

# Discussion of Labour Market Flows, Unemployment and the Phillips Curve

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# The paper in a nutshell

- Proposes a **leading indicator** of labor market slack and inflationary pressures
- Defines the “**unemployment gap**” as:
  - $\text{U-gap} = \text{Flow-based unemployment} - \text{Stock-based unemployment}$
  - Flow-based unemployment takes into account three possible states, including non-participation
- Provides clear **empirical evidence** that the unemployment gap predicts labor market slack and inflation dynamics
- Develops a **model** in which wages respond to changes in the U-gap
- Summary of comments:
  - **A very good and promising paper!**
  - It provides a **timely indicator** of labor market slack and inflationary pressures
  - Although **flows into and out of unemployment** have previously been used to predict unemployment (e.g., Şahin and Patterson, 2012<sup>/1</sup>), the **innovation of this paper is to link these flows with inflationary pressures**
  - The proposed indicator could prove **extremely useful and informative for central banks’ policy tasks**

<sup>/1</sup> See [“The Bathtub Model of Unemployment: The Importance of Labor Market Flow Dynamics - Liberty Street Economics”](#)

# Labour-Market Transitions in the U.S.

- Data: Current Population Survey (CPS, BLS), monthly since 1990
  - ~60,000 households, U.S. civilian population aged 16+

- Each person is in one of three states:

Employed (E)  $\leftrightarrow$  Unemployed (U)  $\leftrightarrow$  Inactive (I)



- Transition matrix  $M_t$ :

$$M_t = \begin{bmatrix} Pr_t(e|e) & Pr_t(e|u) & Pr_t(e|i) \\ Pr_t(u|e) & Pr_t(u|u) & Pr_t(u|i) \\ Pr_t(i|e) & Pr_t(i|u) & Pr_t(i|i) \end{bmatrix}, \quad \sum_y Pr_t(y|x) = 1$$

- High persistence: diagonal elements > 90 % for E and I
  - Unemployment persistence  $\approx 50$  %
  - Job-finding rate ( $U \rightarrow E$ )  $\approx 25$  %
  - Separation rate ( $E \rightarrow U$ )  $\approx 1$ – $2$  %

# What is flow-based unemployment?

- Take any given transition matrix,  $M$ :

$$\begin{bmatrix} e_{t+1} \\ u_{t+1} \end{bmatrix} = \begin{bmatrix} p_{ee} & p_{ue} \\ p_{eu} & p_{uu} \end{bmatrix} \begin{bmatrix} e_t \\ u_t \end{bmatrix}$$

$$X_{t+1} = M X_t$$

- Iterating until  $X_{t+h} \approx X_{t+h-1}$ :

$$\begin{aligned} X_{ss} &= M X_{ss} \\ 0 &= M X_{ss} - X_{ss} = (M - I) X_{ss} \end{aligned}$$

