

Report on "Financial Stress, Regime Switching and Macrodynamics: Theory and Empirics for the US, EU and Non-EU Countries", Pu Chen and Willi Semmler.

The paper focuses on the relation between financial stress and macrodynamics. The authors introduce a theoretical model which is able to model regime switching behavior related to the link between the financial sector and the macroeconomy. The model is solved by a recent advanced method, called NMPC, which is based on a finite horizon optimization problem allowing for multiple equilibria. Empirically, it applies a multi regime VAR and additionally a Markov Switching model to assess the financial-sector-macro dynamics for various countries.

The theoretical model motivates excellently the empirical part which applies a regime-switching (multi regime) VAR. The numerical method seems to be a new, promising tool to describe regime-switching dynamics.

I have following comments and suggestions to the authors to improve their paper, in order of page numbers:

1. **p.5:** The interest rate r is assumed to be $r = 0:04$. Is this a typo (then, 0.04 should be correct) or do the authors model an interest rate range of 0 to 0.4?
2. **p.12:** It would be interesting to see the correlation (in numbers) of IP growth and the FSI for all countries considered.
3. **p.10/13:** The countries and the time horizon analyzed should be stated explicitly at the beginning of section 3 or 4. As far as I see, they are mentioned in table 1 for the first time.
4. **p.13:** For me, it is not completely clear, why the support of the threshold parameter is restricted to be positive. A high stress regime with negative output consequences might not be necessarily associated with a stress variable exceeding zero. For some countries a FSI above -0.5, for instance, could already imply a high stress regime. If the argument in the paper holds, the statistical procedure should also find a value above zero.
5. **p.14:** It is not clear what is meant by following sentence "*The AIC ($M = 2$, $p_{lo} = 3$, $\phi_i = 2$) = -202965.*" The number seems to be way too low.

6. **p.17:** The first paragraph is confusing. A one standard deviation shock in output growth (meaning a positive shock, higher output growth) results in a permanent decrease of financial stress. A lower financial stress index means lower financial stress which is not a worsening of the financial stress situation of a country as it is stated here. Moreover, it might be more interesting to consider negative shocks to output which induce higher financial stress.

This point – a positive output shock - is picked up again on **p.19**, paragraph 2. In an asymmetric, non-linear framework, a positive output shock does not necessarily imply the same dynamics as if a negative output shock takes place. Yet, the argument in this paragraph suggests a symmetric set-up.
7. **p.21/conclusion:** “On the other hand, large reductions in financial stress tend to induce stronger expansionary effects in low rather than in high growth regimes.” I am not sure whether this relates perfectly to the analyses conducted in the paper.
8. **p.37:** I really like the comparison of the results of the Markov Switching model with the multi regime VAR, particularly the dating of stress periods. It delivers valuable insights in the dynamics and supports the derived results. I would recommend putting these comparisons/analyses in the main part. Moreover, I could not find a cross reference in the main text to the Markov Switching analyses in the appendix.
9. The authors focus on short run dynamics, not allowing for regime switching. The shortcomings are mentioned in the paper. Two questions came to my mind:
 - a. Plotting (G)IRFs with a 24 month horizon seems too long for a short run analysis. It is likely that another shock might have occurred within this time frame (see for instance Euro area crisis).
 - b. On p.15 the sentence “So any *further* financial stress shock [...]” is used to explain the outcomes of the multi regime VAR. This explanation does not fit if one focuses on a setting/model set-up in which no other shock takes place.
10. In all figures showing IRFs with respect to different regimes it should be labeled which are low and high stress regime responses.