Short-Term Macroeconomic Forecasting and Turning-Point Detection after the Great Recession

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Discussion by G. Chevillon
1. The model

Empirical macro model for real variables $y_{it}$ that combines

- Common $I(1)$ latent factor $c_t$
  - with short-run dynamics, enters as distributed lag
  - innovations have 2 volatility regimes (high/low)
  - drift has 4 regimes: high/low in each for each volatility level
  - regimes are Markov-Switching

$$\phi_c(L) \Delta c_t = \mu_{S_t,V_t} + \sqrt{1 + hV_t} \sigma_c \eta^c_t$$

- smooth idiosyncratic $I(2)$ trend in GDP (slowly varying long term growth rate)

$$\Delta y_{it} = a_{it} + \gamma_i(L) \Delta c_t + u_{it}$$
$$\Delta a_{it} \sim iid, \quad u_{it} \sim AR$$

- Novelty is the regimes in $\mu, V$
2. Application

- 5-variables, mixed frequency (4 monthly variables – GDP quarterly but disaggregated)
- Real-time vintages when available (post 1991 for GDP, post 1999 for monthly)
- Bayesian estimation
- Assumptions:
  - Identification: recession is more severe in high volatility regime (lower $\mu$)
  - Innovations to $u_{it}, \Delta a_{it}, \Delta c_t$ orthogonal
- Assessment:
  - One Information Criterion
  - Forecasting Exercise post 2007
3. Remarks

- Mixed Frequency: could improve the treatment
e.g., Blasques, Koopman, Mallee, Zhang (2016, JoE), *Weighted maximum likelihood for dynamic factor analysis and forecasting with mixed frequency data*
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  - discount the forecast error for 2008 since it affects comparisons (Figure 5).
Figure 5: Comparison of point forecasts at a 6-month horizon: linear DFM vs. full MS-DFM specification

6 One forecast is obtained at each step of the Gibbs Sampler and Figure 5 reports averages over all draws. The first 2000 draws of the Gibbs Sampler are discarded and the computation of the average forecasts is based on the next 5000 draws.
Conclusion

- Simple & adaptive model that captures interesting features of the data
- Estimation also seems quick here
- Needs to be explored more,
  - in particular since it might be simplified (Dev IC)
  - extended forecast exercise (more models, more variables?)