On "Business Cycles in Credit and Labor Markets" by Petrosky-Nadeau, Tengelsen and Wasmer

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Unemployment and the S&P Stock Market Index

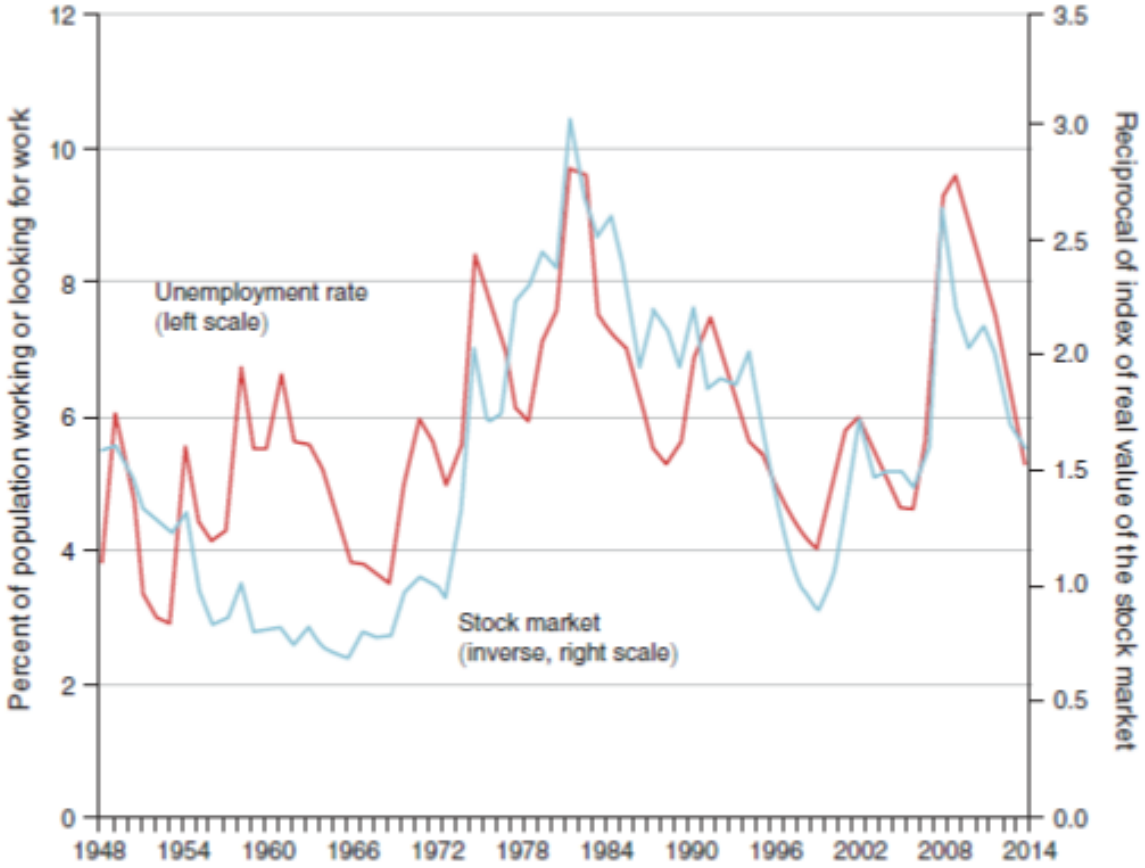

Figure 2. Unemployment and the Real, Detrended Value of the S&P Stock Market Index, 1948–2015

Hall (2017)

Hiring decision as an investment decision

Linking asset market volatility to labor market fluctuation

Q-theory for employment?

- e.g. Bazdresch, Belo and Lin (2009); Merz and Yashiv (2007)

- Investment is low when marginal q is low
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Hall (2017)

- "*the stock market and unemployment respond to the same underlying forces*"
- "*discount rates rise, asset values fall, and all types of investment decline*"
  - Productivity is a weak driving force...

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- labor market tightness does not move enough following productivity shocks
- $p_t = q_n n_{t+1}$

Beyond the Shimer puzzle

In this model, credit frictions interact with hiring decisions of firms

The elasticity of labor market tightness to productivity shocks rises

- another stakeholder (creditor) take some surplus?
- another margin (credit improvement/deterioration) offsets the equilibrium effect from wage movements?

