Monopsonistic Wage-setting and Inflation Dynamics

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1. Summary

- Empirical studies on the Phillips curve show that real unit labor cost is not useful for explaining inflation dynamics. Motivated by evidence from labor economics, we introduce monopsonistic wage-setting into an otherwise standard dynamic stochastic general equilibrium (DSGE) model.
- This allows us to decompose real marginal cost into the wage markdown and real unit labor cost and identify wage markdown shocks as labor demand shocks.
- With both labor demand and supply shocks, our model outperforms its standard counterpart empirically. The refined real marginal cost improves the Phillips curve's explanatory power for inflation dynamics and obviates the need for price markup shocks.

Motivation and Model

2. Real unit labor cost as a proxy for real marginal cost

- Commonly used in empirical research on the Phillips curve.
- Cost minimization subject to Cobb-Douglas production ($MPL = \alpha_L mc \frac{Y}{L}$) and perfect or monopolistic competition ($w = MPL$) imply proportionality between real marginal cost (mc) and real unit labor cost (ulc)

$$mc = \alpha_L^{-1} \underbrace{\left(\frac{wL}{Y}\right)}_{ulc}$$

- Workhorse DSGE models that feature *households' staggered wage-setting under monopolistic competition* use this proxy.
  - Smets & Wouters 07 (SW); Justiniano, Primiceri & Tambalotti 10 (JPT).
- The models find a large role of price markup shocks ε_p in accounting for inflation, indicating a wedge between real MC and real ULC.

$$\widehat{mc} = \widehat{ulc} + \varepsilon_p \text{ with } cov(\widehat{ulc}, \varepsilon_p) < 0$$

3. Endogenizing price markup shocks

- Without perfect or monopolistic competition in the labor market, real MC decomposes into real ULC and the wage markdown.

$$mc = \alpha_L^{-1} \underbrace{\left(\frac{wL}{Y}\right)}_{ulc} \underbrace{\left(\frac{MPL}{w}\right)}_{markdown}$$

- Growing evidence of monopsony power in labor markets (e.g., Yeh, Macaluso & Hershbein 22; Benmelech, Bergman & Kim 22; Rinz 22).
- We introduce *firms' staggered wage-setting under monopsonistic competition* in an otherwise standard DSGE model.
- Two ingredients:
  1. Monopsonistic wage-setting implies the decomposition
     $$\widehat{mc} = \widehat{ulc} + (\widehat{mpl} - \widehat{w})$$
  2. Labor demand shocks generate comovement between the real wage and hours so
     $$cov(\widehat{ulc}, \widehat{mpl} - \widehat{w}) < 0$$
- When real ULC declines, a rise in the wage markdown offsets the effects on $\widehat{mc}$ and thus inflation in the Phillips curve, akin to a price markup shock.

4. Identifying labor supply and demand shocks

In standard models with households' monopolistic wage-setting:

- Wage growth is driven by the wage markup in the wage Phillips curve, while labor is determined on firms' demand curves.
- The wage PC describes households' labor supply, so shocks to the wage markup and to labor preferences are both labor supply shocks and are not identified.

In our model with firms' monopsonistic wage-setting:

- Wage growth is driven by the wage markdown in the wage Phillips curve, while labor is determined on households' supply curves.
- The wage PC describes firms' labor demand, so shocks to the wage markdown are labor demand shocks.
- They can be separately identified from labor preference shocks, that is, labor supply shocks.

Empirical Results

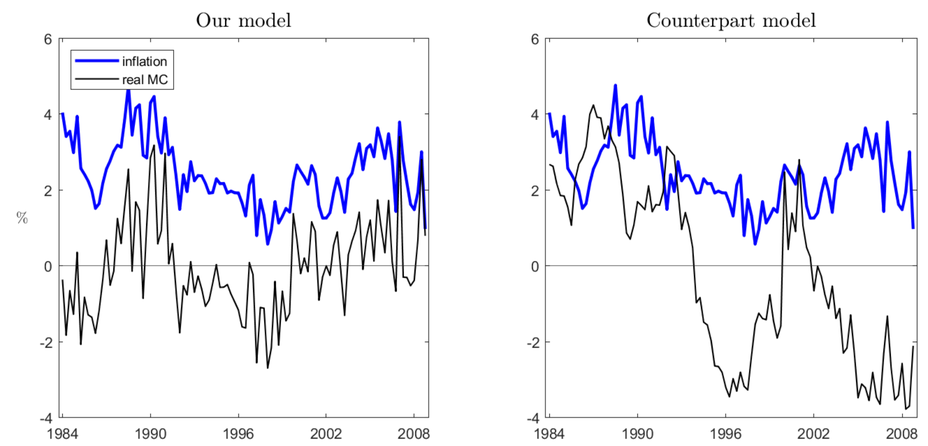
5. Bayesian model comparison

- We estimate our model and its standard counterpart model using full-information Bayesian methods and US macroeconomic data.
- Our model outperforms its standard counterpart in terms of marginal data density.
- Both labor demand and supply shocks are indispensable for the better performance of our model.
- If the model includes only one of the shocks, its empirical performance fails to be better than that of the counterpart model.
- This result holds even when our model abstracts entirely from price markup shocks.

