Econ 314

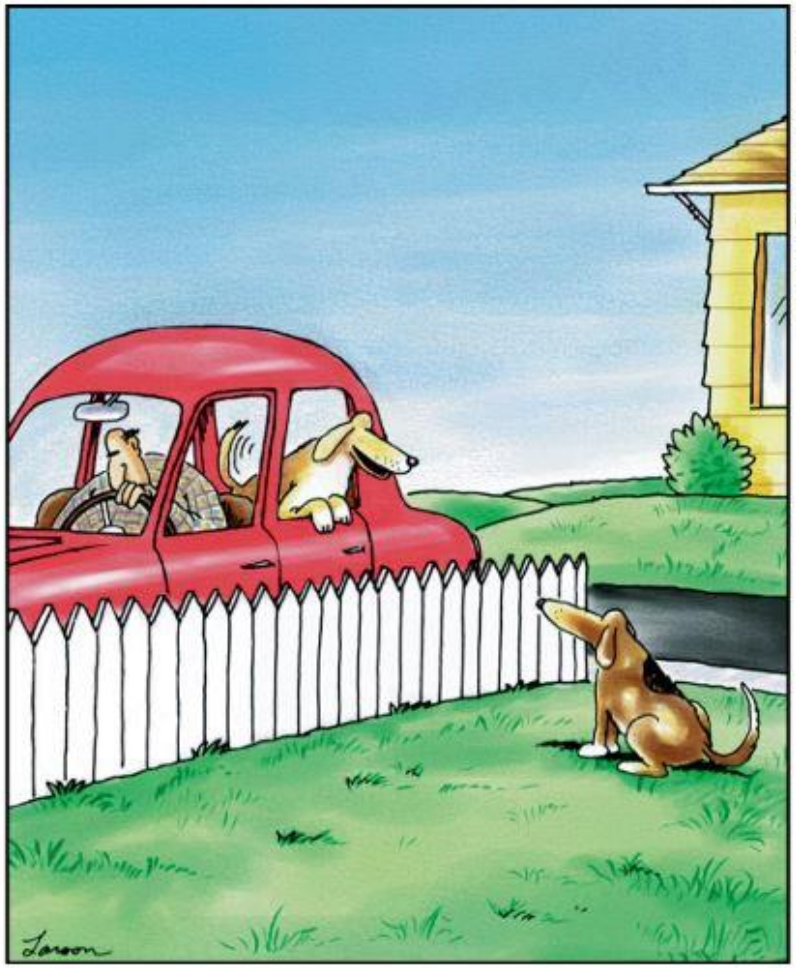
Wednesday, April 15

Basics of Unemployment

Readings: Papers by Blanchard & Katz, Faberman et al., and Ritter & Taylor, Romer's Chapter 11 intro and 11.1, Coursebook Chapter 18, A - G

Class notes: 135 - 138

Today's Far Side offering



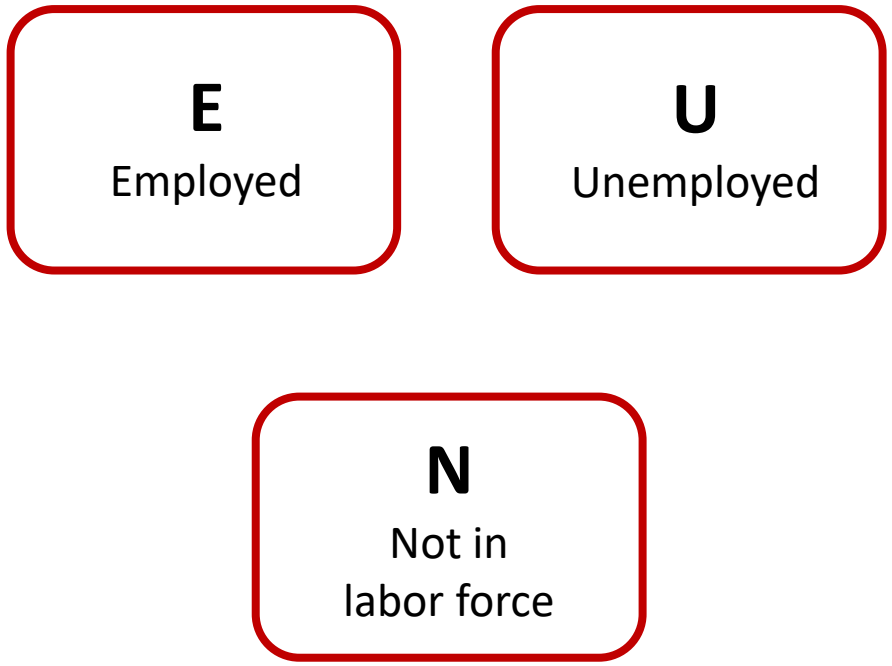
"Ha ha ha, Biff. Guess what? After we go to the drugstore and the post office, I'm going to the vet's to get tutored."

