job finding rate is f_t solving $\exp(-f_t) = \frac{U_{t+1} - U_{t+1}^s}{U_t}$.



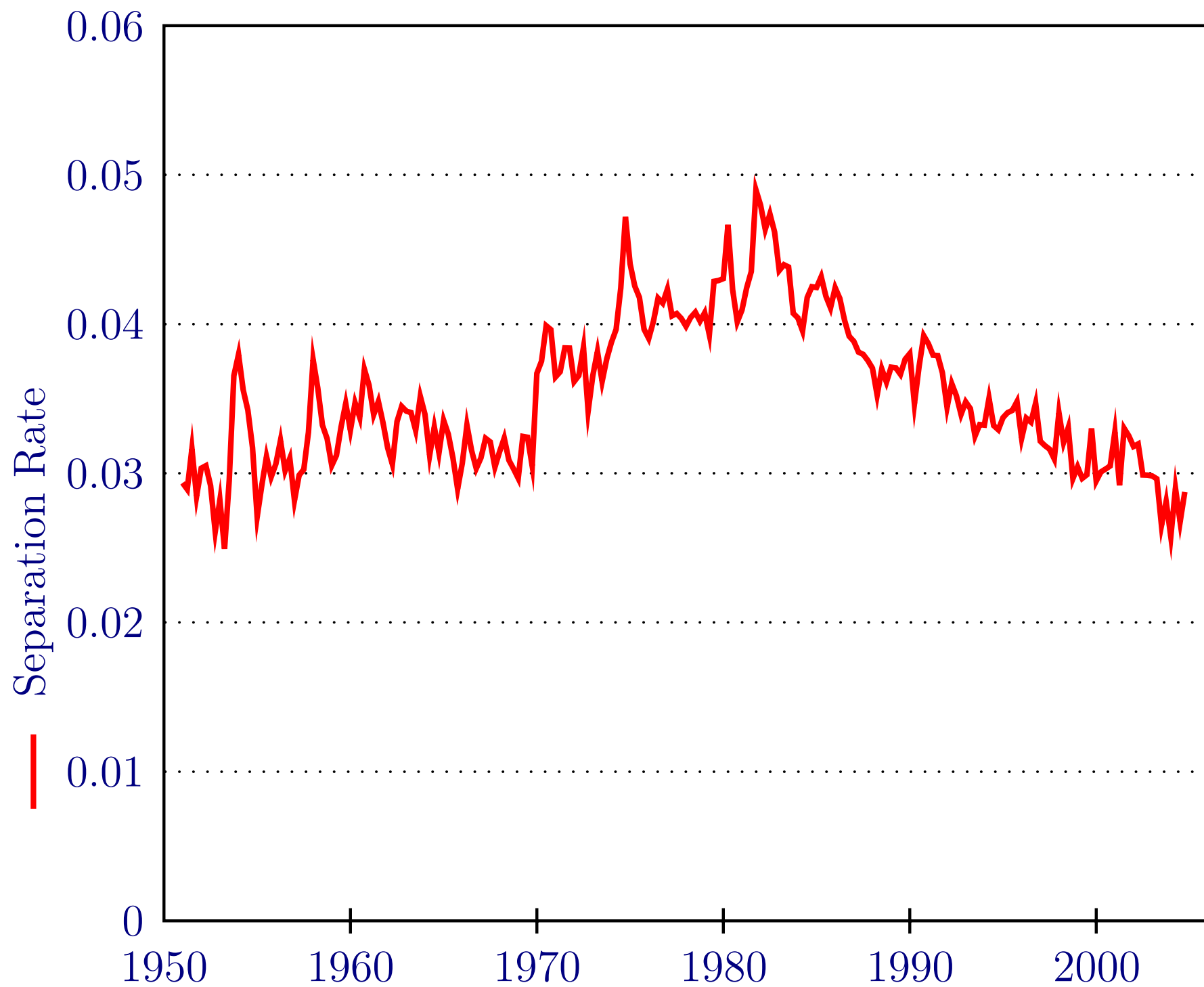


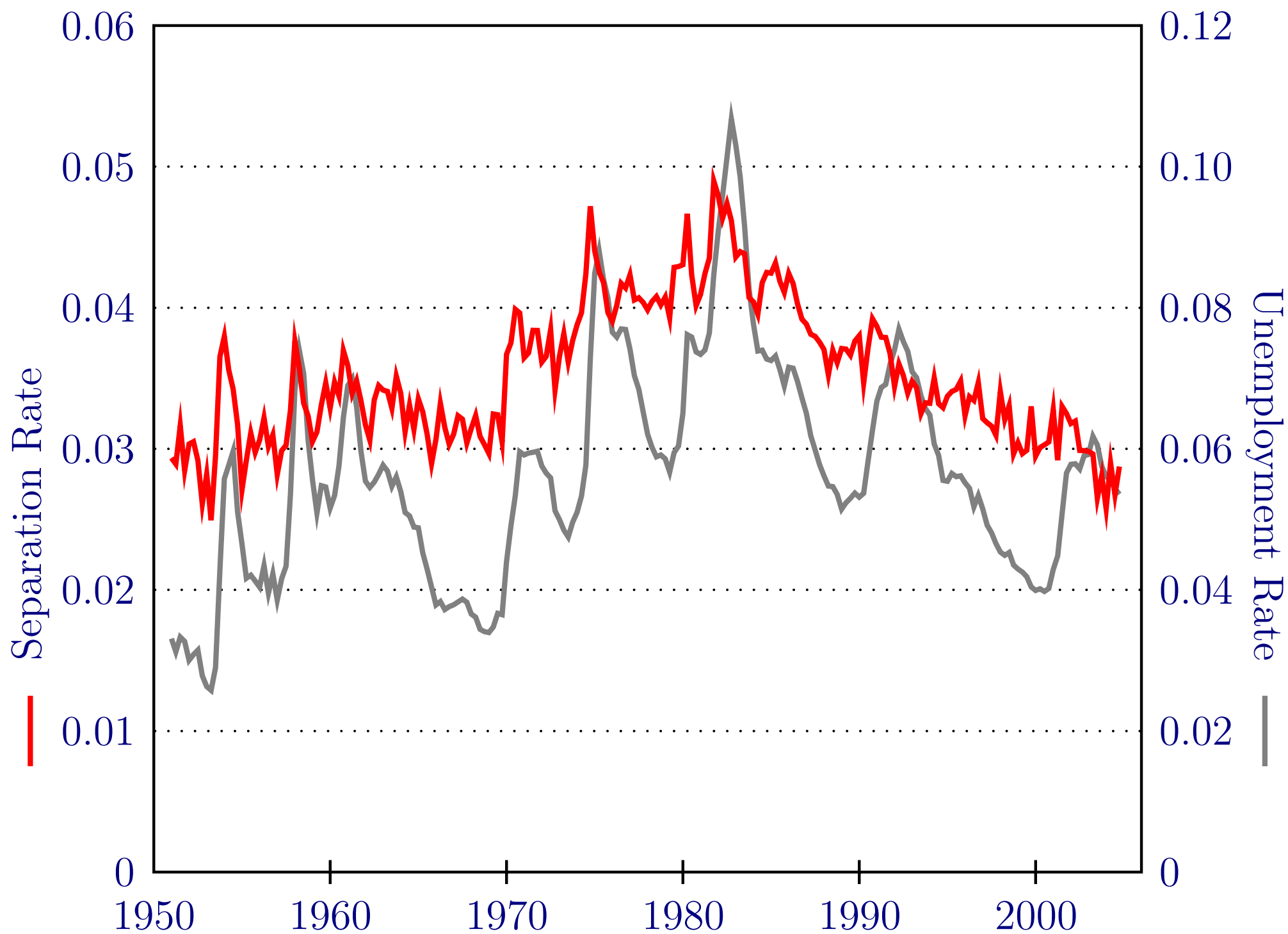
Fact 1

The correlation between the cyclical components of the job finding and unemployment rates is -0.97 .

The Separation Rate

- Goal: Construct an analogous measure of the separation rate.
- Suppose we know U_t , E_t , and f_t .
- Then the separation rate must solve $U_{t+1} - U_t = E_t s_t - U_t f_t$.