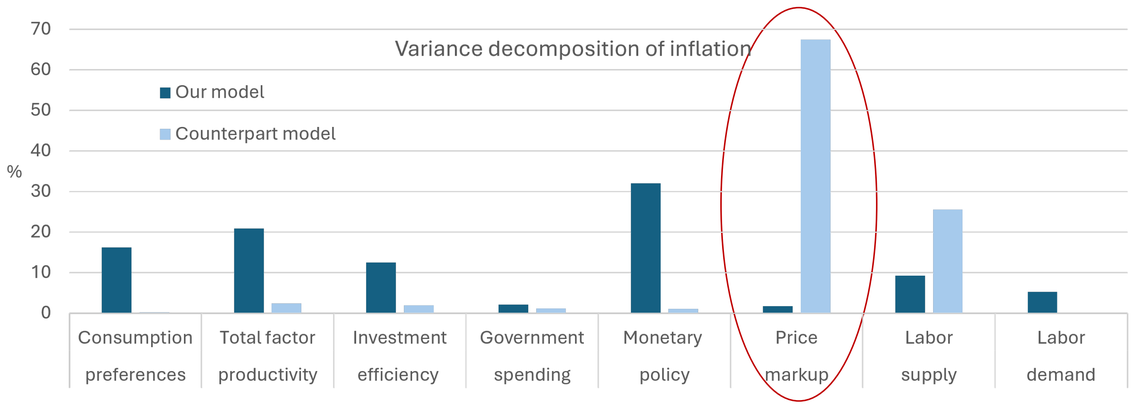
☛ ***The identification of labor supply and demand shocks makes monopsonistic wage-setting relevant for DSGE models.***

6. Implications for inflation dynamics

- The refined real MC in our estimated model has a strong correlation with the inflation data and little correlation with the real ULC data.

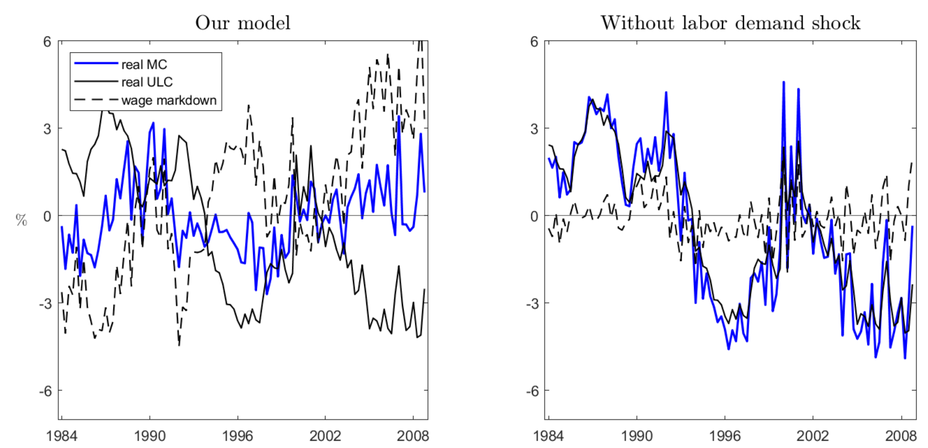


- A variance decomposition attributes inflation fluctuations to a broad mix of shocks that affect real MC and inflation through the Phillips curve, with only a marginal role for price markup shocks.
- The standard counterpart model attributes inflation fluctuations largely to price and wage markup shocks, in line with SW and JPT.



☛ ***Monopsonistic wage-setting improves the ability of the Phillips curve to describe inflation dynamics.***

- Labor demand shocks generate a negative correlation between the wage markdown and real ULC.
- Refines real MC by adjusting real ULC for the wage markdown.
- Without labor demand shocks, real MC mostly inherits the behavior of real ULC and the model's empirical performance declines.



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The views expressed here are my own and are not necessarily those of the Bank of Japan, the Cleveland Fed, or the Federal Reserve System.



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