Poor pooch!

Context and overview

- We now begin the phase of the course in which we look more closely at components of the macroeconomy, starting with unemployment
- People are classified as **unemployed** when they are seeking work but not working
  - There are problems of undercounting and overcounting in this definition
- **Natural unemployment rate** is the rate that is equilibrium in the macroeconomy, and depends on microeconomic structure of the labor market
  - Natural rate varies across economies and over time
- **Efficiency wages** are payments to workers in excess of the market equilibrium wage
  - They can explain both wage stickiness and equilibrium excess supply of labor

Measuring unemployment rate

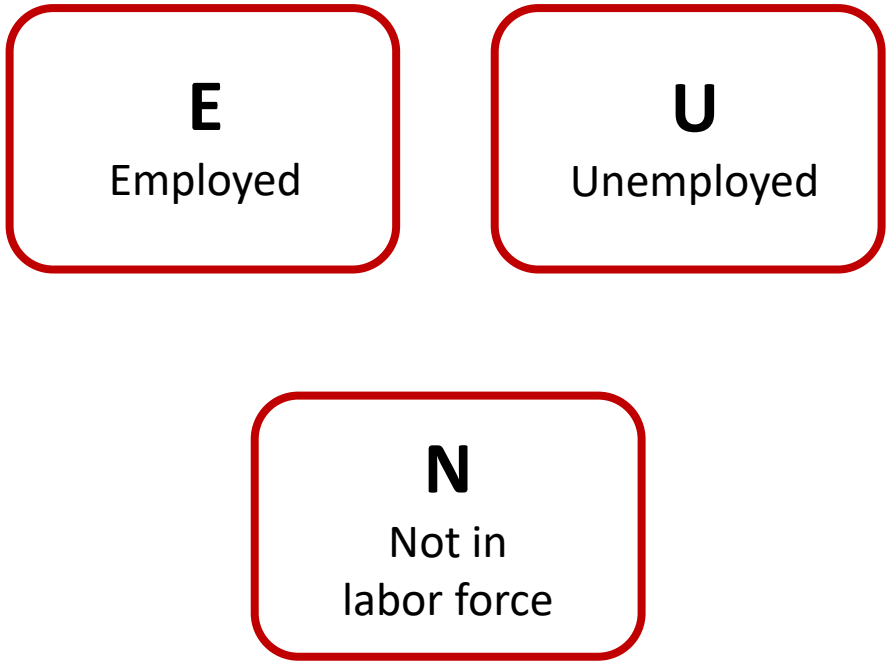


- Monthly survey (CPS) of 60,000+ households
  - See https://www.bls.gov/cps/cps_htgm.htm for survey questions
- Labor-market status during middle week of month
  - E = worked at least one hour
  - U = available for work and searching
  - N = others
- Unemployment rate = U / (E + U)

Measurement issues

- Are U and N distinct states?
  - Discouraged workers
  - Low-intensity searchers
- Underemployment: Should E include everyone employed?
  - Part-time workers who want to work full time
  - High-skill workers in jobs not using their skills
- Long-term vs. short-term unemployment?
- Alternative measures of unemployment rate from BLS account for some of these
  - U1 through U6, with U-3 the headline one

Stocks and flows



- Red boxes are **stocks**, but there are **flows** among them
- **Hires** = movement from U or N into E
- Job **separations** = movement from E to U or N
  - Retirements: E to N
  - Layoffs and furloughs: E to U (usually)
- Job Opening and Labor Turnover Survey (JOLTS) measures flows (since 2000)
- Some theories of unemployment emphasize stocks, others flows

Natural vs. cyclical unemployment

- Natural rate (Friedman): "the level that would be ground out by the Walrasian system of general equilibrium equations, provided that there is [sic] embedded in them the actual structural characteristics of the labor and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labor availabilities, the costs of mobility, and so on."

- Cyclical unemployment = actual rate minus natural rate
- **Cyclical ~ macro factors**
  - Business cycle
  - General excess demand/supply in economy (+ or -)
  - Moves toward zero in equilibrium
- **Natural ~ micro factors**
  - Structure and institutions of labor market
  - Not zero due to imperfections in labor market, including heterogeneity among workers and jobs

Cyclical unemployment and Okun's Law

- **Cyclical unemployment** responds to business cycle:
  - Y > natural output $\Leftrightarrow$ u < natural rate (boom)
  - Y < natural output $\Leftrightarrow$ u > natural rate (recession)
  - Y = natural output $\Leftrightarrow$ u = natural rate (long-run equilibrium on trend)

- **Okun's Law**:
  - Okun argued in the 1970s that 3% $\Delta Y \sim -1\% \, \Delta u$
  - More recent evidence suggests that 2% or less might be more appropriate
  - Relationship varies across countries

Natural-rate hypothesis

- **Natural-rate hypothesis**: Natural rate does not depend on AD or the business cycle
  - Long-run Phillips curve is vertical at natural rate
  - Unemployment tends to return to unchanged natural rate after recession or boom
- Is that true?
  - **Hysteresis** is the possibility that cyclical fluctuations in unemployment could become permanent
  - Lost work skills during unemployment spell, union behavior to raise wages rather than expand employment, etc.

