Discussion of "Man-Bites-Dog Driven Business Cycles" by Kristoffer Nimark

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Introduction

- Paper: Interesting, creative, blends theory and empirics.
- Investigates how news reporting affects business cycles.
- Motivation:

1. Macroeconomic empirical observations:

   1.1 Large changes in macro variables (like GDP, CPI) without an easily identifiable change in fundamentals ('overreaction')

   1.2 Persistent episodes of macroeconomic volatility.

   1.3 Positive correlation between absolute changes in macro variables and the cross-sectional dispersion of survey expectations.

2. Media news reporting:

   - unusual events are more likely to be considered newsworthy than usual events
   - 'dog-bites-man is not news, but man-bites-dog is news'.

Model: Signal structure

- Define the property of 'Man-Bites-Dog signals': more likely to be available about unusual events.
- Let x be some latent fundamentals; S an indicator (1,0) whether the MBD signal y is available about x.
- Structure so that

$$\frac{\partial p(S=1|x)}{|x|} \geq 0$$

  - through Bayes' rule: $p(x|S=1)$ is 'flatter' than $p(x)$ at all points except the mean.

- A functional form assumption that maintains tractability:

$$x \sim (1-\omega)N(0,\sigma^2) + \omega N(0,\gamma\sigma^2)$$
$$\omega = p(S=1)$$

Model: Filtering problem

- Conditional expectations depending if observe MBD signal y:

$$E(x|(\Omega_j^0 = \{x_j\}) = \frac{\sigma_\varepsilon^{-2}}{\sigma_\varepsilon^{-2} + \sigma^{-2}} x_j$$

$$E(x|\Omega_j^1 = \{x_j, y\}) = \frac{\sigma_\varepsilon^{-2}}{\sigma_\varepsilon^{-2} + \sigma_\eta^{-2} + \frac{\sigma^{-2}}{\gamma}} x_j + \frac{\sigma_\eta^{-2}}{\sigma_\varepsilon^{-2} + \sigma_\eta^{-2} + \frac{\sigma^{-2}}{\gamma}} y$$

- Observing MBD signal can lead to:

1. less uncertainty about x: due to information in y $(\sigma_\eta^2 < \infty)$
2. more uncertainty about x : due to larger conditional variance $(\gamma > 1)$.

- When σ_η^2 and γ are large enough $\rightarrow$ more uncertainty.

- If σ_η^2 and γ are large enough, the 3 main propositions follow: after $S = 1$ get
  1. stronger average response to x
  2. posterior uncertainty about x is larger
  3. cross-sectional dispersion of expectations about x is larger.

- *Comment*: easier way to get posterior uncertainty up after unusually large signals?
  - Markov switching process $x_t \in \{x^h, x^l\}$, transition Π :

$$y_t = x_t + \eta_t : \eta \sim N(0, \sigma_\eta^2)$$

  - with large swings in observed $y_t \rightarrow$ more uncertain about which is the prevailing regime.