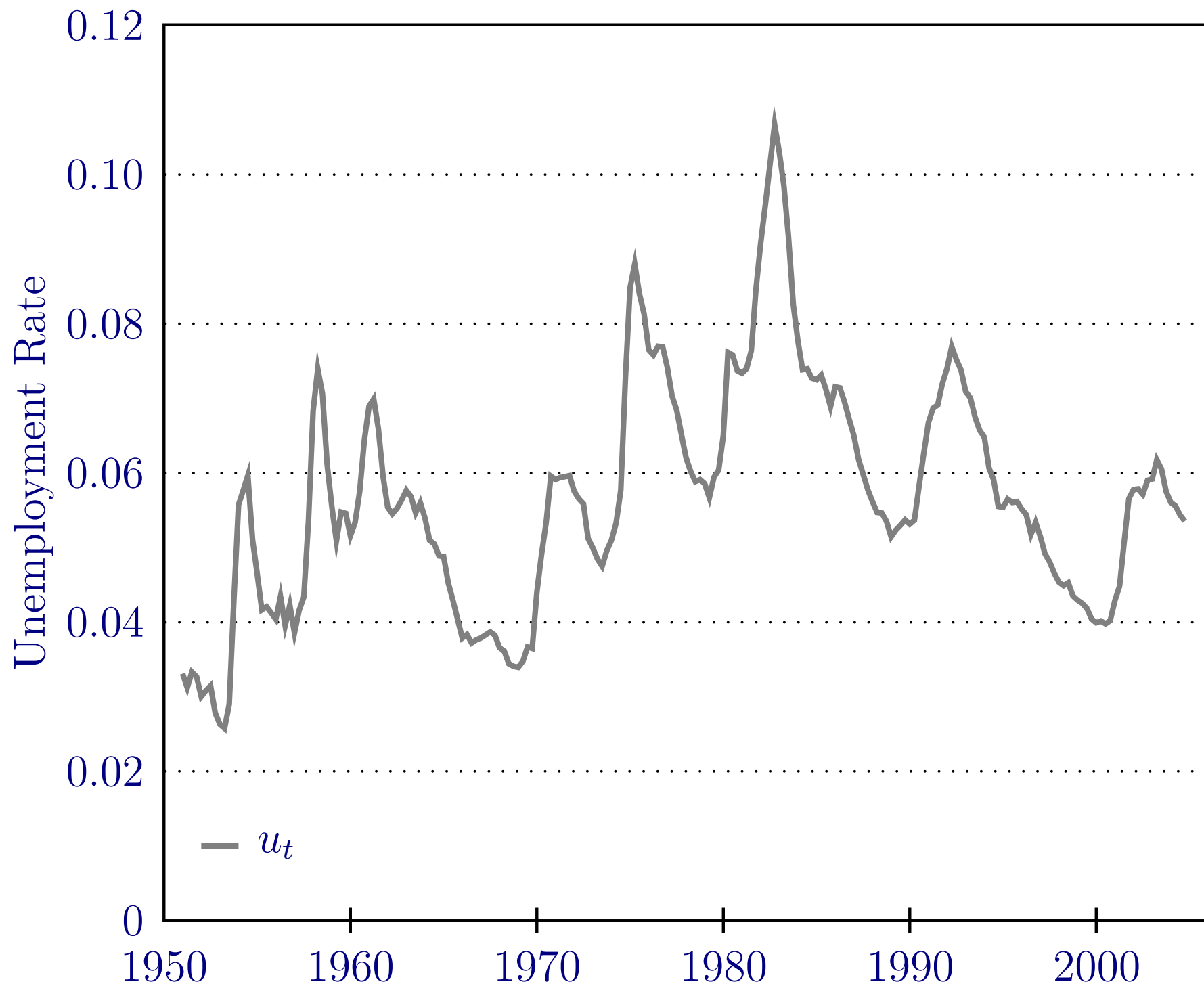
Fact 2

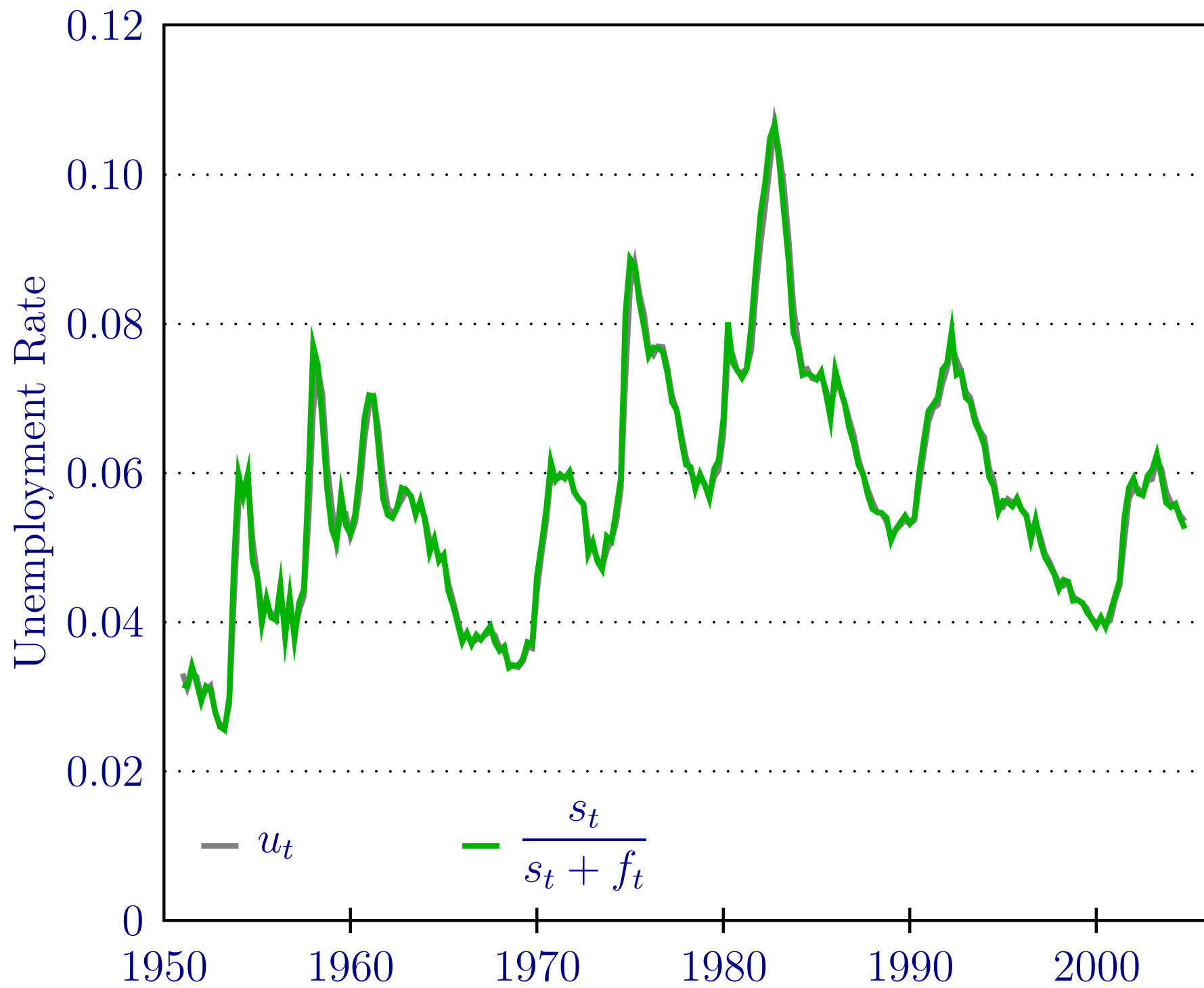
The correlation between the cyclical components of the separation and unemployment rates is 0.65.

Labor Market Flows and Labor Market Stocks

In Steady State $E_t s_t = U_t f_t$.

Compare $u_t \equiv \frac{U_t}{U_t + E_t}$ with $\frac{s_t}{s_t + f_t}$.



