

Macroeconomic Implications of Downward Wage Rigidity

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Discussed by:

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An ambitious paper



- **Evidence for asymmetry of business cycles**
- **Calibrate DSGE model with downward wage rigidity**
- **Can the model generate observed asymmetries?**
- **Effects of monetary policy in asymmetric economy**

My comments



- **Asymmetry: relevance and evidence**
- **Describe the main mechanism**
- **What can the model do?**

Asymmetry: relevance



- **Hold fixed mean growth**
- **Assume policy must be symmetric**
- **Suppose cycles are asymmetric**

Asymmetry: relevance



- **Hold fixed mean growth**
- **Assume policy must be symmetric**
- **Suppose cycles are asymmetric**
 - Change in welfare analysis negligible...
 - **Who cares???**

Asymmetry: relevance



- **Hold fixed mean growth**
 - **Assume policy must be symmetric**
 - **Suppose cycles are asymmetric**
 - **Who cares???**
- 1. Asymmetric adjustment might change mean level**
 - 2. Asymmetry might help us understand transmission**
 - 3. Asymmetric cycles might require asymmetric policies**

Asymmetry: relevance



- **Hold fixed mean growth**
- **Assume policy must be symmetric**
- **Suppose cycles are asymmetric**
 - **Who cares???**

- 1. Asymmetric adjustment might change mean level**
 - Benigno and Ricci (2008)

- 2. Asymmetry might help us understand transmission**
 - informative about appropriate class of policies

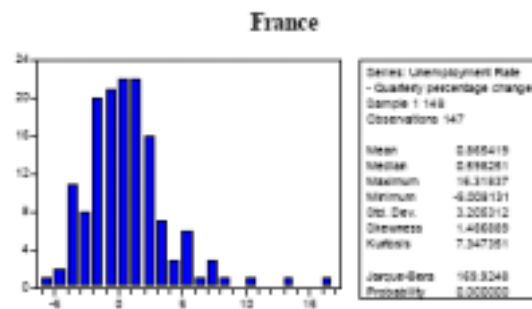
- 3. Asymmetric cycles might require asymmetric policies**
 - i.e. Taylor coefficients might differ for recessions and booms

Evidence: skewness

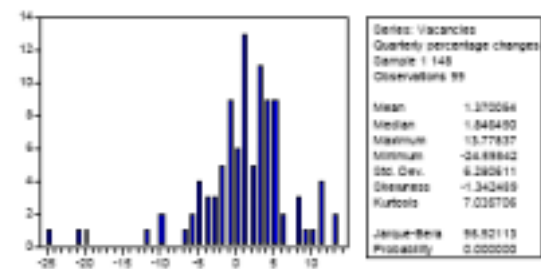


- Unemployment and vacancies strongly skewed:

Unemployment
growth:



Vacancies
growth:

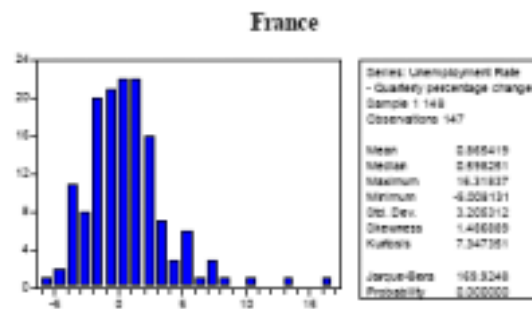


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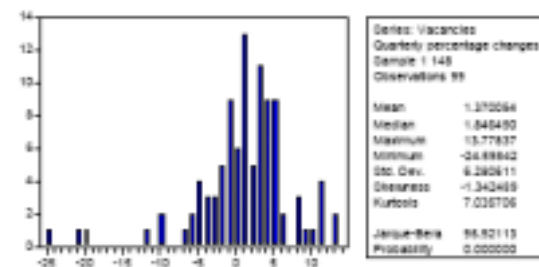


- Unemployment and vacancies strongly skewed:

Unemployment
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Vacancies
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Would be interesting to report
skewness of transition rates too
(job finding and separation rates)

Evidence: skewness



- Unemployment more skewed than output and wages:

| Skewness | | |
|--------------|------------|------------------|
| | <i>USA</i> | <i>Euro area</i> |
| Δy_t | -0.11 | -0.42 |
| Δu_t | 1.49 | 1.83 |
| Δw_t | 0.41 | 1.02 |

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Confidence intervals???

–Possible story: **more downward wage rigidity in Europe** implies sharper recessions in Europe

But **which countries drive skewness** in Europe???

