Labor Markets and Monetary Policy

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Disclaimer

I am speaking for myself today, and not for others in the Federal Reserve or on the Federal Open Market Committee.
Basic Principle of Economic Policymaking

- Don’t use a knife as a screwdriver.
- That is: Given a problem, use the appropriate policy tool for that problem.
What Problem Does Monetary Policy Solve?

- Economies have to adjust in response to macroeconomic shocks.
  - like increases in oil prices or falls in asset prices

- Lesson from the 1970’s: Monetary policy cannot eliminate this adjustment process.

- Primary role of monetary policy: offset impact of nominal rigidities.
What Are Nominal Rigidities?

- Broadly: Prices and inflation expectations adjust only sluggishly in response to shocks.

- This sluggish adjustment can create misallocations of resources.
• Appropriate monetary policy can mitigate these misallocations.

• Thus, if demand is low because of nominal rigidities, then monetary policy should be accommodative.

• (In this talk: monetary policy = interest rate policy, including recent LSAP.)
Monetary Policy and Unemployment

- When is monetary policy the right tool to lower high unemployment?

- Define \( u^* \) to be unemployment rate in the absence of nominal rigidities.
  
  - \( u^* \) is called many things: structural, natural, potential, etc. ...

- Offsetting nominal rigidities implies that monetary policy accommodation should move with \( u_t - u_t^* \).

- Challenge for policymakers: \( u^* \) changes over time.
Two Questions about the Natural Rate

- What can we learn about $u^*$ from the data on unemployment and vacancies?

- What other data can provide supplementary information about $u^*$?
Question 1: Information in Unemployment and Vacancies

- Starting point: In large part, unemployment is high because job creation is low.

- Analyze sources of low job creation using Diamond-Mortensen-Pissarides model.
• Main result: these data alone are not conclusive.

• Possible that low job creation is due only to real factors (for example, UI benefits).
  – That is, $u^*$ may be nearly as high as $u$.

• Then: Current monetary policy is overly accommodative.
• But it is also possible that nominal rigidities are playing a significant role.

• That is, \( u^* \) may be much lower than \( u \).

• Then: Current level of accommodation is appropriate.
Question 2: Other Sources of Information?

- Answer to question 1: Aggregate $u-v$ data aren’t sufficient to pin down $u^*$.

- Second question: Are there other data that can be of use?

- Yes: data in surveys and inflation.

- This auxiliary information supports current level of accommodation.
A Point of Clarification

• My question: What is $u^*$ NOW?

• I’m not asking: What was $u^*$ in December 2008?

• Many reasons to think that $u^*$ changes over time.

• Policymakers need to know current (and future) $u^*$, not historical $u^*$. 
Outline

1. Diamond-Mortensen-Pissarides (DMP) Model

2. Information in $U-V$ Data

3. Other Sources of Information

4. Conclusions
1. DMP Model

- A firm pays a cost $k$ to create a vacancy.

- With some probability, vacancy attracts a qualified applicant.

- Firm and applicant then bargain over the wage.
The Essential Model Element

- Key model variable is the ratio $\frac{u}{v}$.

- Firm is more likely to attract a qualified applicant if $\frac{u}{v}$ is high.

- Worker will accept lower wages if $\frac{u}{v}$ is high.
Benefits of Job Creation in the DMP Model

- Firm pays cost $k$ to create a vacancy.

- Approximate formula for the firm’s benefit from that vacancy:

$$\frac{u}{v} \times (p - z) \times \text{constant}$$
Definition of Terms

- $p$ is the worker’s expected productivity (net of taxes!).

- $z$ is the worker’s flow benefits of not working.
Intuition for the Formula

\[
\frac{u}{v} \times (p - z) \times \text{constant}
\]

- Rises as \( \frac{u}{v} \) rises because:
  - vacancies are likely to attract qualified applicants
  - applicants will accept low wages.
• Rises as $p$ rises, because workers generate more output.

• Falls as $z$ rises, because firm needs to pay higher wages.
Puzzling Lack of Job Creation?

• In December 2007, $u = 0.05$ and $v = 0.031$ (JOLTS data).

• In December 2010, $u = 0.094$ and $v = 0.023$.

• $\frac{u}{v}$ is 2.5 times higher in December 2010.
• Benefits of creating a job seem to have risen enormously.

• Costs have probably not changed.

• Why won’t firms create jobs, given these large benefits?

• Answering this question will lead us to $u^*$. 
2. Information in $U-V$ Data

Aggregate Demand Shortfall

- Standard explanation is that demand is insufficient.

- Firms believe that they can’t sell more than their current production ...

- and so they don’t hire more workers.
- Implicit: Firms can’t (or won’t?) cut prices to generate more demand.

- "Insufficient demand" means prices aren’t adjusting effectively.

- Nominal rigidities are generating low output and high unemployment.