$$(M - I) X_{ss} = 0$$

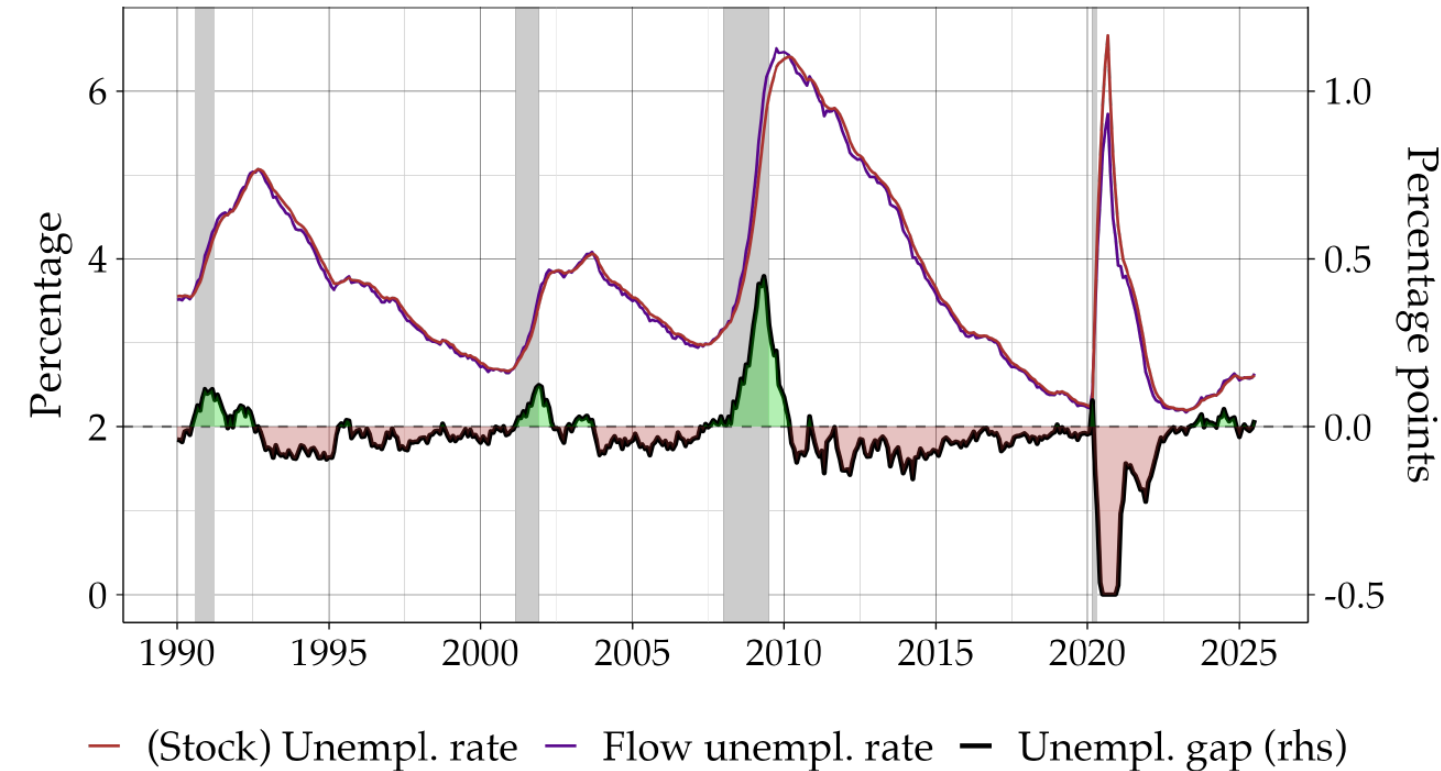
- Steady state employment and unemployment:

$$\begin{bmatrix} p_{ee} - 1 & p_{ue} \\ p_{eu} & p_{uu} - 1 \end{bmatrix} \begin{bmatrix} e_{ss} \\ u_{ss} \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

- $u_{ss}(M)$  is the flow-based unemployment associated with a transition matrix  $M$ .
- If we take  $M_t$  (the transition matrix in period  $t$ ) then we can compute  $u_{ss}(M_t)$ : the **flow-based unemployment** (denoted  $\tilde{u}_t$  in the paper)
- Note that  $u_{ss}(M_t)$  is not necessarily equal to the traditional **stock-based unemployment** ( $u_t$ )
  - $u_t$  results from the past and present accumulated flows associated with the entire history of transition matrices.

# U-gap

Figure 2: Unemployment rates and unemployment gap

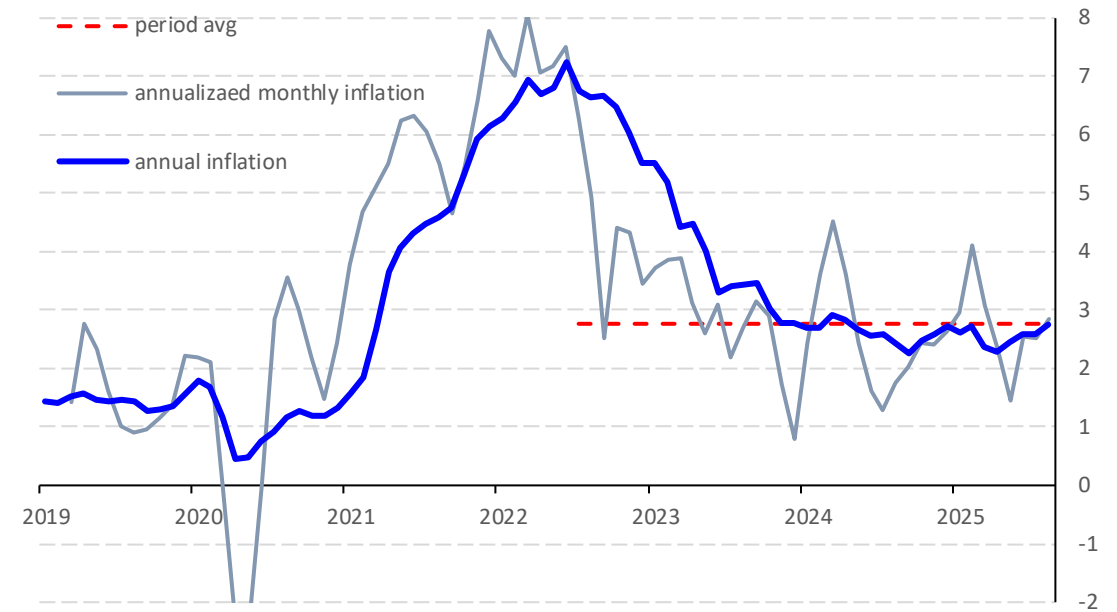


Source: see commented paper.

