Unemployment and Inflation Dynamics in the Monetary Policy Armamentarium

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Unemployment and inflation in the U.S.
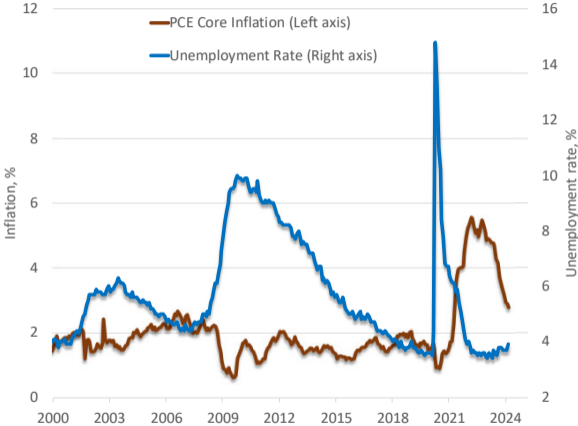
Note: Data through Mar 2024.

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1. During a cyclical recovery, unemployment glides down inexorably at a constant proportional rate.

2. During the 2009-2019 recovery, the natural rate of unemployment declined along a similar path.

3. Unemployment and inflation in the pandemic:
   - There are two kinds of unemployment—temporary-layoff unemployment—and unemployment due to other reasons. The first kind accounted for the explosion of unemployment in the pandemic but is not associated with declining inflation.
   - The pandemic shock likely loosened inflation anchoring, which resulted in higher inflation during the shock, but also in a faster return of inflation to more moderate levels as the shock dissipated.

1. Inexorable recoveries of unemployment

Inexorable recoveries of unemployment

Figure: Paths of unemployment during recoveries, pre-2020; Hall and Kudlyak (2022a)
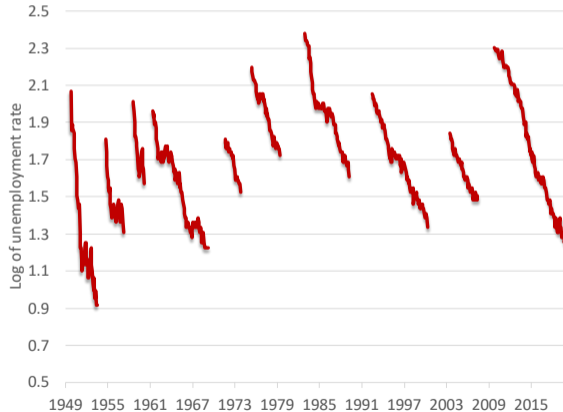
BEHAVIOR OF UNEMPLOYMENT

We find that the historical behavior of unemployment comprises:

▶ occasional sharp upward movements in economic crises,

▶ at other times, an inexorable downward glide at a low but reliable proportional rate of about 0.1 log points per year,

▶ the rate of decline is approximately similar across the ten recoveries prior to the pandemic.

The glide continues until unemployment reaches approximately 3.5 percent or until another economic crisis interrupts the glide.

WHY DID UNEMPLOYMENT RECOVER SO CONSISTENTLY AFTER EVERY RECESSION FROM 1948 THROUGH 2008?

▶ Despite high variation in monetary and fiscal policy, productivity and labor-force growth, there was little variation in the rate of decline of unemployment.

▶ Our thesis is that the economy has a powerful tendency to self-recover from adverse shocks (Hall and Kudlyak (2022c)):

  ▶ Recoveries are endogenous—the economy includes a strong internal force toward recovery that operates apart from policy instruments or productivity growth.

  ▶ The internal force is job creation as in the Diamond-Mortensen-Pissarides model but operating more slowly via a negative feedback from unemployment to job creation: the excess of unemployment created by crises at the beginning of a recovery endogenously slows the recovery.

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2. The active role of the natural rate of unemployment

Identification issue in estimation of the Phillips curve by regression

▶ Empirical Phillips curves often associate the inflation response with the unemployment gap:

$$\pi_t - \pi_t^* = -\phi \cdot (u_t - u_t^*)$$

▶ In this widely-used regression framework, the key parameters—the slope ϕ and the natural rate of unemployment u_t^*—are not identified, given observations on π_t, u_t and a construct for π_t^*.

▶ Identification requires bringing in assumptions or additional data.

ACHIEVING IDENTIFICATION

▶ We propose a method based on the Phillips curve's property that when inflation is at its anchored level, unemployment is at its natural rate, $u_t = u_t^*$ when $\pi_t = \pi_t^*$.