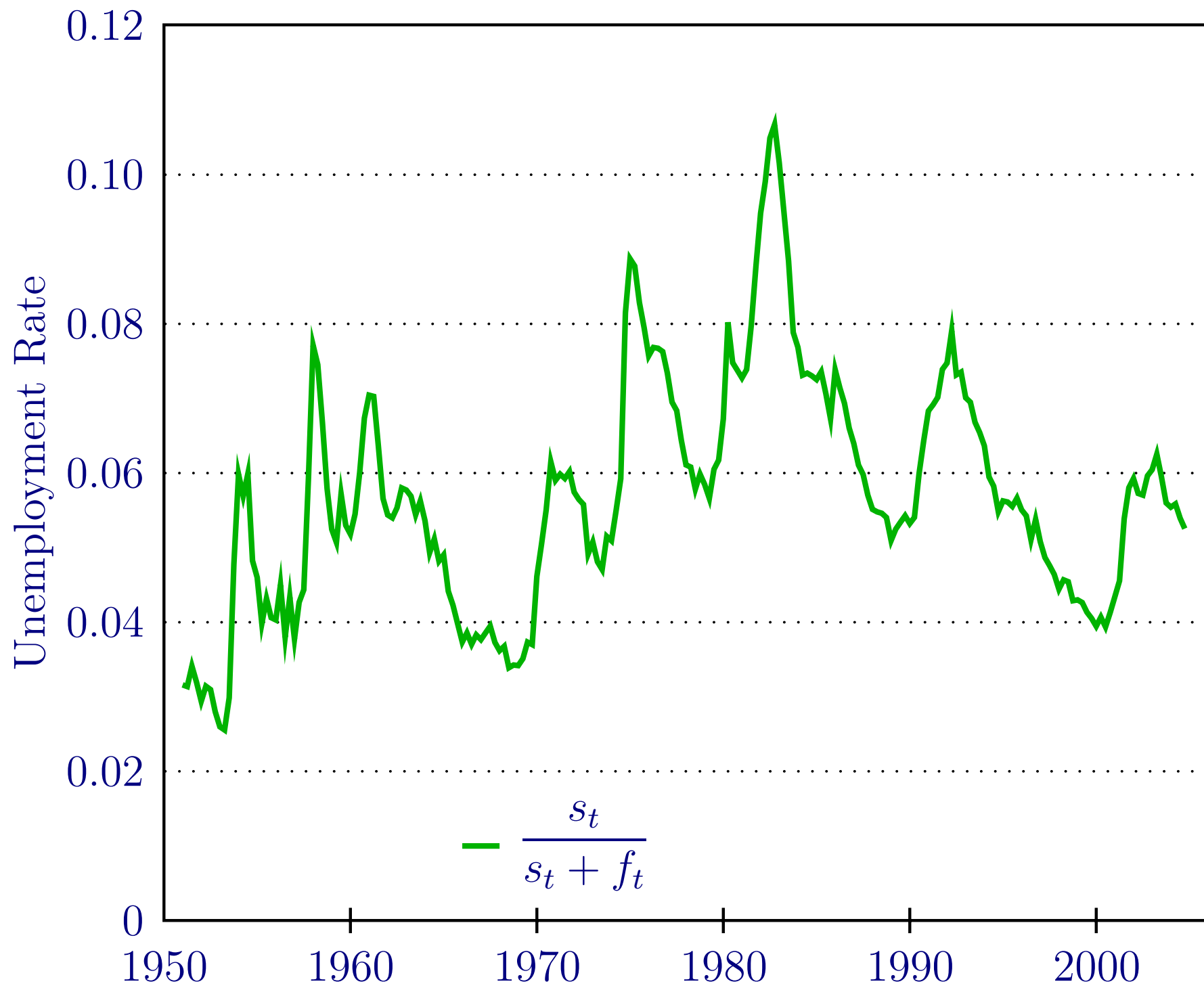


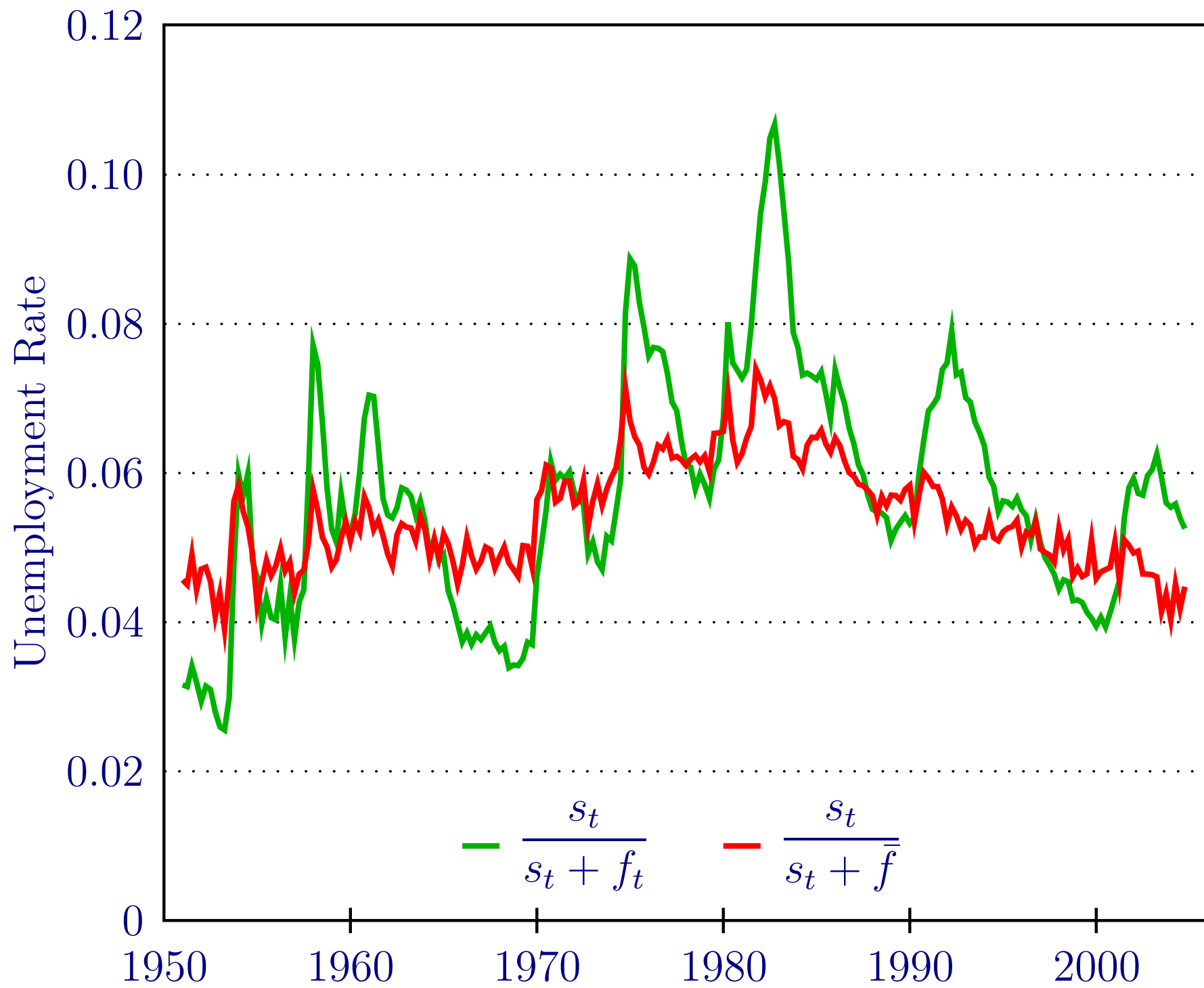
Fact 3

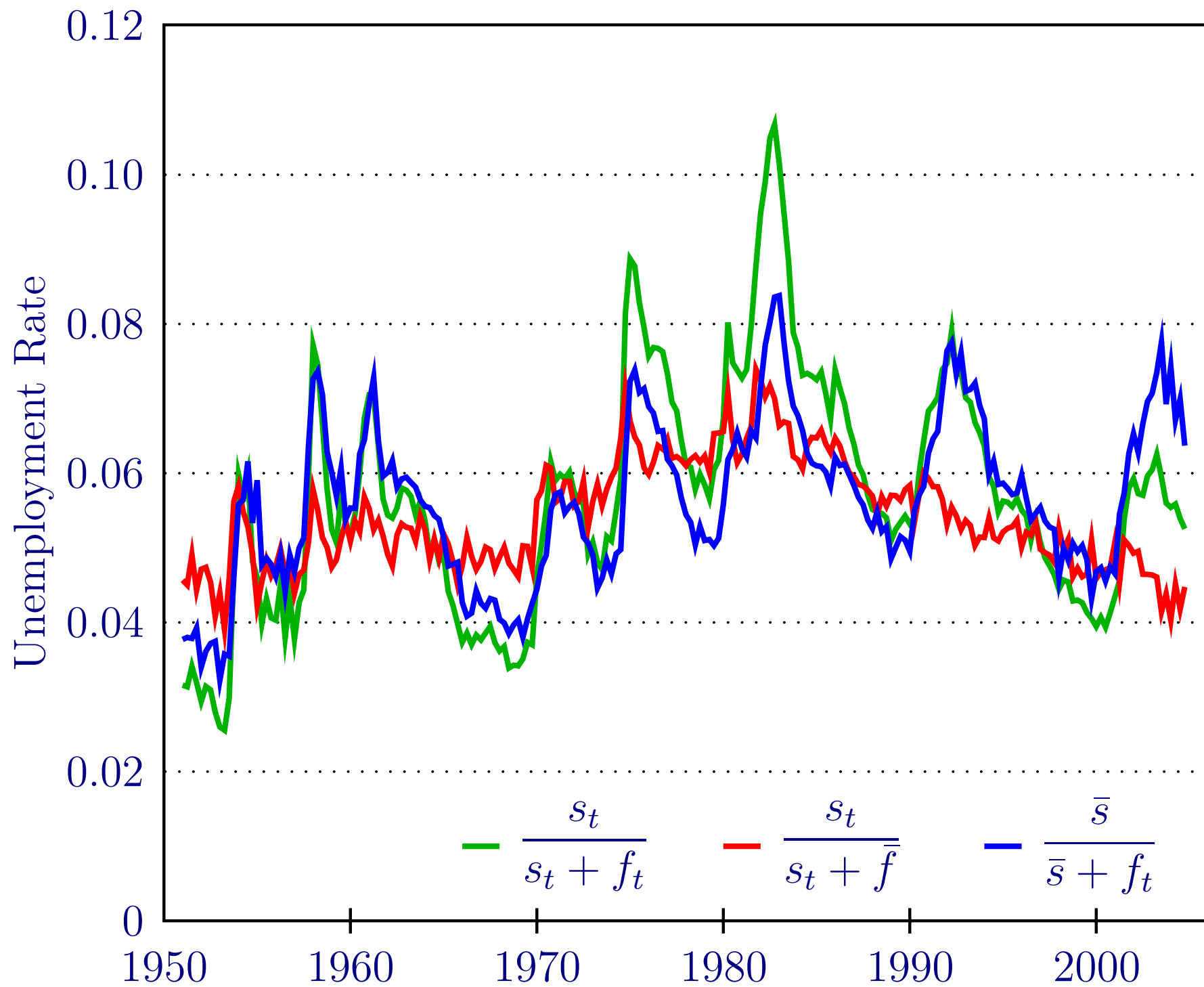
Unemployment is Always in Steady State.

The Effect of f_t and s_t on Unemployment

Compare $\frac{s_t}{s_t + f_t}$ with $\frac{s_t}{s_t + \bar{f}}$ and $\frac{\bar{s}}{\bar{s} + f_t}$.







Fact 4

The Job Finding Rate Accounts for 79% of
