Inflation and Unemployment

Chapter 12

1. Costs of inflation

2. Costs of unemployment

3. Relationship between inflation and unemployment

4. Reducing inflation

5. Reducing the natural rate of unemployment

1 Costs of inflation

1.1 Perfectly anticipated inflation

- All wages and prices adjust at the same rate and the nominal interest rate exceeds the real rate by the rate of inflation
- Costs associated with physically changing prices
- Some confusion over relative prices
- Resources devoted to cash management since money loses value with inflation

1.2 Unanticipated inflation

- Unanticipated wealth transfers
  - Wage setting – between employer and employee
  - Interest rates – between borrower and lenders
- Greater uncertainty makes planning more difficult, possibly raising savings and reducing investment

1.3 Hyperinflation

- High inflation is volatile inflation

- Tremendous resources devoted to cash-management leading to lost output

2 Costs of unemployment

- Lost output due to wasted resources
  - Okun's Law

$$\frac{Y - \bar{Y}}{\bar{Y}} = -2\,(u - \bar{u})$$

- Psychological and social toll on unemployed and their families

- Some offset due to
  - Greater leisure
  - Possibly productive search time yielding better job

3 Phillips Curve

3.1 Empirical relationship

- Higher inflation is associated with lower unemployment
- Using Okun's law, higher inflation is associated with higher output
- Stable relationship in the 1960's
- Broke down in the 1970's – look to theory to understand why

3.2 Theoretical relationship

- Lucas misperceptions theory
  - Output is increasing in price surprises

$$Y - \bar{Y} = b(P - P^e)$$

  - Similar to saying that the percentage deviation of output from the natural rate is increasing in price relative to its expected level

$$\frac{Y - \bar{Y}}{\bar{Y}} = B\,(\pi - \pi^e)$$

  - Using Okun's Law to substitute for output

$$\pi - \pi^e = -\frac{2}{B}\,(u - \bar{u})$$

or

$$\pi = \pi^e - h\left(u - \bar{u}\right)$$

- Theory says that inflation is high when unemployment is low, only if expected inflation and the natural rate of unemployment are constant

- Inflation is
  - increasing in expected inflation
  - increasing in the natural rate of unemployment
  - decreasing in the actual rate of unemployment

3.3 Reconciling Theory and Empirics

- 1960's – the natural rate and expected inflation were constant

- 1970's – inflation and unemployment both rose
  - oil price shocks increased expected inflation
  - also increases natural rate of unemployment
    * worker mismatch
    * reduced MPN and rigid efficiency wages

- 1980's –Volker disinflation reduced inflation and increased unemployment (as in original Phillips curve)

- 1990's – natural rate of unemployment falls possibly due to better IT job worker matching techniques

3.4 Policy and the Lucas Critique

- Can policy-makers assume that a change in policy will leave an empirical relationship between inflation and unemployment unchanged?
  - Lucas misperceptions AS-AD model with monetary growth
  - Reduction in monetary growth
    - Unanticipated
    - Anticipated – changes π^e and shifts the Phillips' curve

- Lucas critique– In designing policy, cannot assume empirically estimated parameters will remain unchanged with a policy change.
  - In empirical Phillips curve, π^e was originally estimated as a constant
  - If money growth changes, changing inflation, eventually π^e changes

4 Reducing inflation

4.1 Long-run equilibrium with constant money growth and constant inflation

- Price rises continuously – continuous shifts in both AD and AS

- The real interest rate is unchanged but the nominal rate is higher by expected inflation

4.2 Unexpected reduction in money growth to zero

- AS continues to shift, but AD stops
- LM shifts left as P increases, but M does not
- Output falls below $\bar{Y}$
- Over time, as inflationary expectations fall, price stops rising, and economy returns to full employment

4.3 Fully anticipated and credible reduction in money growth to zero

- AS and AD both stop shifting
- LM does not shift as neither M nor P rises
- Output remains at $\bar{Y}$

4.4 Volker disinflation of the early 1980's

- Strong recession even though policy was announced
- Perhaps people did not believe the Fed would follow through
- Perhaps price and wage increases were already in the system through contracts
- Sacrifice ratio - amount of output given up to reduce inflation by one percentage point (1.832%)

5 Natural Rate of Unemployment

5.1 Policies to reduce natural rate (frictional and structural) unemployment

- Subsidies for job training and worker relocation
- Unemployment insurance reform
- Reduce labor market restrictions including minimum wages, regulations on working conditions, cost of unemployment insurance, etc.

- Maintain full employment (or greater) at all times
  - Hysteresis in unemployment suggests that once unemployment increases, it remains high
  - Possibly because workers lose skills while they are unemployed
  - Little evidence in US
- Note these changes have benefits in reducing unemployment, but they also have costs - implement only if benefits exceed costs

5.2 Demographics and the natural rate

- Particular segments of the population have long-term steady jobs while others have temporary jobs with spells of unemployment

- For example, young workers have more unstable jobs, so as the baby-boom aged, the natural rate fell