Two categories of theories

1. **Excess-supply equilibrium** theories
   - Real wage is higher than market-clearing level (for some workers)
   - Something prevents wage from falling to employ unemployed workers
     - Contracts (in short run)
     - Minimum-wage laws
     - Unions that bargain for above-equilibrium wage and restrict worker entry
     - Firms paying efficiency wages to spur productivity or reduce turnover
2. **Search** theories
   - Heterogeneity among workers and firms
   - Search is beneficial because it leads to better matches, more productivity
   - Unemployed workers (and vacant jobs) are waiting to be matched up
     - Analogous to inventories in stores waiting to be "matched" with buyers

What we'll study

- **Shapiro-Stiglitz model** is detailed model of why firms might pay efficiency wage > equilibrium wage to prevent shirking

- **Diamond-Mortensen-Pissarides search/matching model** examines costly, two-sided search by unemployed workers and firms with job vacancies

- We won't study contract model or hysteresis model from Romer's Chapter 11 (but they are good!)

Generic efficiency-wage model

- **Raising wage raises workers' productivity**
  - Higher effort because happier
  - Higher effort to keep job
  - Better applicant pool
  - Increased worker health (especially in poor countries)
- Models of worker efficiency/effort
  - Simple: $e = e(w)$
  - More complex: $e = e(w, w_a, u)$ or $e = e(w - w_a, u)$
  - w = worker's real wage, w_a = alternative wage, u = unemployment rate

Firm's wage decision

$$Y = F(eL)$$

$$\Pi = F(eL) - wL$$

Maximize profit wrt w and L:

$$\frac{\partial \Pi}{\partial L} = eF'(eL) - w = 0$$

$$\frac{\partial \Pi}{\partial w} = LF'(eL)\frac{\partial e}{\partial w} - L = 0$$

Equilibrium conditions: $\frac{\partial e}{\partial w}\frac{w}{e} = 1,\ F'(eL) = \frac{w}{e}$

Set wage where elasticity of worker effort = 1

Implications of efficiency wage

$$\frac{\partial e}{\partial w}\frac{w}{e}=1,\ F'(eL)=\frac{w}{e}$$

- Change in MPL
  - Affects employment, but not wage
  - Consistent with highly procyclical L but largely acyclical w
- Change in u or w_a would affect w
  - This kind of model supports the "wage function" that Romer used in looking at effects of price stickiness
- Can *all* firms pay efficiency wage?
  - If they all do, then w and w_a are both elevated (equally)
  - But if wage goes up, then employment goes down along firms' demand curves
  - High unemployment may increase effort: "**Unemployment as a worker-discipline device**"

Review and summary

- **Unemployment rate** is measured by monthly survey
- We separate into **natural and cyclical unemployment**
  - Cyclical responds to business cycle and macro situation
  - Natural depends on micro characteristics of labor market
- **Natural-rate hypothesis**: natural rate is independent of cycle
- Two kinds of models of natural rate: **Excess-supply equilibrium vs. search and matching**
- **Efficiency wages** are appealing example of excess-supply equilibrium

Bad economist joke of the day

An economist was crossing a road one day when a frog called out to him and said, "If you kiss me, I'll turn into a beautiful princess." He bent over, picked up the frog, and put it in his pocket.

The frog spoke up again and said, "If you kiss me and turn me back into a beautiful princess, I will stay with you for one week." The economist too the frog out of his pocket, smiled at it, and returned it to his pocket.

The frog then cried out, "If you kiss me and turn me back into a princess, I'll stay with you for a week and do ***anything*** you want." Again the economist took the frog out, smiled at it and put it back into his pocket.

Finally, the frog asked, "What's the matter with you? I've told you I'm a beautiful princess, and that I'll stay with you for a week, and do anything you want. Why won't you kiss me?"

The man said, "Look, I'm an economist. I don't have time for a girlfriend … But a talking frog? Now that's cool!"

--Taken, with light editing, from Jeff Thredgold, *On the One Hand: The Economist's Joke Book.*

What's next?

- This class examined basic information about **unemployment** and how the rate is measured
- We ended with a simple **efficiency-wage model**
- Next class (April 17) we begin analyzing the **Shapiro-Stiglitz** efficiency-wage model based on prevention of shirking by workers