Unemployment Fluctuations.

Fact 4'

The Job Finding Rate Accounts for 95% of
Unemployment Fluctuations since 1985.

What Causes Job Finding Rate Fluctuations?

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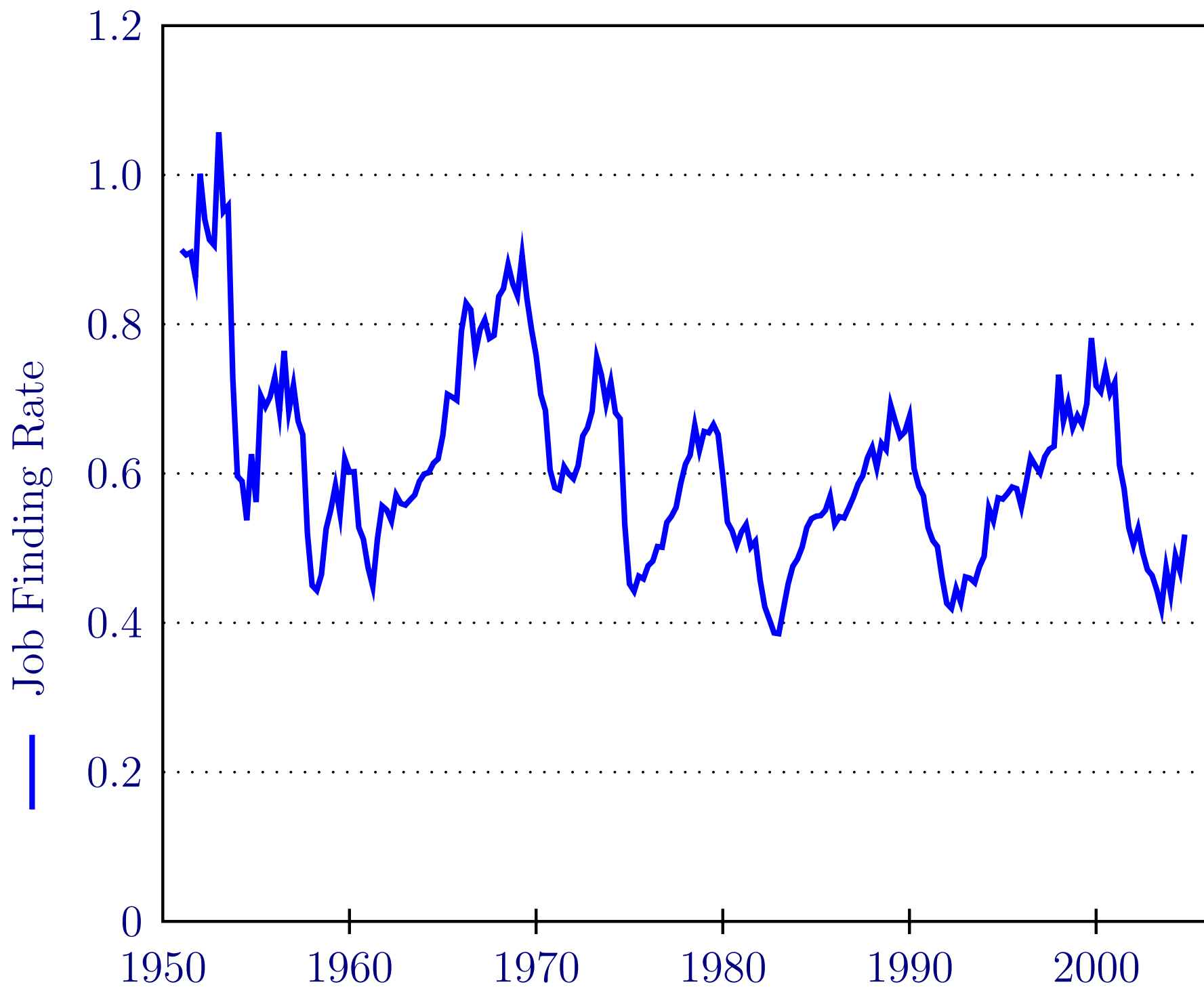
$$f_t = \frac{m(u_t, v_t)}{u_t} = m(1, \theta_t), \text{ where } \theta_t = \frac{v_t}{u_t}.$$

