Discussion of Carlstrom, Fuerst and Paustian’s

"Optimal Monetary Policy in a Model with Agency Costs"

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Excellent paper!
• Features of the model

1. NK core

2. **Two-input** economy: constrained (L) + unconstrained labor (u)

3. **Hold-up constraint** for entrepreneurs

\[ w_t L_t \leq e_{t-1} (Q_t + D_t) \]

\[ \text{net worth} \]
Idea of **hold-up constraint**

- Entrepreneurs add **inalienable** human capital to the production process.

- Labor supplier knows that entrepreneur can **hold up** production by choosing not to provide human capital.

- Requires collateral to be provided in advance.
First order condition on constrained input

\[
\left( \frac{U_L, t}{U_C, t} \right) = w_t = \frac{Z_t}{1 + \phi_t} MPL_t
\]

Notice: two time-varying wedges

1. Real marginal cost (inverse markup): \( Z_t \rightarrow \) Tax analogy (Goodfriend and King, 1997)

2. Shadow value of one unit of (constrained) labor: \( \phi_t \)

→ Interpretation: "risk premium" on a one-period loan
Insights for **optimal** policy

1. Price stickiness and financial distortion may conflict

2. Role for **stabilizing financial premium** (over and above inflation and output gap)

\[
L_t = -\frac{1}{2} \left[ \left( \frac{\varepsilon - 1}{\lambda} \right) \pi_t^2 + (\sigma + \theta) x_t^2 + \frac{\alpha(1 - \alpha)}{1 + \theta} \phi_t^2 \right]
\]

\[
\text{finance premium}
\]
Intuition

• Want to get the right *composition* of output

• Analogy with **two-sector** model with differential price stickiness

• Special case: productivity shocks with $\sigma = 1 \rightarrow \phi_t$ constant $\rightarrow$ Flex price equilibrium efficient
Intriguing: financial frictions affect **labor wedge** (Shimer 2009)

\[ L \text{ wedge} \equiv \frac{MPL_t}{MRS_t} = \frac{1 + \phi_t}{Z_t} \]
US Labor Wedge - deviations from trend, HP filtered data (source Shimer 09)
• Wedge countercyclical

• Need risk premium to rise in recessions (plausible)
Risk premium in CFP model?
CFP Model

Inflation
Net Worth Shock
Output
Risk Premium
Technology Shock
Monetary Shock
Risk premium in CFP model

1. **Pro**-cyclical conditional to (i) *productivity* and (ii) *monetary* shocks

2. **Counter**-cyclical conditional to *net worth* shocks
Why "risk premium" rise in a productivity-driven boom?

↑ productivity → efficient for firms to produce more → ↑ labor demand → ↑ shadow value of additional unit of (constrained) labor

- Typical feature of credit-frictions economies if the financing of flow of one production input is constrained

- Analogy with investment and Tobin's q (rises in a productivity boom)
• Can we generate a **counter-cyclical** premium conditional on all shocks?
  → **Alternative model**

1. NK core

2. Heterogenous impatience rates: → borrower/saver

3. Credit

4. "Ability to pay" constraint
Borrower’s problem

\[ E_0 \sum_{t=0}^{\infty} (\gamma)^t U(C_t, N_t) \quad \gamma \leq \beta \text{ impatience} \]

\[-\lambda_t [P_tC_t + R_{t-1}B_{t-1} - B_t - W_tN_t - T_t] \]

\[-\lambda_t \Phi_t \left[ R_tB_t - (1 - \chi)E_t \{W_{t+1}N_{t+1}\} \right] \text{ ability to pay constraint.} \]
→ Pseudo-Euler condition

\[ U_{c,t} = \gamma E_t \left\{ U_{c,t+1} \frac{R_t}{\Pi_{t+1}} \right\} + U_{c,t} \Phi_t R_t \]

→ In log-linear terms

\[ c_t = \frac{\gamma}{\beta} E_t c_{t+1} - \left\{ \frac{\gamma \left[ 1 + \beta - \gamma \right]}{\beta} \left( r_t - \left[ 1 + (\beta - \gamma) \right]^{-1} E_t \pi_{t+1} \right) + \left( \frac{\beta - \gamma}{\beta} \right) \phi_t \right\} \]
Ability-to-pay model

- **Inflation**
  - Net Worth Shock
  - Tech Shock
  - Monetary Shock

- **Output**

- **Risk Premium**
  - counter-cyclical
• Finance premium always counter-cyclical

• Additional insights:

1. Acceleration on consumption

2. Procyclical credit
Ability-to-pay model

Cons:umptio:n
Net Worth Shock

Credit

Technology Shock

Monetary Shock

Borrower
Saver
Idea: finance premium is **shadow value** of borrowing

- ↑ Productivity → positive income effect for borrower

- Value of collateral rises → Collateral constraint relaxed → Finance premium falls

- Different from permanent-income agent: want to **increase** borrowing ⇔ Credit **pro-cyclical**
What CFP model does not have
1. **Credit / credit spreads** $\Leftrightarrow$ Risk

Both elements particularly important in pre and post crisis

- Typically models have no **credit rationing**

- Think about models with **intensive/extensive** margin of credit (analogy with labor search literature)
2. Credit and financial intermediaries → Current crisis: key role of balance-sheets effects of banks
Figure 1.3. Ratio of Debt to GDP Among Select Advanced Economies
(In percent, GDP-weighted, 1987 = 100)
Key element in the crisis: **liquidity** problem for "new" financial intermediaries

<table>
<thead>
<tr>
<th></th>
<th><strong>Assets</strong></th>
<th><strong>Liabilities</strong></th>
</tr>
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<tbody>
<tr>
<td>traditional banks</td>
<td>long-term loans</td>
<td>deposits</td>
</tr>
<tr>
<td>&quot;investment&quot; banks</td>
<td>MBS</td>
<td>short-term debt</td>
</tr>
</tbody>
</table>
• Banks held long-term assets (e.g., MBS) financed via short-term debt (e.g., commercial paper) → Maturity mismatch

→ When things deteriorate it is the liquidity problem that matters
• Bad state

→ Financial conditions deteriorate

→ Lenders reduce exposure → Ask to service debt

→ Banks try to fire sale long-term illiquid assets
Hence **liquidity friction** at least as crucial as borrowing friction

1. Excessive borrowing is short-term

2. Is it "fire-sale per se" or is it "fire sale" of long-term illiquid assets"?

→ Requires modelling of:

(i) **Interbank** market

(ii) **Maturity** of assets
3. **Firms** vs. **households**: should we care?

- C&I loans vs. household/mortgage loans

- **Mortgage/consumer** loans’ rates significantly smoother than **prime rate** on business loans

(ii) Is it a matter of different **maturity/risk premia**?
• Why higher (different) sensitivity of residential/consumer loans?

(i) **Stickiness** of mortgage/consumer rates

(ii) When interest rates rise → households perceived **more risky**

(iii) ↑ short term rates → banks substitute away from long-term assets (mortgages)

(iv) Households’ balance sheets more sensitive to **asset prices**
4. Default

5. **Unemployment**: link asset prices $\rightarrow$ balance sheets $\rightarrow$ unemployment

(i) Output and unemployment losses more severe with **banking-related** financial stress

(ii) Is this relevant only in exceptional times?
6. **Heterogeneity** → Distributive motive for monetary policy/inflation

7. **Intertemporal** loan

   (i) allow balance sheet effects to have intertemporal propagation

   (ii) motive for optimal inflation volatility?

8. Constraint **occasionally binding** → exercise on rise of risk premia during crisis a bit heroic