In the 2009-2019 recovery, u^* stayed close to u_t, given an inflation anchor of 2 percent
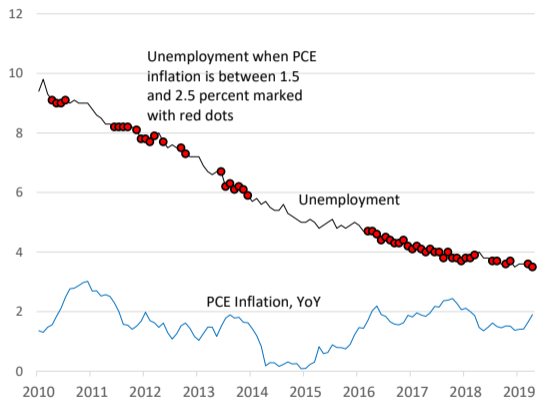
OTHER WAYS TO INFER THE TIME-SERIES PATH OF THE NATURAL RATE OF UNEMPLOYMENT

▶ Conjecture that the natural rate of unemployment is a long-run trend in the actual unemployment rate.

▶ Build a sub-model for the natural rate, which expresses the natural rate as a latent variable that follows a specified stochastic process. Estimate the sub-model jointly with the Phillips curve.

▶ Use a general equilibrium model to calculate a counterfactual path of the unemployment rate in a model free of wage stickiness.

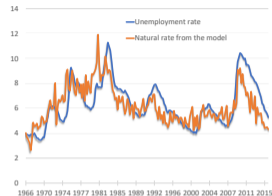# Vastly different $Cov(u_t, u_t^*)$ across approaches
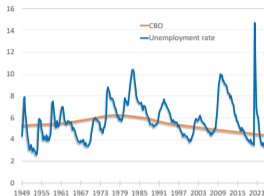
(a) CBO, noncyclical rate of unemployment

(b) King and Morley (2007), VAR

Fig. 2. The natural rate of unemployment.

(c) Galí et al. (2011), GE

CBO's measure implies that variations in the natural rate are a small and unimportant component of total unemployment; King and Morley (2007)'s natural rate accounts for almost all of the movement of total; Galí et al. (2011)'s natural rate accounts for around half.

Regression of inflation on unemployment instead of the unemployment gap

► The natural rate is unobserved. And so suppose it is left out from the regression:

$$\pi_t - \pi_t^* = -\hat{\phi} u_t$$

► The slope coefficient is

$$\hat{\phi} = \frac{\text{Cov}(\phi(u_t - u_t^*), u_t)}{\text{V}(u_t)}$$

or

$$\hat{\phi} = (1 - C)\phi$$

where C is the unobservable regression coefficient of u_t^* on u_t.

► If C is zero, the regression gives the true slope of the Phillip's curve, ϕ.

► If the true natural rate is highly correlated with the actual rate, Phillips curves estimated with constant or nearly constant natural rates of unemployment will inevitably be close to flat.

Views on the slope of the Phillips curve

▶ The range of opinions about the 2009-2019 recovery illustrates different views:

　▶ The *sticky view*: ϕ was small, while the unemployment gap, $u_t - u_t^*$ was large. The Phillips curve is flat.

　▶ The *flexible view*: ϕ was material during the recovery, while the unemployment gap, $u_t - u_t^*$, was small. The Phillips curve is steep.

▶ Both views fit the data. Additional analysis helping to reveal u_t^* or ϕ would be needed to determine which view is correct.

Implications: sticky or flexible?

▶ Evidence from our and other research suggests that the natural rate of unemployment, rather than being a slow-moving function of mainly demographic forces uncorrelated with actual unemployment, is substantially positively correlated with the actual rate.

▶ Under the flexible view, during recoveries, inflation pressure is low because the unemployment gap is close to zero. Under a contrasting, sticky view, inflation pressure is low because the Phillips curve's slope is close to zero.

▶ Low unemployment does not necessarily signal high inflation pressure.

3. Unemployment and inflation in the pandemic cycle

Unemployment in the 2020 pandemic

► Rapid increase in unemployment

  ► Not due to a typical deterioration in demand. Coincided with the locally-mandated stay-at-home-orders (Kudlyak and Wolcott (2020))

► Rapid decline in unemployment

  ► Not due to a typical slow search and matching process but due to recalls

The unemployed with and without jobs
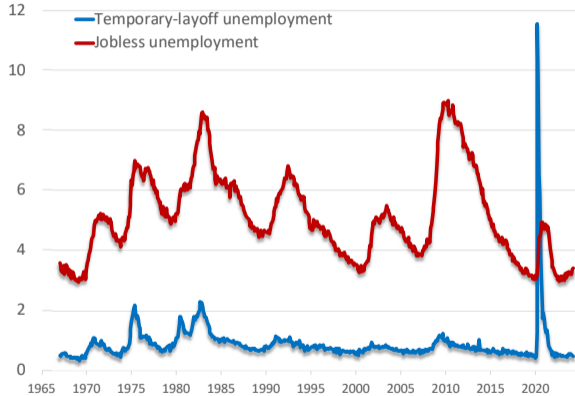
Note: Data through Mar 2024. Source: Hall and Kudlyak (2022b).