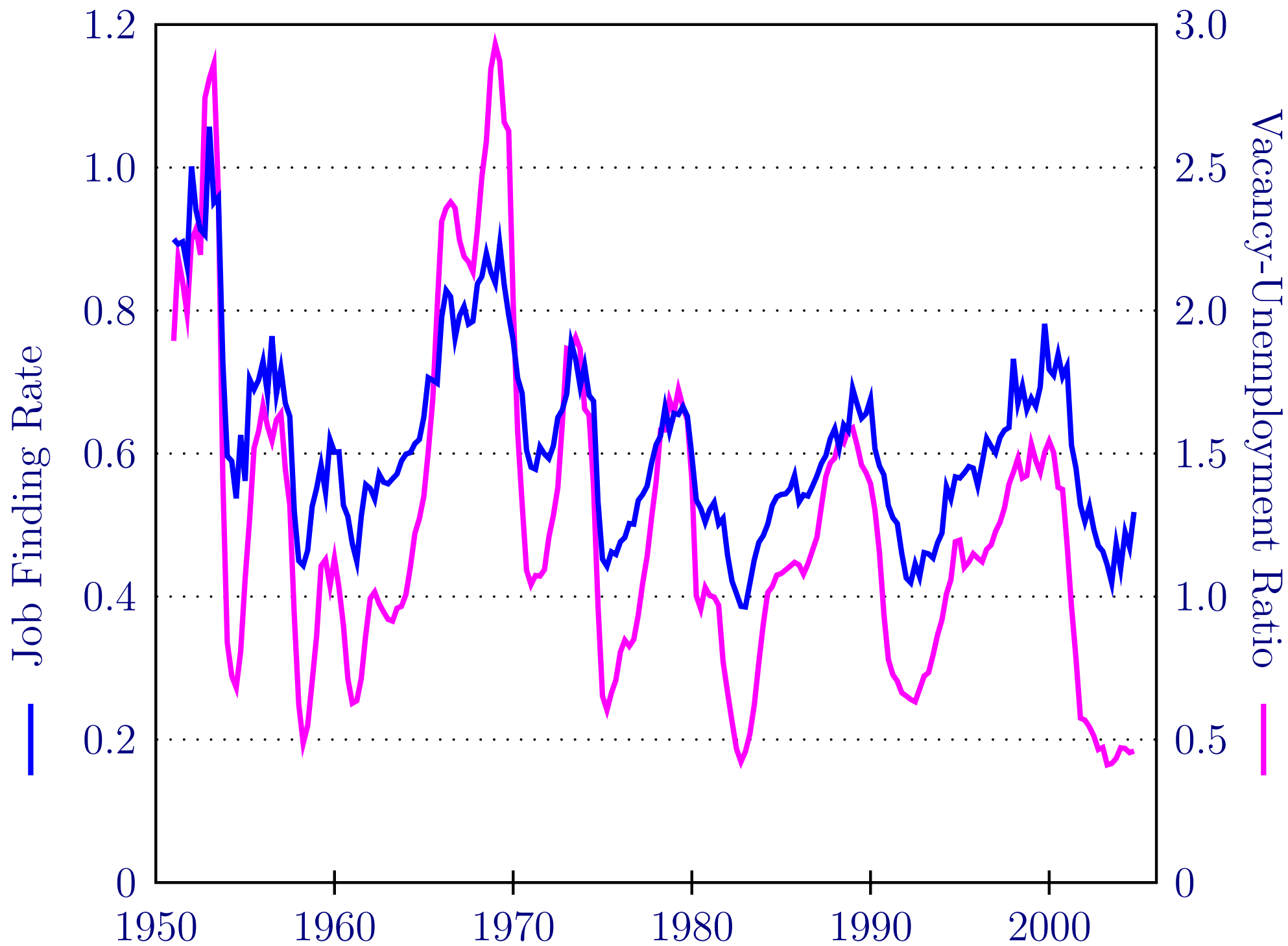
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Measure v_t as the Conference Board Help-Wanted Advertising Index.





Fact 5

The correlation between the cyclical components of the job finding rate and v-u ratio is 0.96.

