Labor Market Facts and Matching Function

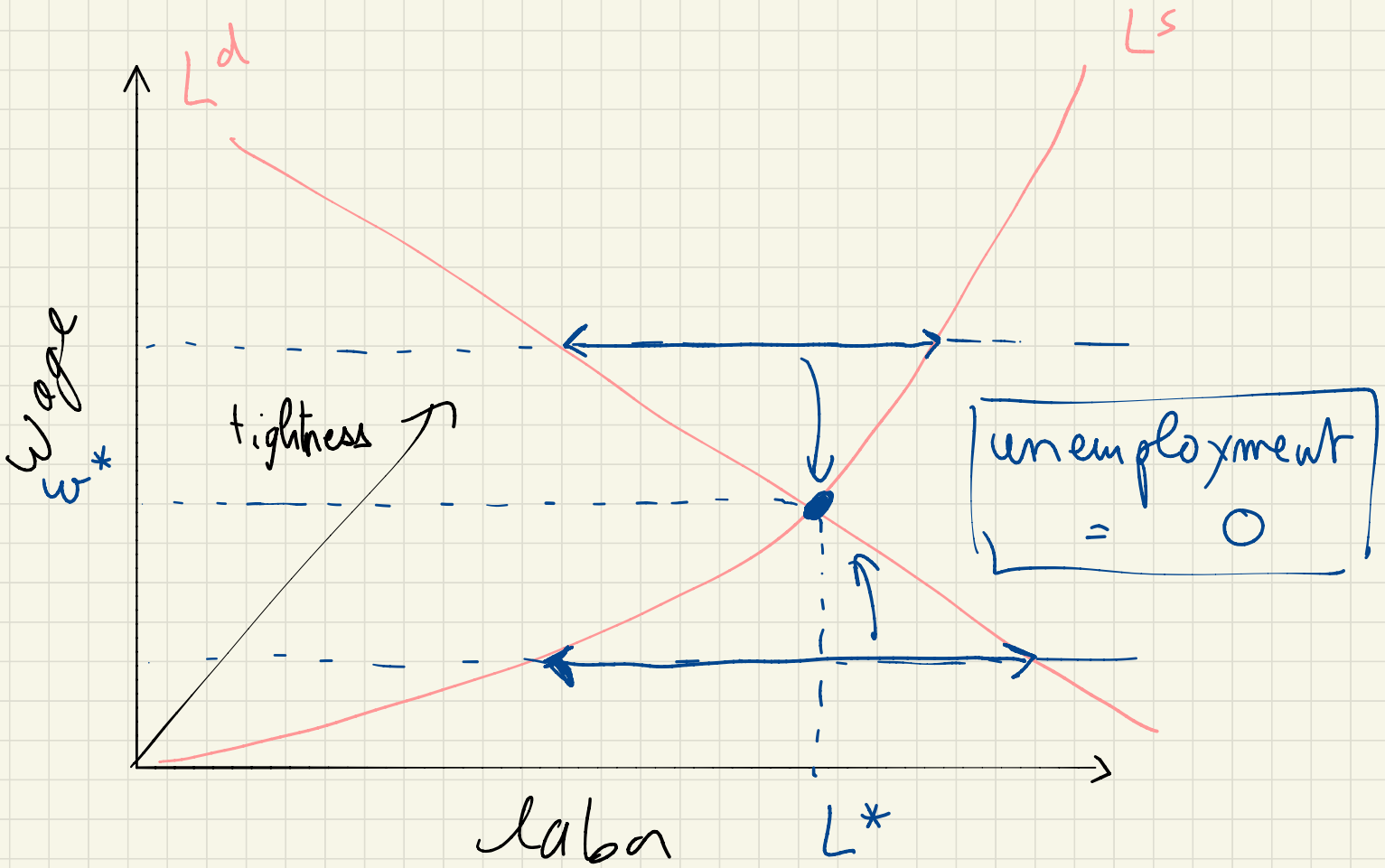
Pascal Michaillat
https://pascalmichaillat.org/c1/

