$u^* = \sqrt{uv}$: THE FULL-EMPLOYMENT RATE OF UNEMPLOYMENT IN THE UNITED STATES

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Available at https://pascalmichaillat.org/13/
HOW TO INTERPRET THE LEGAL CONCEPT OF FULL EMPLOYMENT?

• Employment Act of 1946:
  - Full employment allows “to foster … general welfare”

• Full Employment and Balanced Growth Act of 1978:
  - Away from full employment, the economy “is deprived of the full supply of goods and services, the full utilization of labor … and the related increases in economic well-being”

  Full employment = social efficiency

  FERU = efficient rate of unemployment
COMPUTING THE FERU

- Planner’s objective: minimize nonproductive use of labor $u + v$
  - Unemployment rate $u$: value of home production & recreation is offset by psychosocial cost of unemployment
  - Vacancy rate $v$: 1 vacancy requires 1 worker devoted to recruiting
- Subject to hyperbolic Beveridge curve $u \times v = A$
  - $u$ and $v$ cannot be reduced simultaneously
- First-order condition gives efficient unemployment rate $u^*$:
  \[
  \frac{d[u + A/u]}{du} = 0 \Rightarrow 1 - A/(u^*)^2 = 0 \Rightarrow u^* = \sqrt{A}
  \]
- FERU is geometric average of $u$ and $v$: $u^* = \sqrt{uv}$
CRITERION FOR FULL EMPLOYMENT

- Economy is at full employment when $u = u^* = \sqrt{uv}$
  - At full employment when $u = v$
- Economy is inefficiently slack when $u > u^* \sqrt{uv}$
  - Inefficiently slack when $u > v$
- Economy is inefficiently tight when $u < u^* = \sqrt{uv}$
  - Inefficiently tight when $u < v$
US UNEMPLOYMENT RATE (Petrosky-Nadeau & Zhang 2021)

Weir (1992) CPS (BLS)
US VACANCY RATE (PETROSKY-NADEAU & ZHANG 2021)

![Graph showing US vacancy rate from 1930 to 2024. The data sources are indicated by MetLife, Conference Board, and JOLTS (BLS).]
BEVERIDGE CURVE IS A RECTANGULAR HYPERBOLA

Unemployment
Vacancy

Share of labor force (log scale)

0.5% 1% 2% 4% 8% 15% 30%

1930 1950 1970 1990 2010 2024
LABOR MARKET IS GENERALLY TOO SLACK
LABOR MARKET IS TOO TIGHT DURING WARS

Share of labor force (log scale)

- Covid Recovery
- Vietnam War
- Korean War
- WW2

Years:
- 1930
- 1950
- 1970
- 1990
- 2010
- 2024
FERU $u^* = \sqrt{uv}$ AVERAGES 4.1% AND IS STABLE
UNEMPLOYMENT GAP IS COUNTERCYCLICAL

1930 1950 1970 1990 2010 2024

0.5%
  1%
  2%
  4%
  8%
 15%
 30%

Share of labor force (log scale)

+ 20.9pp
+ 6.4pp
+ 5.7pp
+ 5.9pp
UNEMPLOYMENT GAP IS COUNTERCYCLICAL

Share of labor force (log scale)

- 1.5pp
- 0.8pp
- 0.7pp
- 1.6pp

1930 1950 1970 1990 2010 2024
0.5% 1% 2% 4% 8% 15% 30%
FERU IS LOWER THAN EXISTING UNEMPLOYMENT TARGETS

Share of labor force

1930 1950 1970 1990 2010 2024
0%
2%
4%
6%
8%
10%

4.4%
FERU IS LOWER THAN EXISTING UNEMPLOYMENT TARGETS

![Graph showing the comparison between NRU (CBO) and FERU from 1930 to 2024. The graph indicates that FERU is consistently lower than the existing unemployment targets represented by NRU (CBO).]
FERU IS LOWER THAN EXISTING UNEMPLOYMENT TARGETS

Share of labor force

- NAIRU (Crump et al 2024)
- NRU (CBO)
- FERU

1930 1950 1970 1990 2010 2024

0% 2% 4% 6% 8% 10%
TIGHTNESS $v/u$ SUMMARIZES STATE OF LABOR MARKET

Labor-market tightness (log scale)
TIGHTNESS v/u SUMMARIZES STATE OF LABOR MARKET

Labor-market tightness (log scale)

Full employment
TIGHTNESS $v/u$ SUMMARIZES STATE OF LABOR MARKET

Labor-market tightness (log scale)

- Vietnam War
- Korean War
- WW2
- Great Recession
- Volcker Recession
- Great Depression
- Covid Recession
- Full employment
DETECTING RECESSIONS WITH UNEMPLOYMENT & VACANCIES

Unemployment

Vacancy
RECESSION MAY HAVE STARTED AS EARLY AS MARCH 2024
NEW RULE PERFECTLY DETECTS ALL RECESSIONS SINCE 1929