- In this case, $u^*$ is much lower than $u$. 
Other Sources of Low Job Creation

• Does the DMP model suggest other explanations for low job creation?

• Return to the formula for benefits of job creation:

\[
\frac{u}{v} \times (p - z) \times \text{constant}
\]

• We’ve seen that \( \frac{u}{v} \) rose by 2.5 times from 12/07 to 12/10.

• What about the other terms in the formula?
Changes in \( p \) (After-Tax Productivity)

- Why might \( p \) have fallen (relative to trend) since 2007?

- Expected increases in taxes:
  - federal and state; corporate, personal, sales

- Expected increases in input prices (like energy).
Changes in $z$ (Benefits of Not Working)

- Why might $z$ have risen (more than usual) since 2007?
  - extensions in UI benefits
Tentative Numbers

- Mortensen-Nagypal (2007, RED) set $p = 1$ and $z = 0.73$.

- Suppose $p$ fell by 10% and $z$ rose by 0.05 in the past three years.
  - technically: relative to trend.

- These are very large – but not entirely implausible – changes.
• If $p$ and $z$ change like this, what happens to the benefits from job creation?

$$\frac{u}{v} \times (p - z) \times \text{constant}$$

• $(\frac{u}{v}) \times (p - z)$ rises by only 11%.

• In this scenario: Nominal rigidities are much less significant.

• Hence: $u^*$ is not much lower than $u$. \[ \text{end} \]
Summary

\[
\frac{u}{v} \times (p - z) \times \text{constant}
\]

- Since December 2007, \((\frac{u}{v})\) has gone up 2.5 times.

- By itself, this increase suggests that nominal rigidities are constraining job creation.
  
  - \(u^*\) is well below \(u\).
• BUT: It is *possible* that $p$ has fallen and $z$ has risen.

• $p \downarrow 0.1$ and $z \uparrow 0.05$ implies job creation benefits are only up 11%.

• But then nominal rigidities are not constraining job creation much.
  
  – $u^*$ is nearly as high as $u$. 
Bottom Line

- Aggregate $u$-$v$ data are inconclusive about $u^*$.  

- These data are inconclusive about appropriate level of monetary policy accommodation.
Labor Market Matching Efficiency

- Along with \( p \) and \( z \), there is another factor that could increase \( u^* \).

- If labor market matching efficiency fell, then \( u^* \) would rise.

- Definitionally: Labor market matching efficiency has declined if:

  - Firm’s probability of finding a qualified applicant is lower than is implied by the high value of \( \frac{u}{v} \).
• DMP model (applied to \( u-v \) data) provides an estimate of the post-2007 fall in labor market matching efficiency.

• Even when we add this estimate, the \( u-v \) data are consistent with a wide range of possible \( u^* \).

• \( u^* \) might be as low as 5.9% (if you think \( (p-z) \) hasn’t changed).

• or \( u^* \) might be as high as 8.9% (if you think \( (p-z) \) has fallen by 0.15).
3. Other Information?

• Policymakers need to know $u^*$ to determine appropriate monetary policy.

• The aggregate $u$-$v$ data aren’t definitive about the magnitude of $u^*$.

• Do policymakers have supplementary sources of information about $u^*$?
Basic Intuition of Auxiliary Information

• $u^*$ is low relative to $u$ if nominal rigidities are keeping demand low.

• We need information to detect state of demand.
Surveys

- Various surveys of businesses about impediments to job creation.

- Reserve bank presidents ask businesspeople for causes of low job creation.

- What I find: "insufficient demand" first – and then taxes/regulation.

- Implication: $u^*$ may have risen since December 2007, but $u^* < u$. 
(Somewhat Crude) Inflation Heuristics

• If \( u - u^* \) is high, then nominal rigidities are pushing demand down.

• That should be reflected in behavior of inflation.

• Basic idea: Low demand puts downward pressure on inflation.

• Exact impact depends on model of price-setting and expectations.
• Older models: $u_t - u_t^*$ is high when $\pi_t$ (inflation) is low relative to $\pi_{t-1}$.

• Newer models: $u_t - u_t^*$ is high when $\pi_t$ is low relative to $\pi_{t+1}^e$. 
• In second half of 2010: core PCE inflation was 0.5%.

• Low compared with past core PCE inflation ...

• and low compared with future core PCE inflation.

• Both new and old models suggest $u_t - u_t^*$ is significantly positive.
4. Conclusions

- Is high unemployment mainly due to nominal rigidities?

- Or is it mainly due to other factors?
• Aggregate data on unemployment/vacancies aren’t definitive.

• But other data imply that $u_t - u_t^*$ is significantly positive.

• My conclusion:

• It is appropriate for monetary policy to be highly accommodative.
Future Policy?

- In the future: I expect both $u_t$ and $u_t^*$ to fall over time.

- When will the FOMC need to cut back on accommodation?

- The FOMC will continue to re-evaluate as it gets new information.

- I will be paying close attention to the behavior of core inflation.