① ~~GDP~~ / growth

② ~~inflation~~

③ unemployment

- well-being surveys
- waste of resources


L^d
L^s
wage
w^*
tightness
unemployment
= 0
labor
L^*

2014

US

Total population: 318.9 million

potential workers

children (<16yo)

army

prisons

Non-institutional civilian population: 247.9 million

$UR = \frac{9.5}{155.9} \approx 6\%$

Civilian labor force 155.9 million

Out of the labor force 92.0 million

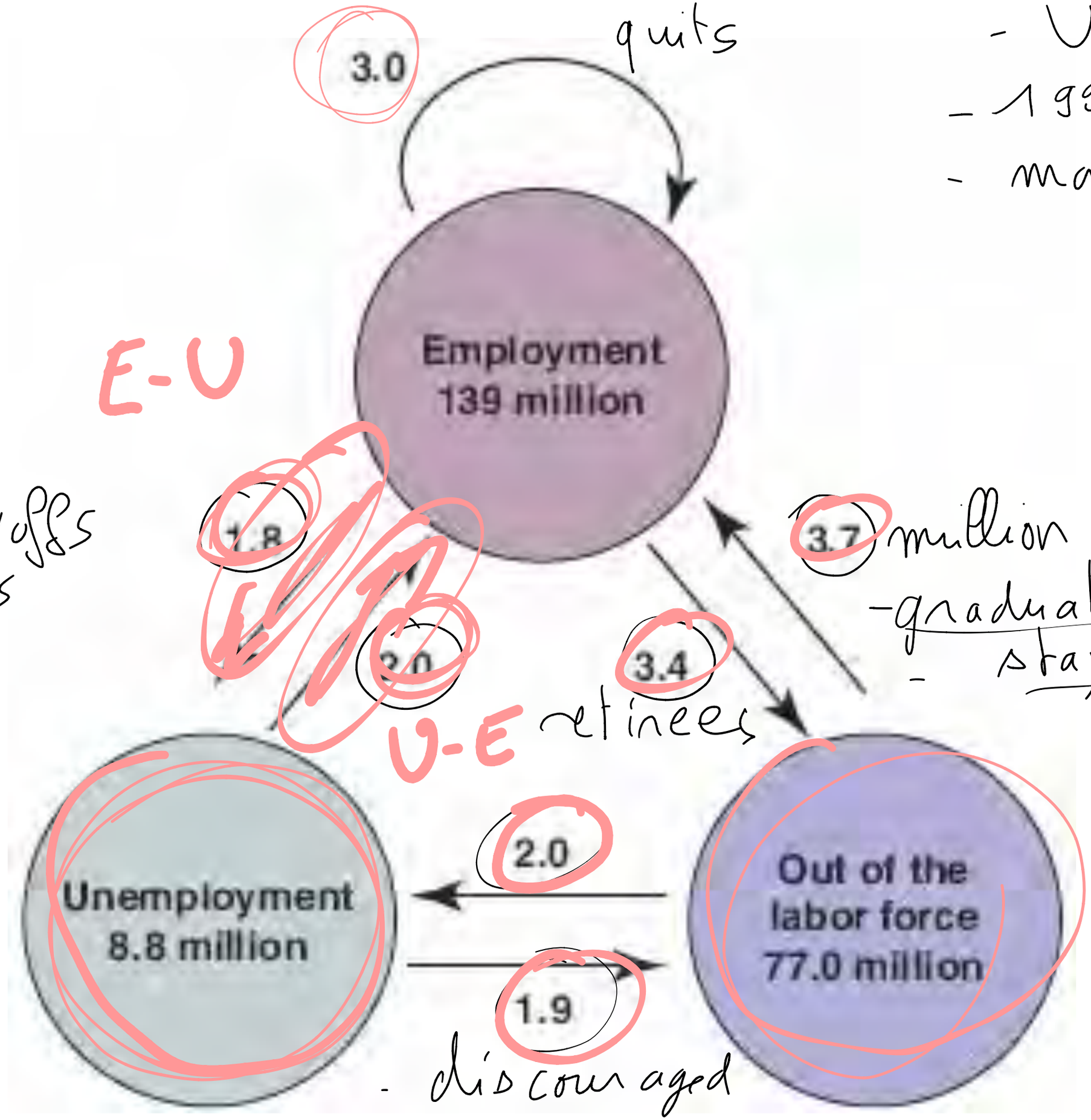
no job + do not want a job.