Model: an RBC model with MBD signals

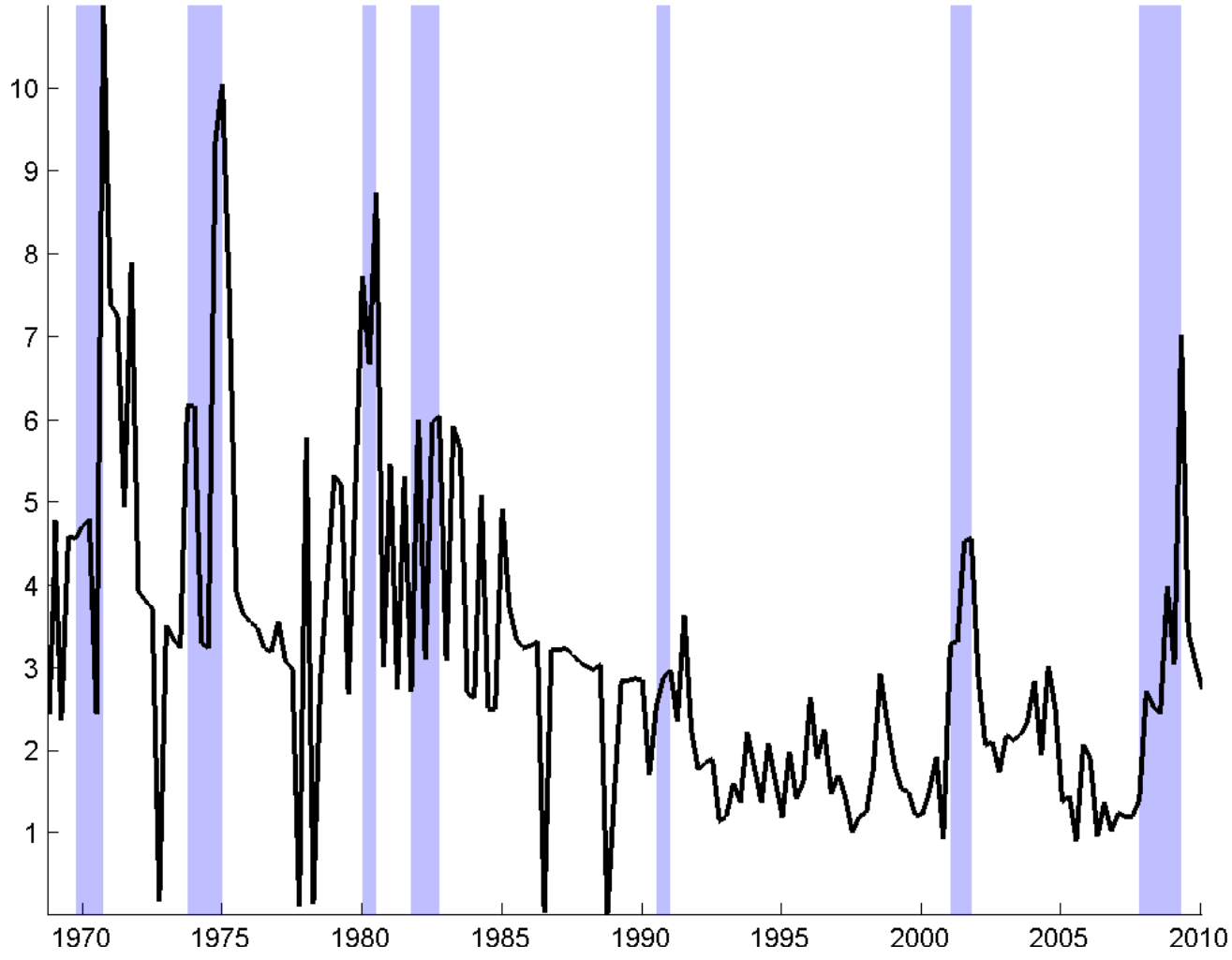
- RBC model with dispersed information as in Lorenzoni (2009)
  - signals on aggregate TFP: island specific and possibly MBD.
- Solving the model:
  - conditional on information sets, linearize the model.
  - dispersed information $\rightarrow$ 'forecast the forecast the others'
    - solution: approximate by a finite dimensional representation.
  - new problem here: time-varying precision due to MBD signal.
    - solution: use a time-varying parameters representation.
- A very nice methodological contribution: how to solve the model with time-varying info sets.
- *Comment*: is linearity for decision rules still a good approximation with time-varying precision?
  - time-varying uncertainty does not affect decision rules here.

Back to motivation (1) : empirical asymmetries and cyclicality

- Paper's empirical motivation: three general 'stylized facts'.
- These facts are more nuanced:

1. Apparent 'overreaction' of macro variables to fundamentals: asymmetric business cycles?
    - Recessions steeper, more sudden than booms.
2. Periods of volatility: strong evidence of countercyclicality.
3. Cross-sectional dispersion of survey expectations increases after large changes: evidence of countercyclicality.

Cross-sectional dispersion of SPF forecasts of industrial production growth



Estimation results: need to adjust the model?

- The model (for now...) does not predict asymmetries and cyclicalities.
- However, these features are in the data and the model estimation is fitting these facts.
- How? Estimated probability of observing MBD signals is higher in recessions.
- Why? Because the MBD signals generate:
  1. overreaction: larger contractions than observed TFP.
  2. increased volatility.
  3. increased dispersion.
- It suggests adding some features to the model.
  - theoretical probability of MBD signals countercyclical.

Back to motivation (2): media news reporting

- Media decides newsworthiness based on unusual
  - fundamentals (as in here) or signal realization?
- Examples that seem to refer to unusual signal realization:
  - 'Man-bites-dog' dictatum
  - Bloomberg 'Movers' segment: stocks selected on the basis of largest price movements (price is just a signal?)
- Another possible model of media: signal is reported only if it is in the tails of the distribution $\rightarrow$ truncated distribution:
- Example: Realized signal about a fundamental x :

$$y = x + u,\ x \sim N(0, \sigma_x^2),\ u \sim N(0, \sigma_u^2)$$

- Man-Bites-Dog signal S reports y only if $|y| \geq a > 0$.
- The probability of $S = 1$ is increasing in $|x|$ and $|u|$.
- Which model is a better description of media?
  - Potentially they describe different market segments.