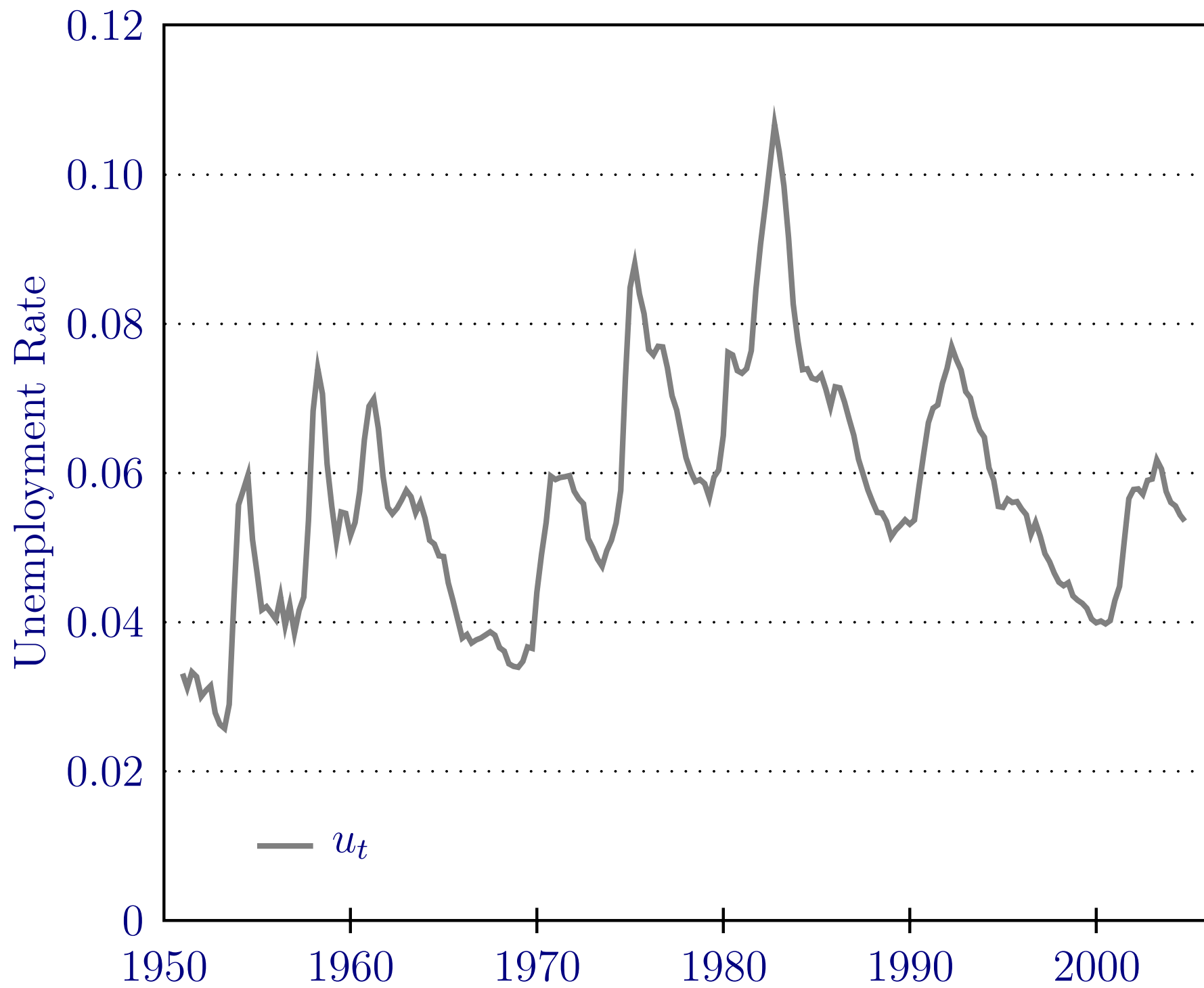
Vacancies Drive the Unemployment Rate

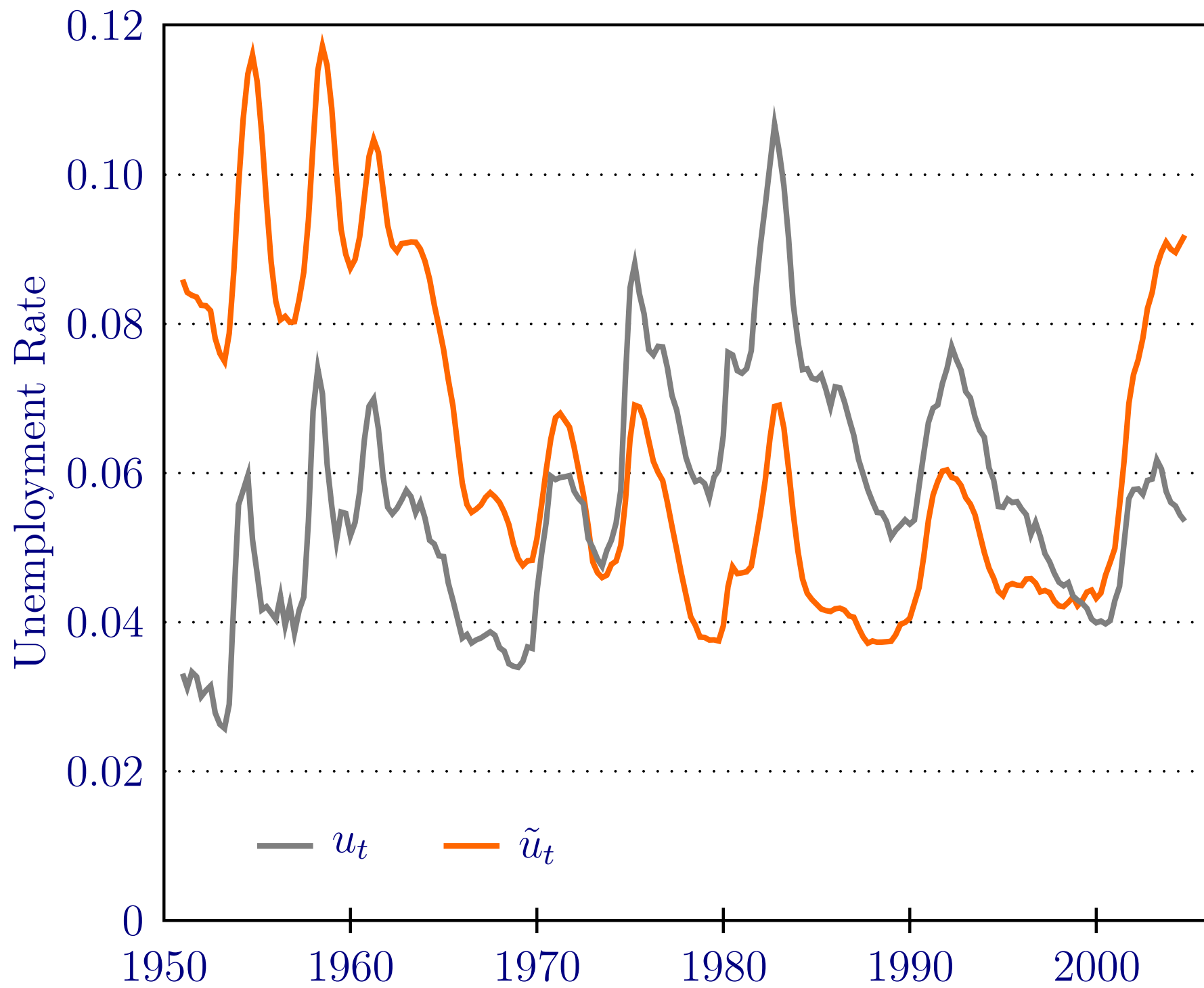
Construct $\tilde{u}_{t+1} = \tilde{u}_t + (1 - \tilde{u}_t)\bar{s} - m(\tilde{u}_t, v_t)$.