Evidence: turning points



■ Duration of booms and recessions:

| | Duration (qtrs) | |
|-------------------|-----------------|------------------|
| | <i>Boom</i> | <i>Recession</i> |
| Output | | |
| <i>Euro area</i> | 34.0 | 2.0 |
| <i>US</i> | 19.3 | 2.8 |
| Employment | | |
| <i>Euro area</i> | 12.5 | 8.0 |
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But asymmetry of duration tells us nothing about **asymmetry of growth rates???**

Evidence: turning points



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Extremely interesting but also surprising!!!
Contradicts McKay and Reis (JME 2007)

Please graph phases of both cycles for all countries...

Evidence: turning points



■ Duration of booms and recessions:

| | Duration (qtrs) | | Growth rate | |
|-------------------|-----------------|------------------|-------------|------------------|
| | <i>Boom</i> | <i>Recession</i> | <i>Boom</i> | <i>Recession</i> |
| Output | | | | |
| <i>Euro area</i> | 34.0 | 2.0 | 0.70 | -0.72 |
| <i>US</i> | 19.3 | 2.8 | 0.99 | -0.86 |
| Employment | | | | |
| <i>Euro area</i> | 12.5 | 8.0 | 0.03 | -0.21 |
| <i>US</i> | 10.4 | 8.0 | 0.18 | -0.33 |

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This way of reporting it says little about **asymmetry of growth rates...**

Evidence: turning points



■ Duration of booms and recessions:

| | Duration (qtrs) | | Deviation from mean growth rate | |
|-------------------|-----------------|------------------|---------------------------------|------------------|
| | <i>Boom</i> | <i>Recession</i> | <i>Boom</i> | <i>Recession</i> |
| Output | | | | |
| <i>Euro area</i> | 34.0 | 2.0 | 0.08 | -1.34 |
| <i>US</i> | 19.3 | 2.8 | 0.23 | -1.58 |
| Employment | | | | |
| <i>Euro area</i> | 12.5 | 8.0 | 0.09 | -0.15 |
| <i>US</i> | 10.4 | 8.0 | 0.22 | -0.29 |

The model



- **New Keynesian DSGE**
- **Labor market matching**

The model



- **New Keynesian DSGE**
- **Labor market matching**
- **Two obvious candidates for asymmetry:**
 - **Asymmetric labor adjustment costs**
 - *Hiring slow, firing immediate*
 - **Downward wage rigidity**
 - *No resistance to wage increases*

The model



- **New Keynesian DSGE**
- **Labor market matching with exogenous separation**
- **Wage norm resulting in downward wage rigidity**

The model



- **New Keynesian DSGE**
- **Labor market matching with exogenous separation**
 - Ravenna and Walsh (2008)
- **Wage norm resulting in downward wage rigidity**
 - “Wage norm” is past wage, adjusted for trend productivity growth
 - Wage is weighted average of Nash bargain and wage norm
 - Weights differ for increases and decreases

Role of wage norm



$$\text{Wage}_t = (\text{Nash wage}_t)^{\gamma_t} * (\text{Wage norm}_t)^{1-\gamma_t}$$

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→ Wage norm_t = Wage_{t-1} * Productivity trend

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—Is this **real or nominal** wage rigidity?

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–Is this **real or nominal** wage rigidity?

→ Nash wage_t = arg max $\sqrt{\text{Worker surplus}_t * \text{Firm surplus}_t}$
–Nash wage is **real by definition**

→ Wage norm_t = Wage_{t-1} * Productivity trend
–This **wage norm is nominal** (not corrected for inflation)

–Seems more correct to call this **nominal wage rigidity**

Role of wage norm



$$\text{Wage}_t = (\text{Nash wage}_t)^{\gamma_t} * (\text{Wage norm}_t)^{1-\gamma_t}$$

→ $\text{Nash wage}_t = \arg \max \sqrt{\text{Worker surplus}_t * \text{Firm surplus}_t}$

→ $\text{Wage norm}_t = \text{Wage}_{t-1} * (1 + \pi_t)$

–This **wage norm is real**

–This is what I would call **real wage rigidity**

Downward wage rigidity



$$\text{Wage}_t = (\text{Nash wage}_t)^{\gamma_t} * (\text{Wage norm}_t)^{1-\gamma_t}$$

–Weight γ_t depends on adjusted Nash wage growth:

$$\Omega_t = \frac{\text{Nash wage}_t}{\text{Wage norm}_t}$$

–If $\Omega_t > 1$, then $\gamma_t \rightarrow 1$...

–If $\Omega_t < 1$, then $\gamma_t \rightarrow 0$...