Employed 146.3 million

Unemployed 9.5 million

- no job
- want job (search)

- US
- 1996-2014
- monthly



E-U

- layoffs
- quits

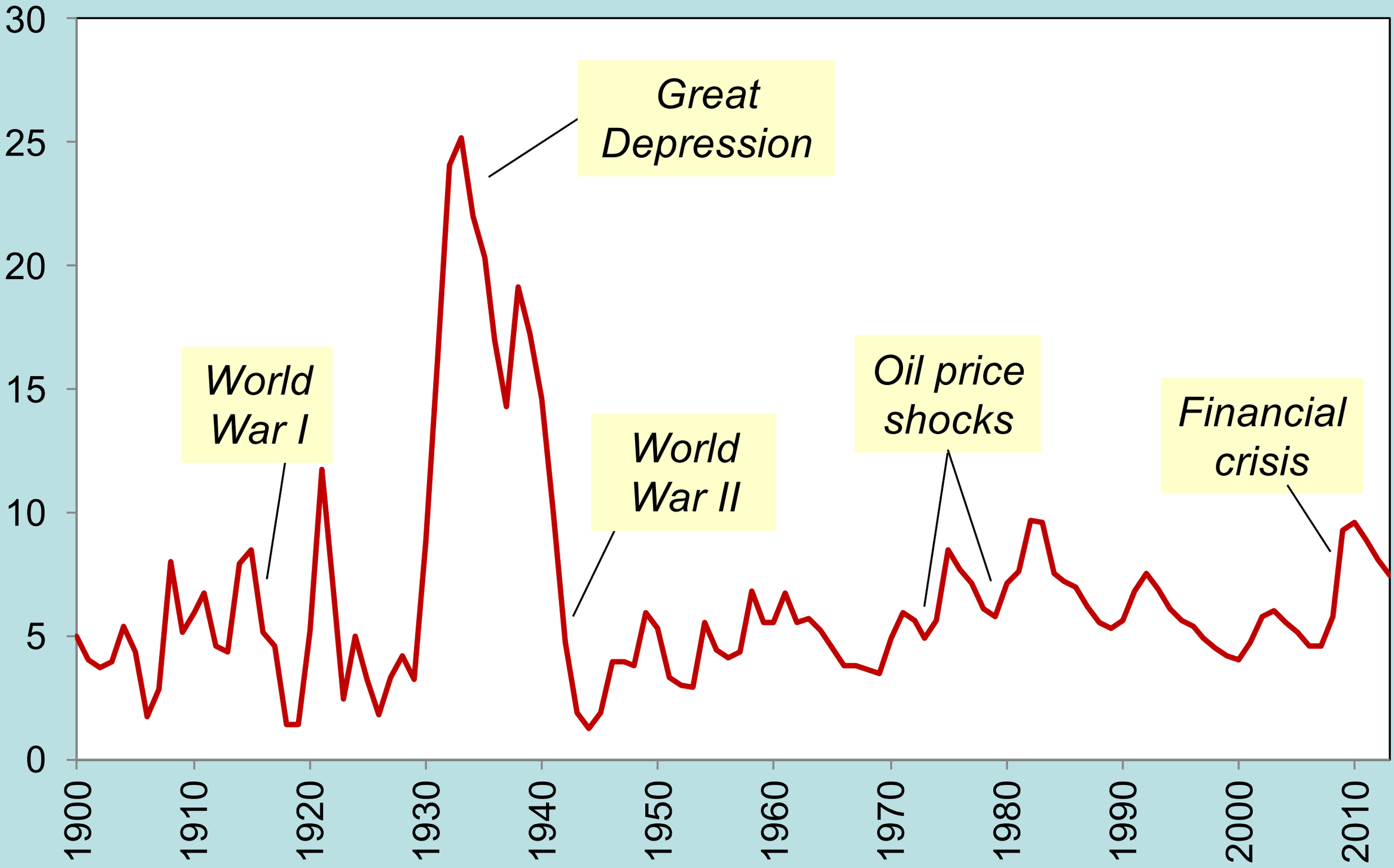
- million
- graduates
- stay-at-home

U-E retirees

- discouraged

12%
11%
10%
9%
6%
3%
0%
1951
1970
1985
2000
2009
2019
- US unemployment rate
5.8%
Business cycles

U.S. Unemployment Rate
(% of labor force)



PROCYCLICAL

- US
- vacancy rate

5%
4%
3%
2%
1%
0%

3%

- newspapers ad.

- JOLTS

1951
1970
1985
2000
2019

BEVERIDGE CURVE.