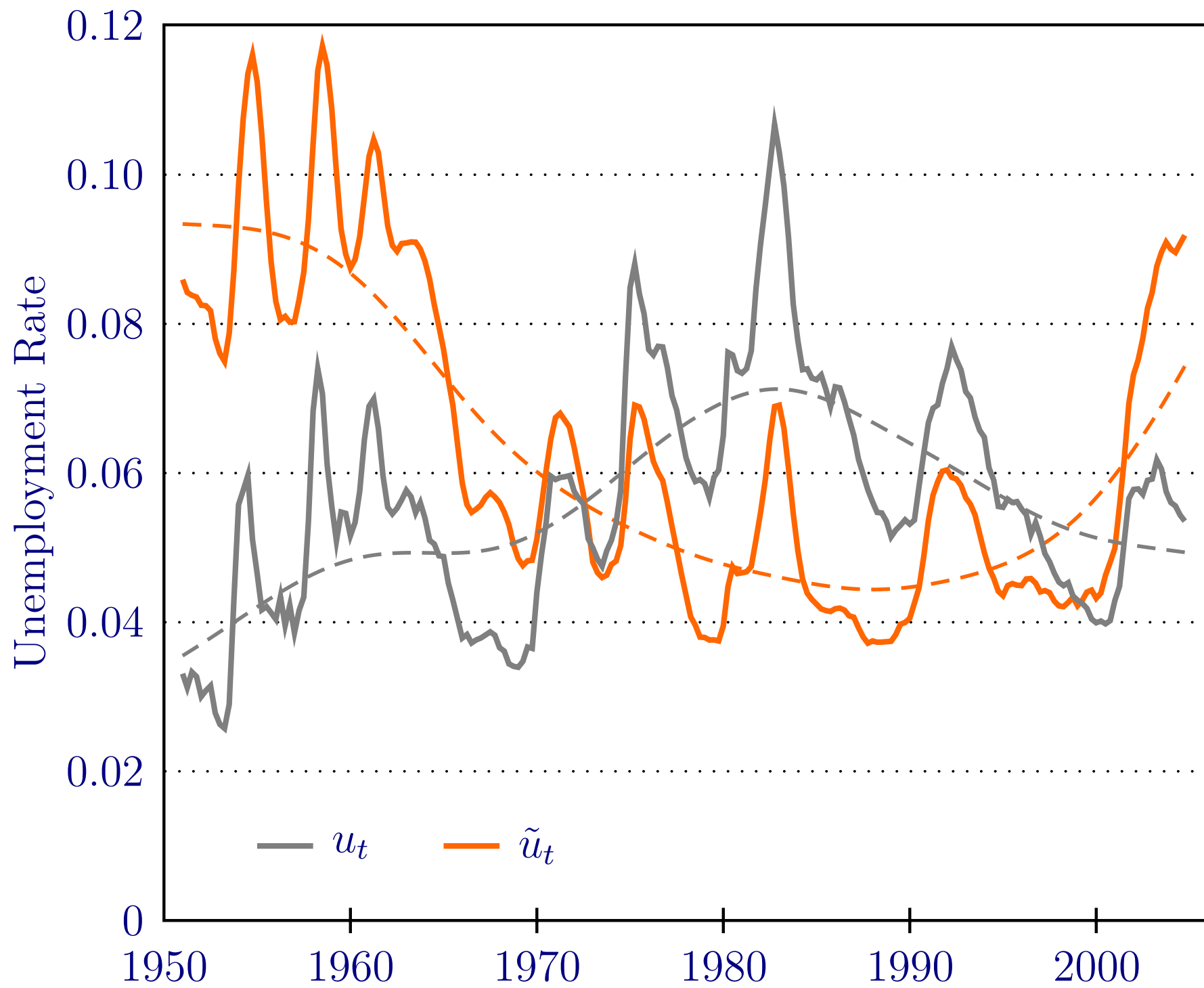
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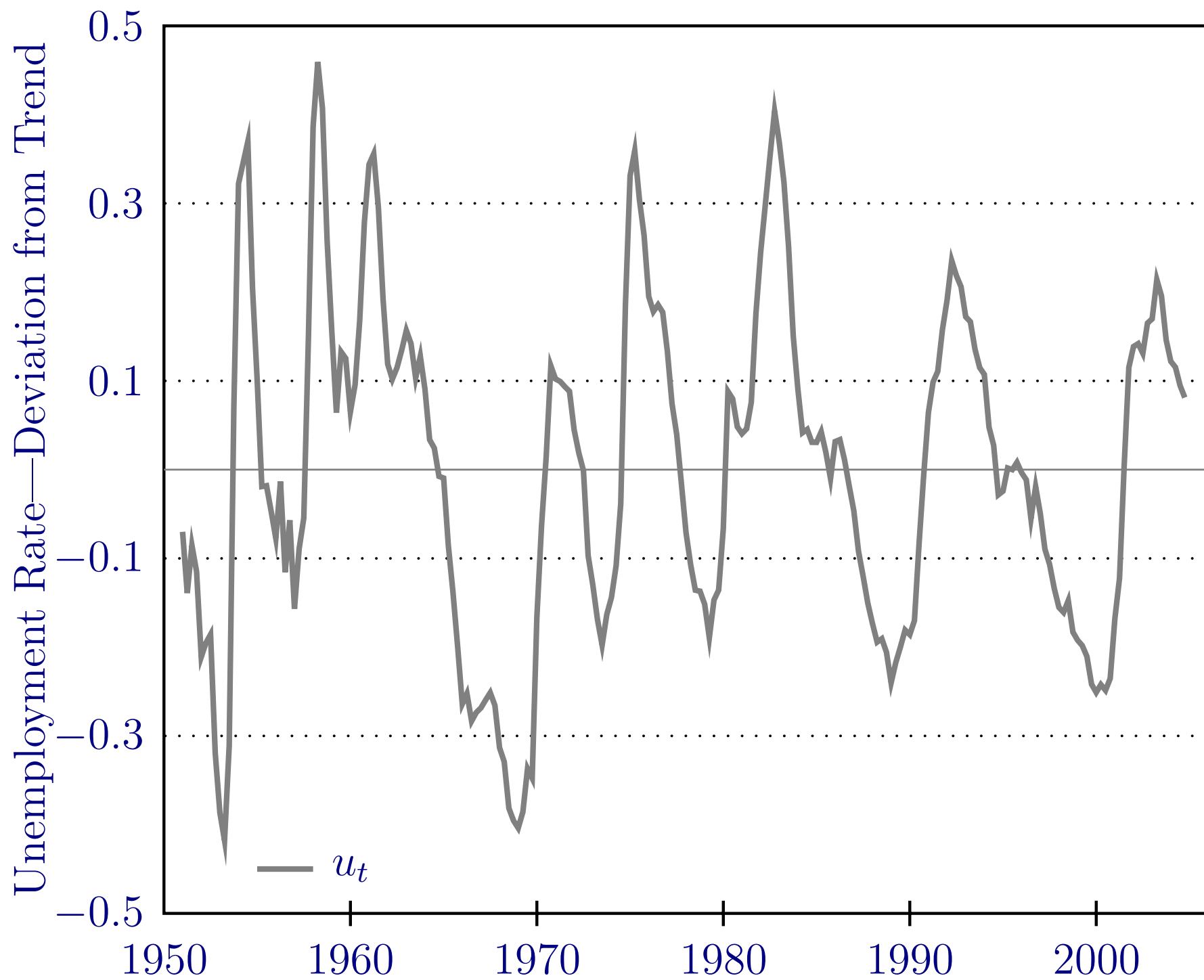
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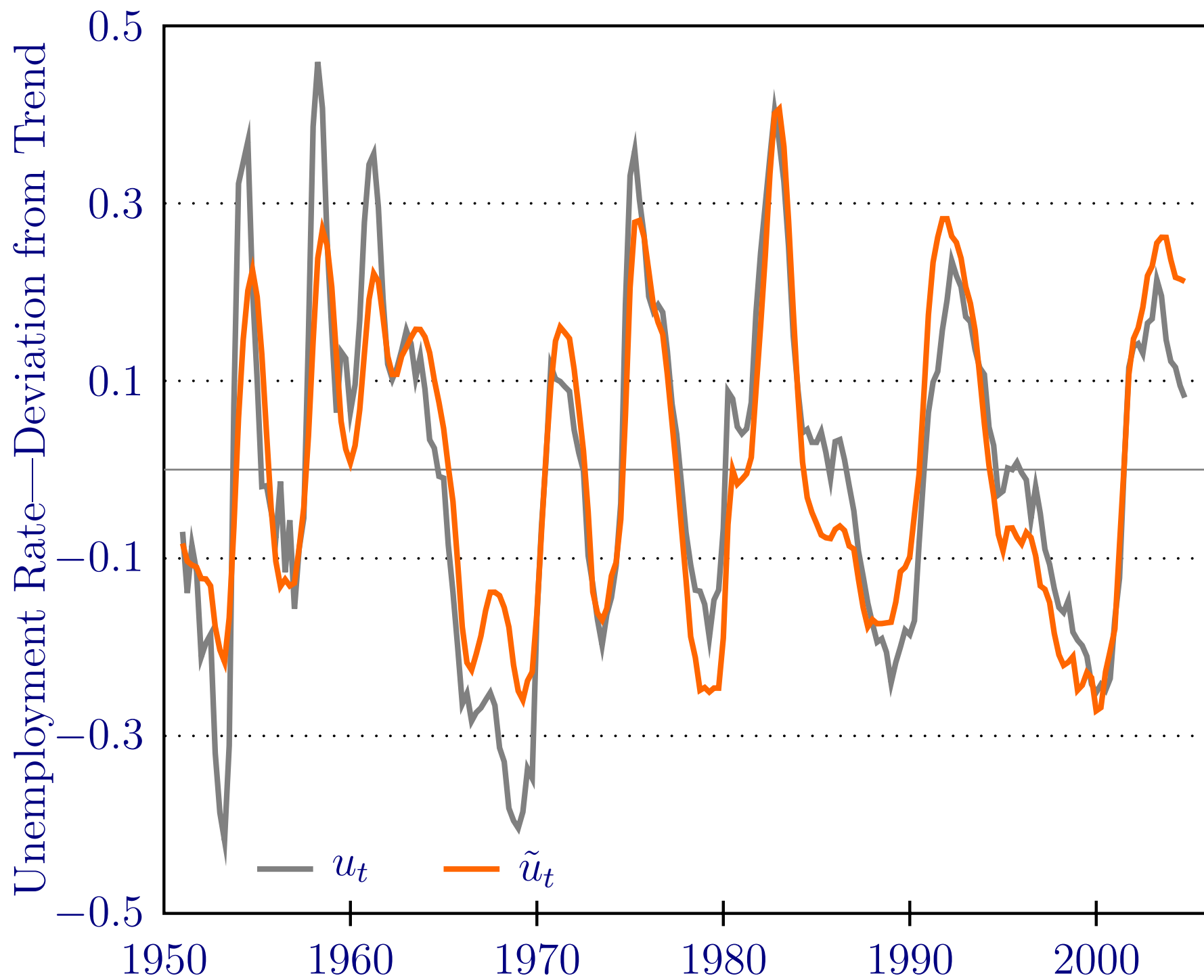
$$m(\tilde{u}_t, v_t) = 0.017 \tilde{u}_t^{0.5} v_t^{0.5}.$$











Fact 6

To explain fluctuations in unemployment,
we need to explain fluctuations in vacancies.

Benchmark Model

- Pissarides (1985) with productivity (p) shocks.
- Risk neutral workers supply labor inelastically.
- Profit maximizing firms use a technology that is linear in labor.
- If profitable, they create vacancies to recruit workers.
- The firm keeps a fraction $1 - \beta$ of the value of match surplus.
- There are shocks to the productivity of all jobs.