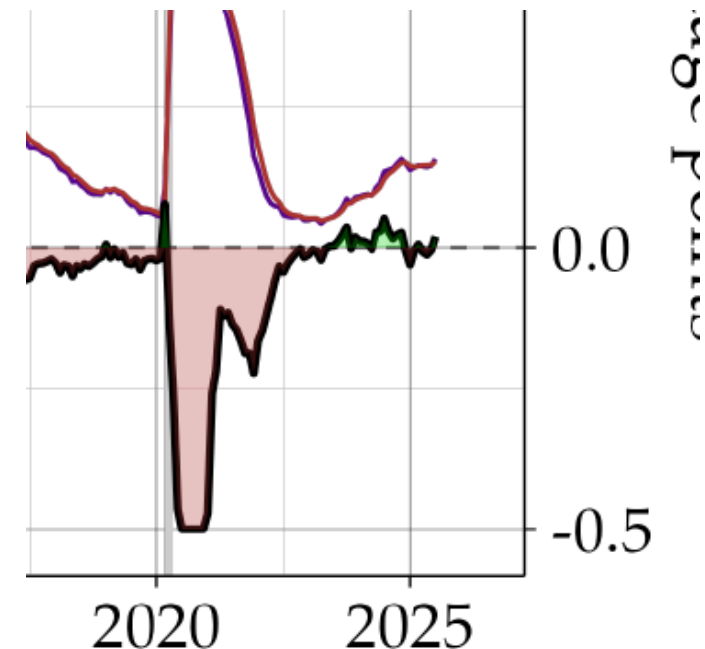
- When a recession officially ends, U-gap declines faster than traditional unemployment.
  - What does this imply from a policy perspective?
  - How should the central bank react considering MP lags?
- 2008—2009 Financial Crisis:
  - For many months traditional unemployment remained close to its peak while the U-gap was mildly negative.
    - Was the stimulus **too weak**?
- COVID-19 recession:
  - U-gap reached unprecedented negative values
    - Was the stimulus **too strong**?

# Inflation dynamics

- Section 3 establishes that the U-gap is a leading indicator of:
  - traditional measures of labor market slack, and
  - wage and inflationary pressures
- Should the focus be on **annual inflation** or on **inflation at the margin**?
  - Since the paper emphasizes **job flows**, it would likely benefit from focusing on **inflation at the margin**
  - Perhaps the **U-gap** has stronger contemporaneous correlations with **monthly inflation**
- Underappreciated relationship:
  - $\pi_t = \left(\frac{1}{12}\right) \sum_{s=0}^{11} \gamma_{t-s}$
  - where  $\pi_t$  is **annual inflation** and  $\gamma_t$  is **annualized monthly inflation**
- The timing of the **U-gap** returning to zero coincides with the **contemporaneous reduction in inflationary pressures** when measured by the **monthly inflation**, but less so when measured using **annual inflation**.



Source: Own calculations with data from Fred



Source: extract from figure from the commented paper <sup>6</sup>

# Model

**Two-state model:** {employed ( $e$ ), unemployed ( $u$ )}

## Agents and wages

- **Firms** post vacancies and face **Calvo-style price rigidity**
- **Workers** are always willing to work but may fail to find a job
- **Wages** are determined through **Nash bargaining**

## Key innovation

- Wages of **newly hired workers** are flexible
- A firm setting the wage for only a fraction of the payroll (the new hires) is affected less per dollar than a firm setting the wage for the entire payroll — **isomorphic to lower bargaining power**
- **Firms' bargaining power varies over time**, depending on the share of new hires

## Anticipation effect

- When the **hiring probability increases** and is persistent, firms anticipate that their **bargaining power will rise in the future**, which increases the **continuation value**
- Thus, a higher **job-finding probability** leads to higher wages

# Model

## The role of choice vs. chance

- The model only captures the **role of chance**. What about the **role of choice**?
- **Key margin**: How does **labor supply** respond over the business cycle?
- A common notion: when **traditional unemployment** is at its peak, **wages** are low relative to normal levels.
- **Labor supply response** to low wages: participation may **decrease**.
- Implication: **wage pressures at the margin may arise from low participation, even when unemployment is high.**

## Conclusion

**A very good and promising paper!**

It provides a **very useful and timely indicator** of labor market slack and wage and inflationary pressures