Discussion of Çakmakli and Altug: "Contructing Coincident Economic Indicators for Emerging Economies"

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Disclaimer

The views expressed are those of the authors and do not necessarily reflect the official view of the European Commission.

What is the paper after?

- Constructing a coincident economic indicator for Turkey
- Using a dynamic latent factor model
  - There is a latent driver of all cyclical activity (a common factor)
  - Every relevant macro variable is some function of it
  - It can be coincident, or allow for leads and lags

Extra features: specifics of emerging markets

- Using mixed frequency data
  - Quarterly and monthly frequencies, sometimes even a change in this respect
- Using an “unbalanced panel” of variables
  - Indicators become available sequentially
- Changing volatilities, extreme observations
  - Allow time variation in the mean and the variance of the innovation of the indicator
  - By using a Bayesian semiparametric estimation
- Explicit modeling of seasonality
- Overall, quite an involved and complex estimation framework!

Empirical strategy 1: factor dynamics

- An AR(p) process $\Phi(L) C_t = \eta_{C,t}$
- The innovation term follows an infinite Markov mixture model
  - K-state Markov chain, with a state dependent mean and variance (θ), and constant transition probabilities
  - The transition probabilities out of state *i* are Dirichlet ($\alpha\beta$), where β is Dirichlet (γ/K)
    - This allows for some dependence between transitions out of different states
    - The Dirichlet process parametrizes the conditional distribution of θ_t given θ_{t-1}
- $K \to \infty$ makes the finite model infinite

Advantages

- The support of θ is not bounded
- We obtain a density estimation of θ, not just parameter values
- Changes in parameters are discrete, compatible with low frequency macro data

Empirical strategy 2: Seasonality and temporal aggregation

- Two seasonal components (quarterly and monthly), explicitely modelled

$$
\begin{aligned}
S_{1,t} &= -\sum_{s=1}^{11} S_{1,t-s} + \eta_{S_{1,t}} \\
S_{2,t} &= -S_{2,t-3} - S_{2,t-6} - S_{2,t-9} + \eta_{S_{2,t}} \\
X_t^i &= \lambda_1^i C_t + \lambda_2^i S_{1,t} + \lambda_3^i S_{2,t} + \varepsilon_t^i
\end{aligned}
$$

- Temporal aggregation: the factor always evolves at a monthly frequency, but some X variables are missing
  - Flow variables correspond to the sum of the unobserved parts

Questions: clarifications

- Detrended series?
  - What is the detrending procedure?
  - Can/should you incorporate into your DGP directly (like done by Canova and Ferroni)?
  - Are we somewhat “cutting first with an axe and then doing laser surgery”?
- Are the variables which start later indeed used in the analysis? Is there an issue with this?
- How do we get the time variation in the factor loadings?
  - Is it for the variables where data frequency varies?
  - Could we have time variation in others?
- Not sure if I understand how and why the procedure is immune to extreme observations

Comments and questions: methodology

- Role of the priors and identification restrictions
  - Are they standard?
  - Do they make a difference?
  - The identification assumption matters – elaborate on that?
- Role of the modeling choice for seasonality
  - Is it standard – both the form, and also the coexistence of a quarterly and a monthly pattern?
  - (How much) does it matter?
  - Can we compare the seasonal patterns to the outcome of a "standard Tramo-Seats" estimate?
- Can one add to the priors the information that earlier data is likely to be of lower quality?
  - Or can we recover/confirm this information?

Comments and questions: results and applications

- What/how much do we gain relative to other methodologies and/or existing indicators?
- How much do the specific assumptions bring to the (better?) performance of the CEI relative to other papers?
- Can we relate changes in the mean and volatility of the CEI innovation to events/developments in a formal/systematic way?
  - How would a constant θ CEI compare to this one?
  - Can we identify a shift in θ in real time?

Conclusions

- A very nice semiparametric/flexible approach to further extend the latent dynamic factor methodology
- Tailored at emerging market features
  - Not sure if this has been explained and played out completely
- Would be interesting to see how much the methodology "matters"
  - Would it indeed not matter in developed countries?
  - How much does it matter in Turkey, and in other emerging economies?
  - In terms of "sheer estimates", but even more in terms of conclusions/applications