Benchmark Model

- Recursive equation for the value of match surplus:

$$rV(p) = p - (z + f(\theta(p))\beta V(p)) - sV(p) + \lambda(\mathbb{E}(V(p')|p) - V(p)).$$

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$$rV(p) = p - (z + f(\theta(p))\beta V(p)) - sV(p) + \lambda(\mathbb{E}(V(p')|p) - V(p)).$$

- Free entry condition for vacancies:

$$c = \frac{f(\theta(p))}{\theta(p)} (1 - \beta)V(p).$$

Benchmark Model

Standard Deviations

| | U.S. Data | Model |
|------------------|-----------|-------|
| Log Productivity | 0.020 | 0.020 |
| Log V-U Ratio | 0.382 | 0.035 |

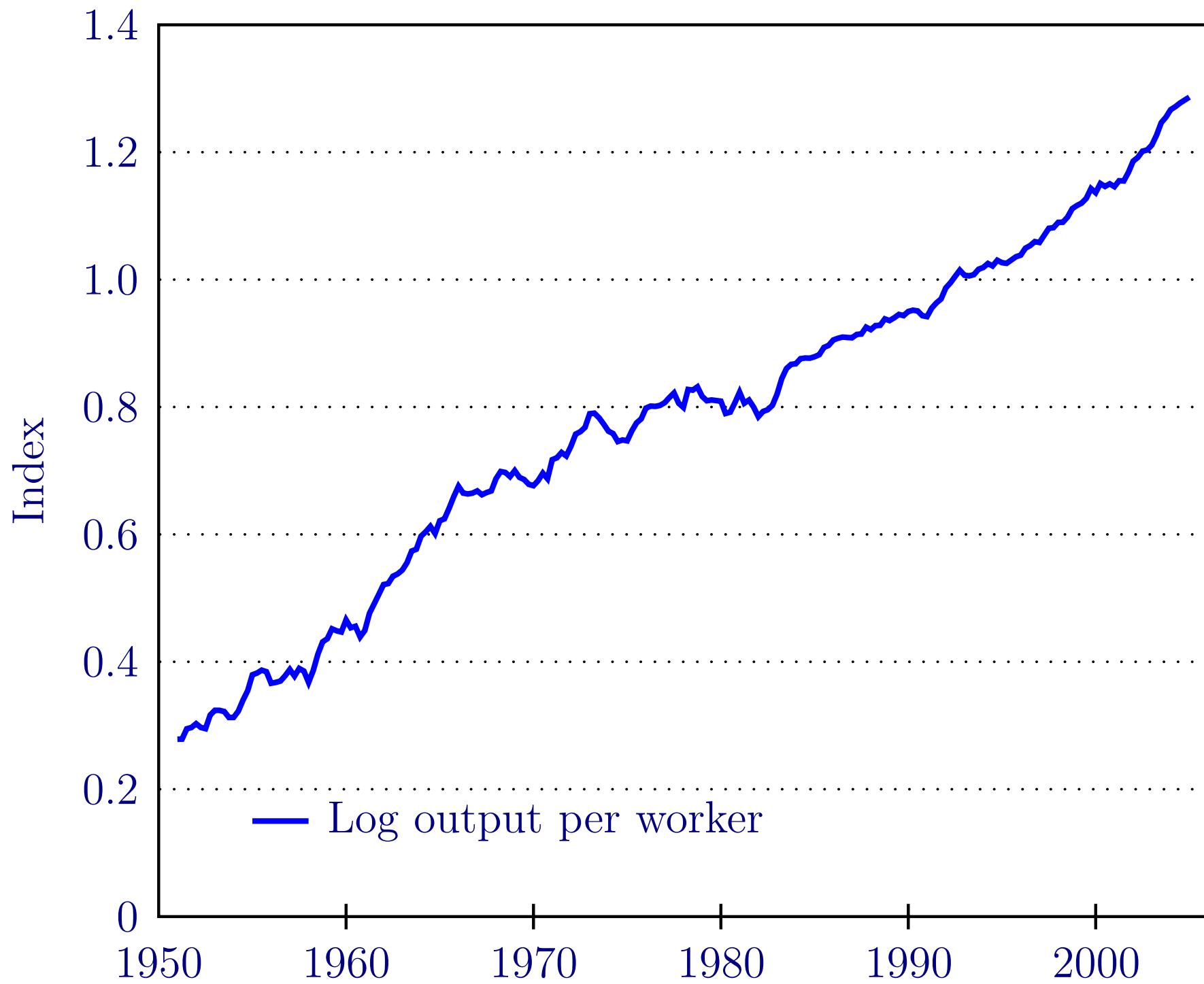
Critical assumption: $z = 0.4\bar{p}$.

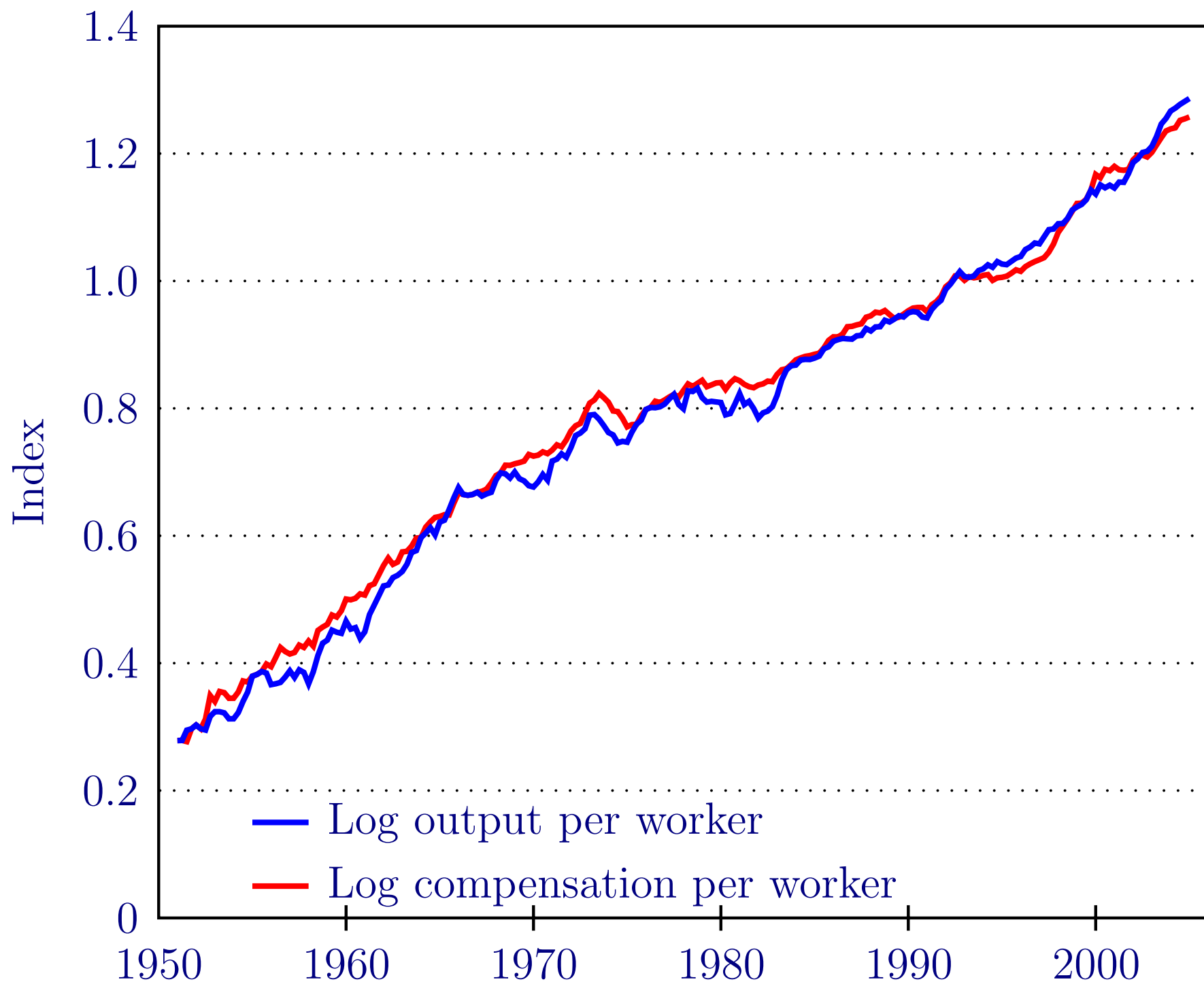
How Can the Benchmark Model Be Fixed?

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 - ◇ This definitely makes the v-u ratio more volatile.
- But are wages too flexible in the benchmark model?
 - ◇ Look at data on real output and compensation per worker.





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| | U.S. Data | Model* |
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*Assumes wages are continually renegotiated.

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| Log Productivity | 0.020 | 0.020 | 0.020 |
| Log V-U Ratio | 0.382 | 0.035 | 0.035 |
| Log Compensation | 0.016 | 0.020 | 0.005 |

*Assumes wages are continually renegotiated.

†Assumes wages are bargained only in new matches.

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 - ◇ On-the-job search.
 - ◇ Asymmetric Information.

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