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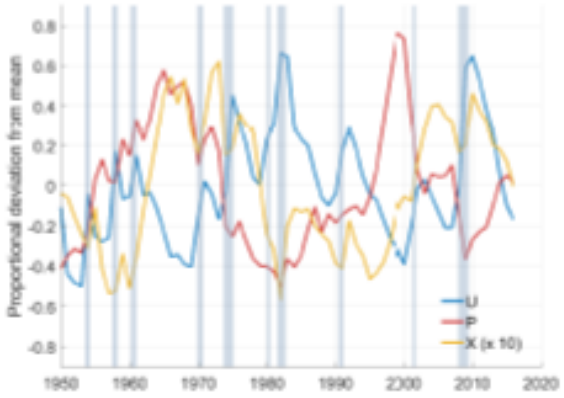
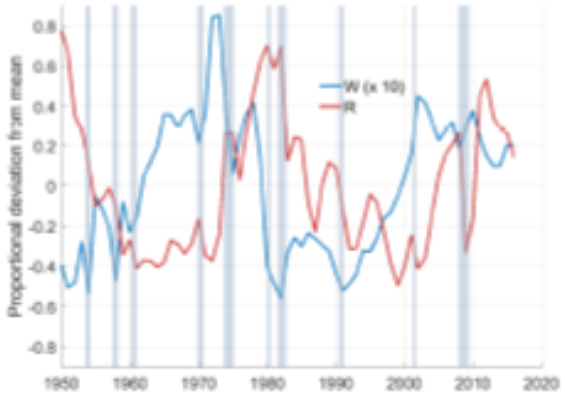
$\Rightarrow$ Use this model to study driving forces of asset prices and labor market dynamics

1. productivity shocks
2. bargaining weight shocks (worker)
3. bargaining weight shocks (creditors)
4. matching efficiency shocks

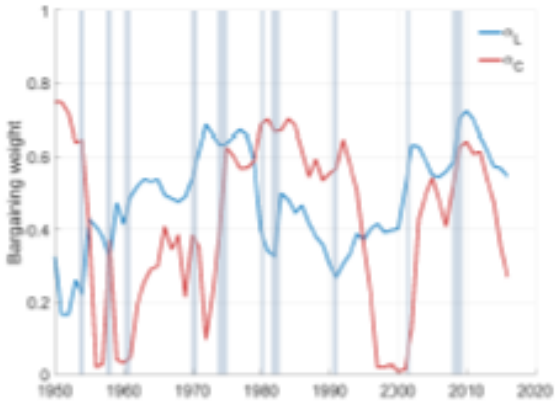
Parameters will be estimated



(a) Unemployment, stock market value, and productivity



(b) Wage and return on equity



(c) Labor and credit market bargaining weights

(d) Labor and credit market matching efficiencies

Figure 4: Experiment results, 1950 to 2016.

Model (here, basic setup only)

search and matching in labor and credit markets
a la Petrosky-Nadeau and Wasmer (2013)

1. Labor market:
   1.1 matching unemployed U and vacant jobs V with efficiency parameters χ_L
   1.2 tightness θ and wage W with share $\alpha_L \in (0,1)$ to worker

2. Credit market:
   2.1 matching new projects N_c and creditor B_c with efficiency parameters χ_c
   2.2 tightness ϕ and wrepayment Φ with share $\alpha_c \in (0,1)$ to creditor

Job creation with frictions in financial markets

- Job creation condition

$$\frac{\Gamma_t}{q(\theta_t)} = \mathbb{E}_t M_{t+1}[X_{t+1} - W_{t+1} + (1 - s^C)[(1 - s^L)\frac{\Gamma_{t+1}}{q(\theta_{t+1})} + s^L K_{t+1}]]$$

$$\text{where } \Gamma_t = \frac{\gamma + K_t}{(1 - s^C)} - (1 - q(\theta_t))\mathbb{E}_t M_{t+1} K_{t+1}$$

  - Recruiting cost: γ
  - Total amount of search costs in financial markets: $K_t = \frac{k_I}{p(\phi_t)} + \frac{k_{B,t}}{\overline{p}(\phi_t)}$
  - Exogeneous credit-relationship death shocks: s^c
  - [perfect credit markets] If $s^c = 0$ and $K_t = 0$, $\Gamma_t = \gamma$:

$$\frac{\gamma}{q(\theta_t)} = \mathbb{E}_t M_{t+1}[X_{t+1} - W_{t+1} + (1 - s^L)\frac{\gamma}{q(\theta_{t+1})}]$$

$\Rightarrow$ K_t is time-varying?

$\Rightarrow$ $q(\theta_t)$ -v- K_t

Equity value and returns

- Ex-dividend value of equity

$$P_t = \underbrace{\left[\frac{k_l}{p_t q_t (1 - s^c)}\right]}_{\text{the shadow value}} N_{t+1}$$

- The return on equity

$$R_t = (1 - s^c) \frac{X_{t+1} - W_{t+1} - \Psi_{t+1} + (1 - s^L) \frac{k_l}{p_{t+1} q_{t+1}}}{\frac{k_l}{p_t q_t}}$$

$\Rightarrow$ Replacing adjustment costs by search frictions

$\Rightarrow$ Level, volatility, comovement as well as higher order moments over cycles

Thoughts for future

Look forward to learning from this paper

- Cyclical implications of rent sharing with workers and creditors
- Business cycle and asset pricing moments (by keeping one shock fixed)
- Solution and estimation methods: substantial contribution

Dividends -v- discounts

- volatility?
- cyclicality?