Tight labor market in the pandemic recession

► Despite the historically high unemployment rate, the labor market was comparatively tight

  ► jobless unemployment rate reached its peak of 4.9 percent in Sept-Nov 2020
  ► job finding rate
  ► v/u ratio
  ► labor market perceptions

RELATIVELY HIGH JOB-FINDING RATES OF THE JOBLESS UNEMPLOYED IN THE PANDEMIC
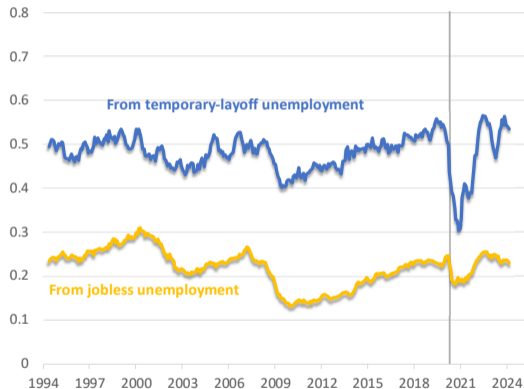
Note: Authors calculations from the CPS micro data. Monthly series, SA using Census X-13-ARIMA-SEATS, MA(5). The vertical line indicates April 2020. Data through Feb 2024. 17

High vacancy/unemployment ratios during the pandemic
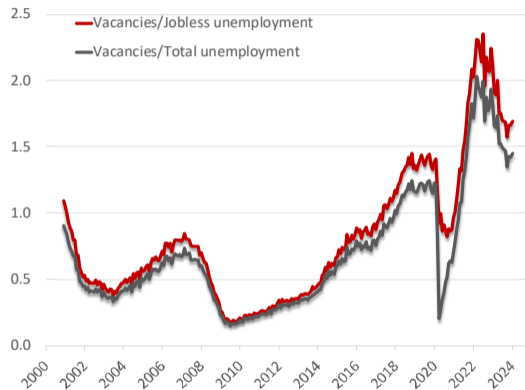
Note: Data through Jan 2024.

Unemployment and inflation post-pandemic

▶ Despite historically high unemployment, the labor market in the pandemic remained relatively tight by historical standards.

▶ Our earlier work suggests that the natural rate of unemployment followed closely the decline of the actual unemployment rate.

▶ What about inflation post-pandemic?

Pandemic dealt a major turbulence shock to anchored inflation

► During the long 2009-2019 recovery, inflation became anchored at 2 percent.

► The turbulence that the pandemic brought to sellers' economic situations induced more frequent price changes than in the tranquil pre-pandemic times. The pandemic loosened the anchoring of the inflation rate that prevailed during 2009-2019.

► In the Phillips curve framework, an increase in turbulence makes the Phillips curve steeper.

► That also means that inflation declines faster when the turbulence shock subsides.

Conclusions

Conclusions

► In a cyclical recovery, unemployment glides downward along a predictable path.

► In the Great Recovery of 2009 through 2019, the natural rate of unemployment glided down a similar path; it was not constant over time.

► During recoveries, labor market tightness is indicative of labor market pressure but not necessarily of inflationary pressure.

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EXTRA SLIDES

Recoveries of jobless unemployment
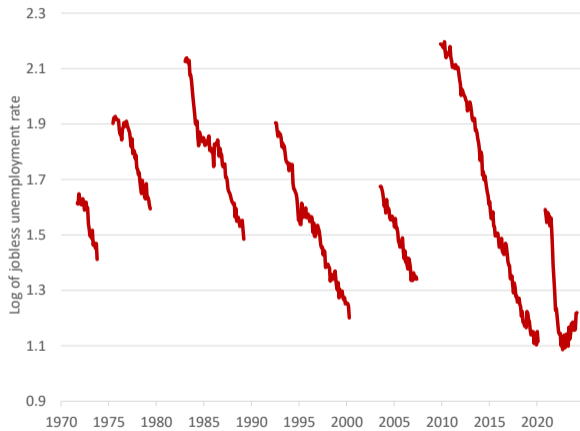
Labor market perceptions line up well with jobless unemployment
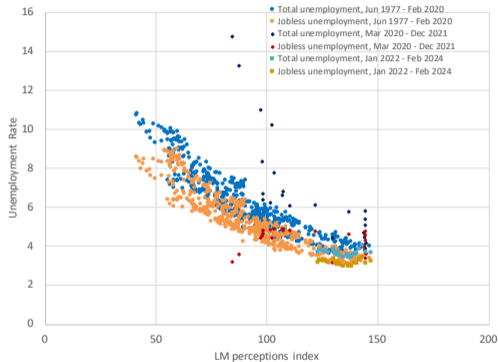
Note: The labor market perceptions index is % of the consumers who say that jobs are plentiful minus % of those who say that jobs are hard to find, plus 100, constructed from the Conference Board data. Data through Feb 2024.