1969

1951

-3

-3.3

-3.6

-3.9

-4.2

Log vacancy rate

-3.7

-3.4

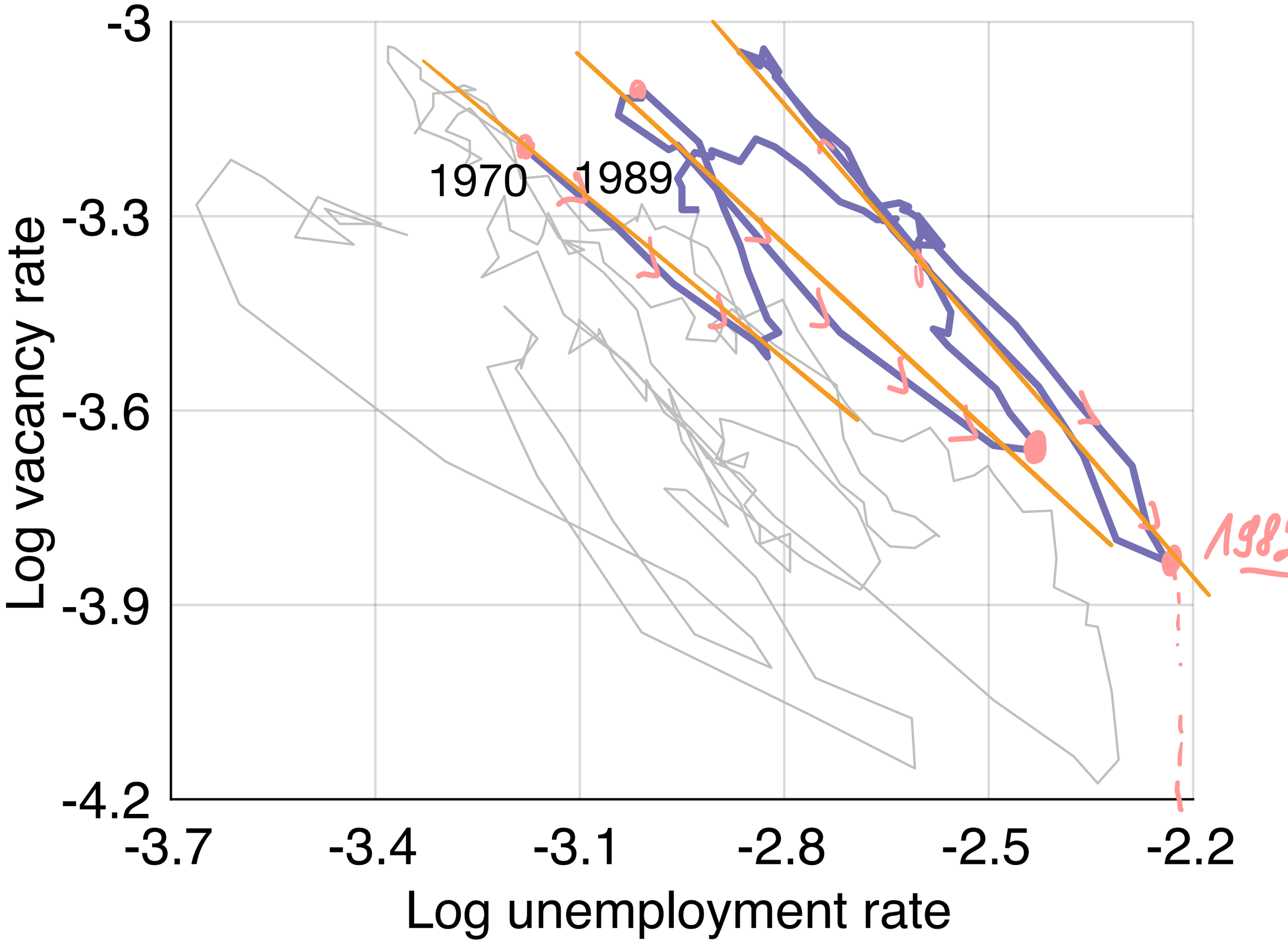
-3.1

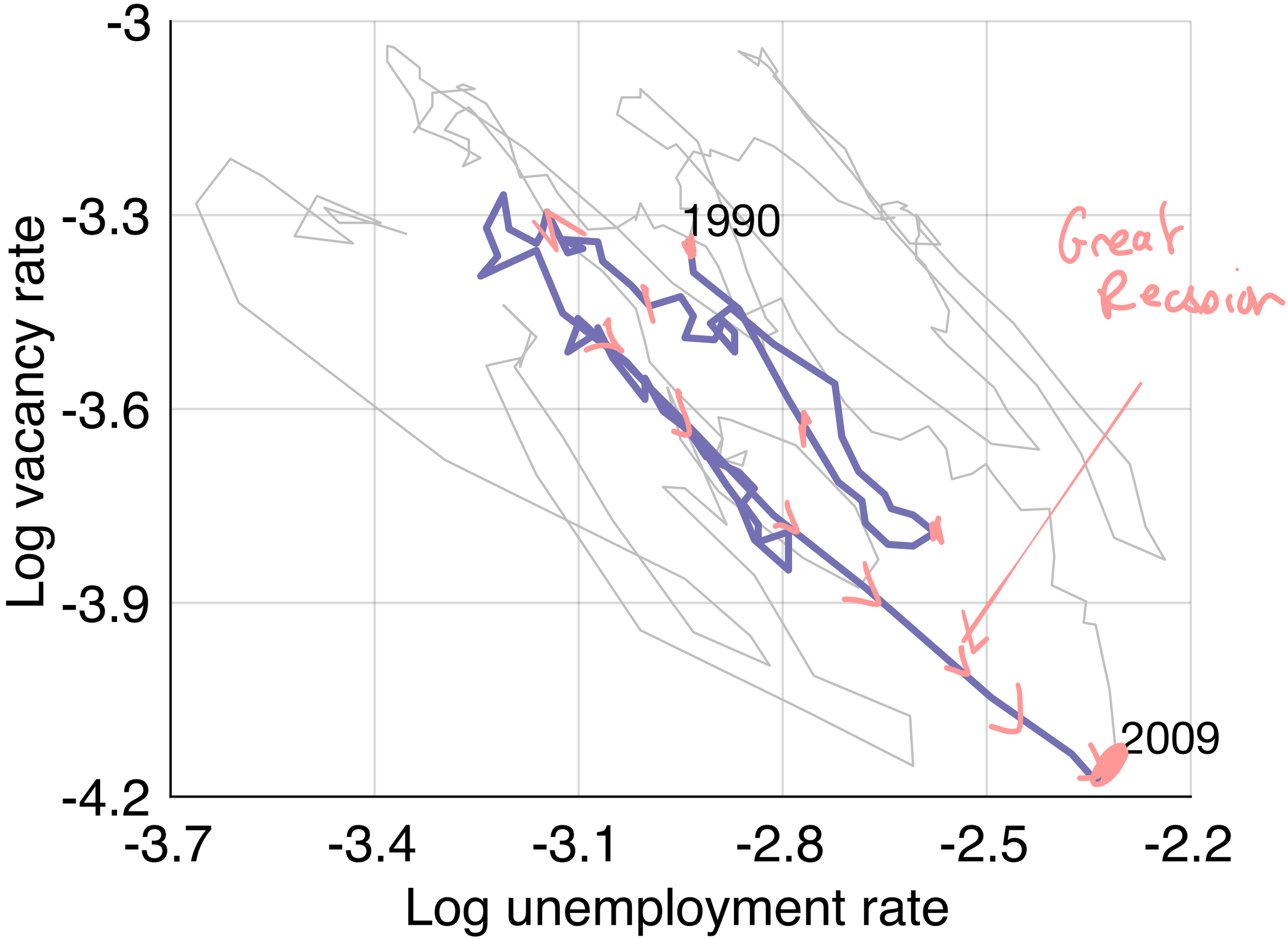
-2.8

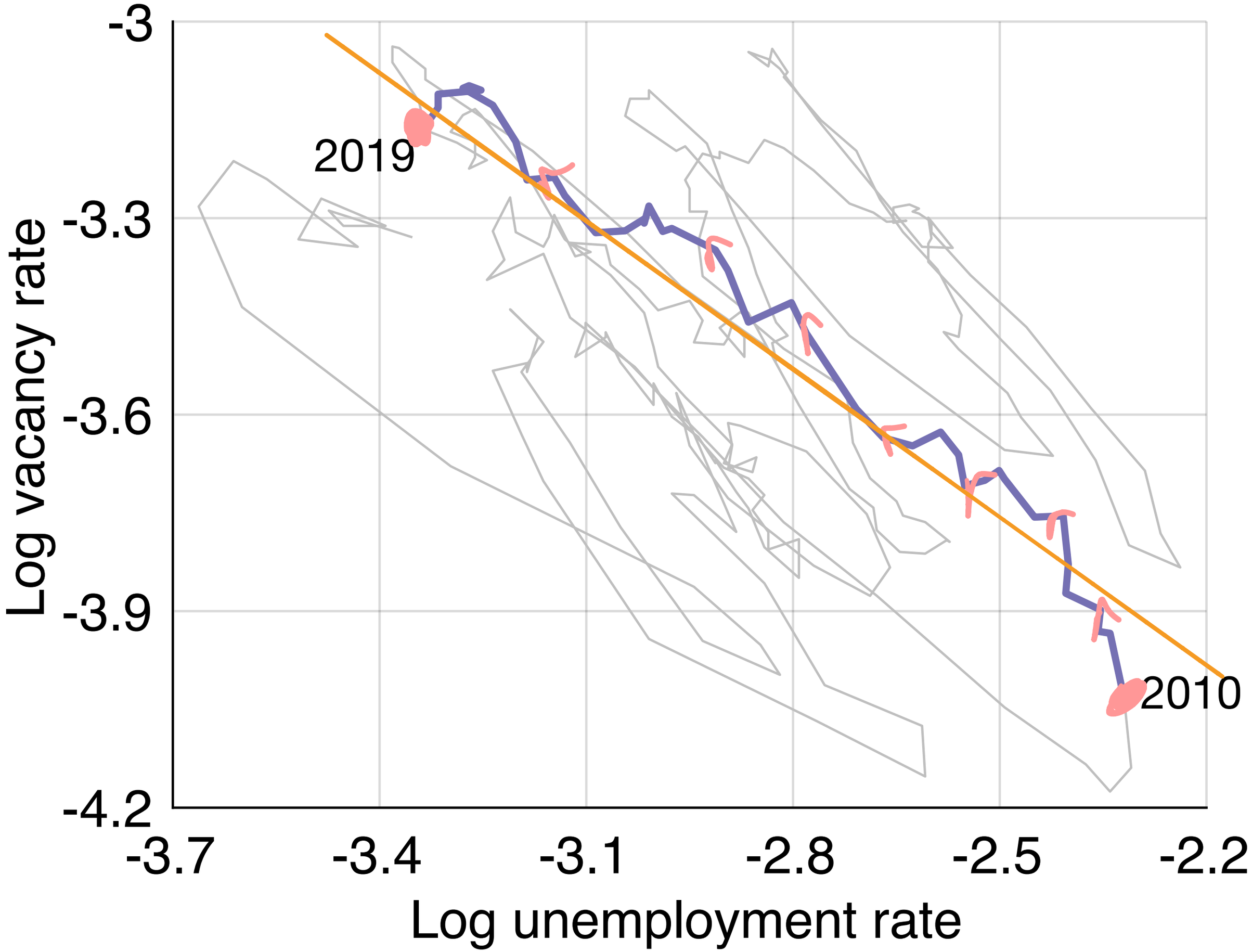
-2.5

-2.2

Log unemployment rate


-3
-3.3
-3.6
-3.9
-4.2
Log vacancy rate
1970
1989
1982
-3.7
-3.4
-3.1
-2.8
-2.5
-2.2
Log unemployment rate


-3
-3.3
-3.6
-3.9
-4.2
Log vacancy rate
1990
Great Recession
2009
-3.7
-3.4
-3.1
-2.8
-2.5
-2.2
Log unemployment rate


-3
-3.3
-3.6
-3.9
-4.2
Log vacancy rate
2019
2010
-3.7
-3.4
