Referee report for Locally Time-Varying Parameter Regression

Short synopsis

The paper introduces a new way of capturing dynamic sparsity (or better: dynamic shrinkage) in time-varying parameter regression models. Dynamic sparsity is achieved by assuming heteroskedasticity in the shocks to the latent states and time-variation in the process innovation variances is modeled through a latent thresholding mechanisms similar in spirit to Nakajima & West (2013, JBES). The key idea is to assume a latent process that evolves according to an AR(1) process with unconditional mean zero and variance one. If this process exceeds a threshold, parameter time variation is enabled whereas in the opposite case, the process innovation variance equals zero and no parameter time variation is possible.

I have reviewed the paper before and the author incorporated several of my comments in an adequate manner. I like this version of the paper and find it much improved. Nevertheless, there are still some points left that need to be addressed before the paper is fit for publication.

Comments

— The simulation exercise, in its current form, is not really convincing. It would be better to show how your approach performs for different parameters of the DGP and also for multiple realizations from the DGP. For instance, is your model performing better if the ratio between the measurement error variances and the process innovation variances declines? What about the relative performance to a benchmark model such as the one proposed in Kowal et al? It would also be good to see whether the results you show for one particular realization also hold if you repeat that element and average across errors made in estimating the full history of the latent states.

— I appreciate that you have two empirical applications. However, my suggestion is to split these in two separate sections as opposed to showing in-sample results for each application separately and then discussing the forecasting results together. My suggestion would be to start with the macro application, discuss in-sample findings and then the out-of-sample results. Then you move on to the finance application and do the same. It is a matter of taste but in the current form I find the structure a bit confusing. In addition, it would be nice to also see how model performance changes over time by inspecting cumulative log predictive likelihoods over time. This would allow you to investigate whether your model is performing better during recessions or in periods where stock markets strongly declined.

— In the first paragraph in the introduction you cite several papers which emphasize the relevance of parameter change. Since the most recent one is Belmonte, Koop & Korobilis (2014) it would be nice to have more recent articles

that find that TVP models improve upon constant parameter regressions.

— You make the point that your approach is computationally more efficient than other approaches. It would be good to add empirical runtimes for the different models (most importantly for the Kowal model and the standard MI model) you use in the empirical applications so as to show how your approach performs along that dimension (and convince other
researchers to adopt it).

— It would be good to define the state innovation variance earlier (i.e. directly below equation 1).

— I would suggest you define the latent process in (2) already under the assumption that the persistence parameter is common across coefficients (since this is what you do). Then I would simply use the paragraph that starts with ``in my experiments ...'' as a footnote when you discuss/introduce the persistence parameter.

— I don't think your dependent variable is the quarterly log growth rate but simply the quarterly growth rate of IP (computed by taking log-differences of IP), correct?

I'm fully aware of the fact that some of these comments are a matter of taste (in particular the ones on the empirical application). What I, however, find important is that you pay attention to the simulation exercise so as to convince the reader that your approach is worth adopting.