Downward wage rigidity



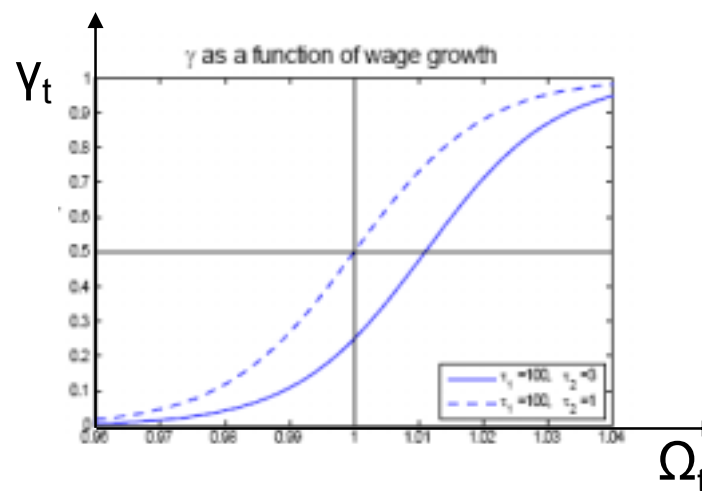
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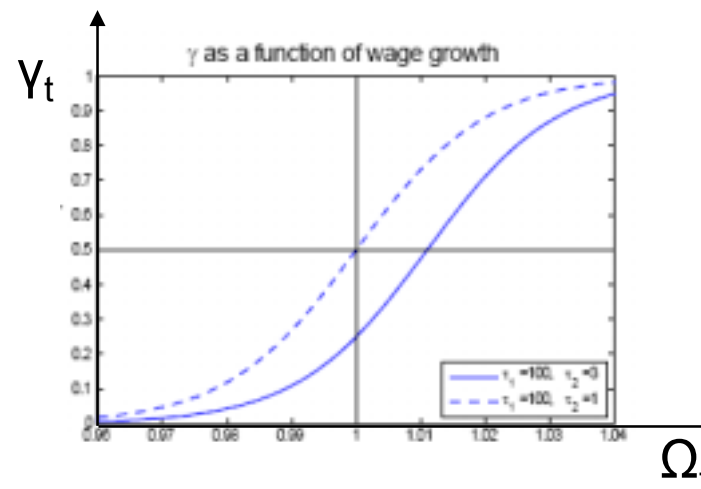
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Wage growth **nonmonotonic** in Ω_t !

Downward wage rigidity



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–If $\Omega_t > 1$, then $\gamma_t \rightarrow 1$... **wage increases permitted.**

–If $\Omega_t < 1$, then $\gamma_t \rightarrow 0$... **wage norm prevents wage decreases.**

Implications: skewness



- **Downward wage rigidity, right-skewed unemployment:**

| Skewness | | | | |
|--------------|--------------|--------------|--------------|--------------|
| Δy_t | Δh_t | Δw_t | Δu_t | Δv_t |
| -0.27 | 0.28 | 1.12 | 0.79 | -0.25 |

- **Increase in productivity or decrease in interest rates:**
– Wages $\uparrow\uparrow$, vacancies \uparrow , unemployment \downarrow
- **Decrease in productivity or increase in interest rates:**
– Wages \downarrow , vacancies $\downarrow\downarrow$, unemployment $\uparrow\uparrow$

Implications: skewness



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–Possible story: **more downward wage rigidity in Europe** implies sharper recessions in Europe

Implications: turning points



- Lower transition rates (finding and separation):
 - cycle longer and smoother
- Increase wage rigidity:
 - cycle shorter and more intense
- Model matches turning points for employment well
 - even without downward wage rigidity
- Increase downward asymmetry of wage rigidity:
 - no effect on length of cycle
 - but recessions more intense

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Does this statement hold
trend growth fixed?

Monetary policy



- **Taylor rule** (in logs):

$$r_t = \omega_r r_{t-1} + (1 - \omega_r)(\omega_\pi \pi_t + \omega_n n_t) + \varepsilon_t$$

- “Strict inflation targeting shortens expansions, makes recessions more violent”

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Monetary policy



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- **Symmetric!!**

- If downward wage rigidity is “structural”, optimal monetary policy probably implies **asymmetric rule**.

- If downward wage rigidity is not “structural”, you probably shouldn’t take policy implications of this model seriously

Summary: main points



- If possible, **document skewness of transition rates:**
 - distinguish fluctuations of unemployment driven by job finding from those driven by separation
- Explain, explore, defend **turning points of employment:**
 - also construct statistics for employment associated with turning points of output
- Clarify whether changes affect **mean growth rates**
 - presumably downward wage rigidity leaves trend growth unchanged
- If you do policy analysis, **study asymmetric rules**
 - but maybe model is better suited to documenting importance of downward wage rigidity than deriving its policy implications



James Costain

THANK YOU FOR YOUR ATTENTION

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SERVICIO DE ESTUDIOS