-3.1
-2.8
-2.5
-2.2
Log unemployment rate

Monthly job-finding rate

1.2
0.9
0.6
0.3
0

1960
1975
1990
2005

- US

$f \leq 1$

average duration =
$1/0.5 \approx 2$ months

0.5

ave. duration =
$1/0.2 = 5$ months $\leftarrow 0.2$

Monthly vacancy-filling rate

2
1.5
1
0.5
0

1950
1960
1975
1990
2005
2015

dwe · duration = 1/1 = 1 month

- US
- 9 < 2

1

Monthly job-separation rate

0.06
0.05
0.04
0.03
0.02
0.01
0

1960
1975
1990
2005

- US
- E→U
- $\Delta > 0$
- ≈3%
- job duration ≈ 8 years

matching function : m

- U : # unemployed workers
- V : # vacancies

new matches every month

$= m(U, V)$.

① $\frac{\partial m}{\partial U} > 0$

② $\frac{\partial m}{\partial V} > 0$

③ $m(0, V) = 0$

$m(U, 0) = 0$

④ constant returns to scale.

$\forall \lambda > 0$:

$m(\lambda \cdot U, \lambda \cdot V)$

$= \lambda \cdot m(U, V)$

example : Cobb-Douglas

$m(U, V) = \omega \cdot U^{\eta} \cdot V^{1-\eta}$

$\omega > 0$: efficacy

$\eta \in (0,1)$: elasticity.

labor market tightness: $\theta = V / U$

A: m has constant returns to scale.

job-finding rate: $f = \frac{m(U,V)}{U}$ ← # new jobs / # jobseekers

$$f = \frac{m(U,V)}{U} = m\left(\frac{U}{U}, \frac{V}{U}\right) = m(1, \theta)$$

CRS

$f(\theta)$

$f'(\theta) > 0$

vacancy-filling rate: $q = \frac{m(U,V)}{V}$

$$q = \frac{m(U,V)}{V} = m\left(\frac{U}{V}, \frac{V}{V}\right) = m\left(\frac{1}{\theta}, 1\right)$$

$q(\theta)$

$q'(\theta) < 0$

Relationship between $f(\theta)$ & $q(\theta)$:

$$f(\theta) / q(\theta) = \frac{m(U,V)}{U} \cdot \frac{V}{m(U,V)} = \frac{V}{U} = \theta$$

$$\boxed{f(\theta) = \theta \cdot q(\theta)}$$