

SURVEY DATA AND SUBJECTIVE BELIEFS IN BUSINESS CYCLE MODELS

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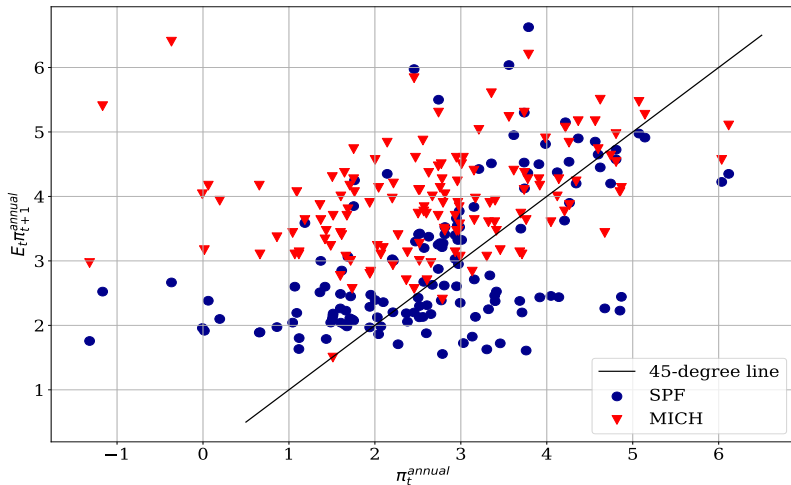
CONTRIBUTION

1. New approximation method.
2. Consider pessimism/optimism as a source of comovement *in the expected* law of motion for shocks.
3. Study of the cyclicity of expectation biases/wedges.
4. Study of the effects of biased subjective expectations on unemployment:
 - A labor market with search frictions enhances the effects of biased expectations because it makes labor-market related decisions forward looking.
 - This can address the unemployment volatility puzzle.

PLAN

1. Bias in inflation expectations.
2. Inflation and unemployment expectations.
3. Some intuition for the expectation of correlation among shocks.
4. Debates in the literature this paper could speak to.
5. Minor comments.

INFLATION WEDGE BREAKDOWN



INFLATION EXPECTATIONS

- ▶ Consumer inflation forecasts display a positive bias:
 - waves of optimism and pessimism modeled as concerns about model misspecification.
 - Ambiguity.
- ▶ Robust finding in models and data:
 - At business cycle frequencies (this paper and also Ilut and Schneider (2014)).
 - At lower frequencies (Masolo and Monti (2017)).
 - Michelacci and Paciello (2019) find evidence of Knightian uncertainty driving expectations even controlling for household's wealth position, using a UK survey.
- ▶ Reconciling theory and data:
 - Agents give more weight to "bad" states of the world.
 - Survey evidence suggests economic agents associate high inflation (and high unemployment) with bad states of the world.

INFLATION AND UNEMPLOYMENT EXPECTATIONS

The model in this paper has implications for the *comovement* of inflation and unemployment expectations.

So an important contribution is to establish this comovement in the data:

1. Inflation and unemployment wedges comove in the time series.
2. At the group level (respondents grouped by education and income, etc.): groups displaying larger overpredictions of inflation also tend to have a larger bias in the unemployment expectations.
3. At the individual level, both when individuals are compared to the population and to their own group.
4. The cross-sectional findings are robust to estimating separate regressions for each monthly survey.

3-EQ NK MODEL INTUITION

The shock to subjective beliefs can be interpreted as a microfoundation to Euler-equation-wedge type shocks, e.g. a discount-factor shock.

$$\begin{aligned}c_t &= \mathbb{E}_t c_{t+1} - (i_t - \mathbb{E}_t \pi_{t+1}) + d_t \\ \pi_t &= \kappa m c_t + \beta \mathbb{E}_t \pi_{t+1} \\ i_t &= \bar{r}_t + \phi \pi_t + \varepsilon_t,\end{aligned}$$

or:

$$\begin{aligned}\tilde{y}_t &= \mathbb{E}_t \tilde{y}_{t+1} - ([i_t - \mathbb{E}_t \pi_{t+1}] - [d_t + \mathbb{E}_t \Delta a_{t+1}]) \\ \pi_t &= \tilde{\kappa} \tilde{y}_t + \beta \mathbb{E}_t \pi_{t+1} \\ i_t &= \bar{r}_t + \phi \pi_t + \varepsilon_t,\end{aligned}$$

Optimal policy prescription:

$$\bar{r}_t = r_t^n = d_t + \mathbb{E}_t \Delta a_{t+1} \text{ and } \varepsilon_t = 0.$$

3-EQ NK MODEL INTUITION (CT'D)

- ▶ Suppose $d_t \downarrow$ (increases the desire to save like an increase in pessimism).
- ▶ "Worst thing" that can happen is for interest rates not to fall, i.e.:
 - $a_t \downarrow$ ($\mathbb{E}_t \Delta a_{t+1} = -(1 - \rho) a_t \uparrow$)
 - $\varepsilon_t \uparrow$
- ▶ Demand for consumption will fall.
- ▶ Inflation:
 - pushed down by the MP tightening.
 - up by the negative TFP shock.
 - TFP effect dominates in the quantitative analysis.

The labor market friction, which makes labor decision forward looking, amplifies these effects.

THREE INTERESTING PAPERS

- ▶ Andre et al. (2019) ask experts and the public how they expect inflation and unemployment to respond to shocks.
 - Main discrepancy: inflation response to monetary and tax shock.
 - This lines up with your finding that expectations about monetary policy shocks correlate with changes in wedges.
- ▶ Coibion et al. (2018) argue that the comovement between professional SPF and consumer expectations (Michigan) changed around the turn of the century.
- ▶ Angeletos, Collard, and Dellas (2019) aim at identifying a shock (MBC shock) that can act as the main driver of business cycles:
 - The shocks they identify are, by design, a combination of traditional macro shocks.
 - Your model could speak to that: main difference seems to be larger movement in expectation of TFP implied by your quantitative analysis.

MINOR COMMENTS

- ▶ How important is the Great Recession in driving the correlations?
- ▶ ZLB.
- ▶ Would be interesting to have real-time estimation of the VAR.
- ▶ Could use Greenbook data as a benchmark/unbiased forecast.

CONCLUSION

Very interesting paper showing that:

- ▶ Consumer expectations for inflation and unemployment are:
 - biased,
 - moving together,
 - countercyclical.

- ▶ A New-Keynesian model featuring search frictions on the labor market and robust preferences can:
 - generate comovement in the perceived law of motion of otherwise independent shocks,
 - which can, in turn, reproduce the countercyclical behavior of expectation wedges,
 - and can help solve the unemployment volatility puzzle.

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